

AN APPROACH TO DEVELOP ENTERPRISE CAPACITY AT AN EARLY CHILDHOOD DEVELOPMENT CENTRE

by

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ABSTRACT

Significant progress has been made in South Africa's early childhood and Grade R spheres. However, South Africa has a long way to go to meet the needs of the majority of its children. *Institutional capacity (IC)* refers to the administrative and managerial *functions* in an early childhood development centre (ECDC). The failure to develop IC impacts the *quality of services* delivered to the most vulnerable children in our society.

This dissertation identifies various existing approaches/frameworks for developing *institutional capacity*, but that are not integrated in a manner deemed useful nor effective for a ECDC administrator wishing to improve the quality of its services. Knowledge areas with no application within ECD were used to create a baseline for an *enterprise capacity development approach (ECDA)* and demonstrated in an ECDC in a South African context.

Enterprise engineering (EE) as a discipline, together with its theories and fundamentals, informed the constructional design of the ECDA, undergirded by Hoogervorst's approach, IC approaches, and approach design principles. The enterprise evolution contextualisation model (EECM) provided descriptive guidance for the ECDA, while the generic system development process (GSDP) delineated between using and provisioning systems as part of the enterprise design process. The ECDA, scoped to the provisioning system, consists of five activities that are applied as a heuristic to iteratively redesign design domains to affect performance areas. These activities entail the execution of construction design cycles for selected design domains, the identification of performance areas, and the identification of constructional requirements and specifications, followed by the extraction of design principles.

An action design research (ADR) methodology was used for this study, and guided the formulation of the problem and building and constructing the ECDA, together with the iterative shaping of the ECDA in a real-world demonstration. After evaluating the results of this study, it was concluded that the ECDA had a significant impact on improving the quality of services. The ECDA was thus found to be useful to the ECDC administrators in developing enterprise capacity.

Keywords: Enterprise engineering; Institutional capacity; Early childhood development; Quality; Education service, Public services

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Chapter 1: Introduction

The number of working parents, including single-parent families and families with both parents employed, is rising, creating an ever-growing need for quality child care, according to ExpertHub (2018). Further to this, that need is creating a tremendous entrepreneurial opportunity for people who love children and who want to build a business caring for them. The South African Departments of Social Development (DOSD), Basic Education (DOBE), and Health (DOH) all have the mandate to develop an integrated approach to services for children aged from birth up to, but not including, Grade R, formally classified as the early childhood phase. In the most recent community survey conducted by Statistics SA (2016), there were 5,976,519 children aged between birth and four years, showing a five per cent increase from the previous survey held in 2011 (refer to Figure 1). This not only reinforces the need for this social service, but also points to an opportunity for entrepreneurs to capitalise on this growing market.

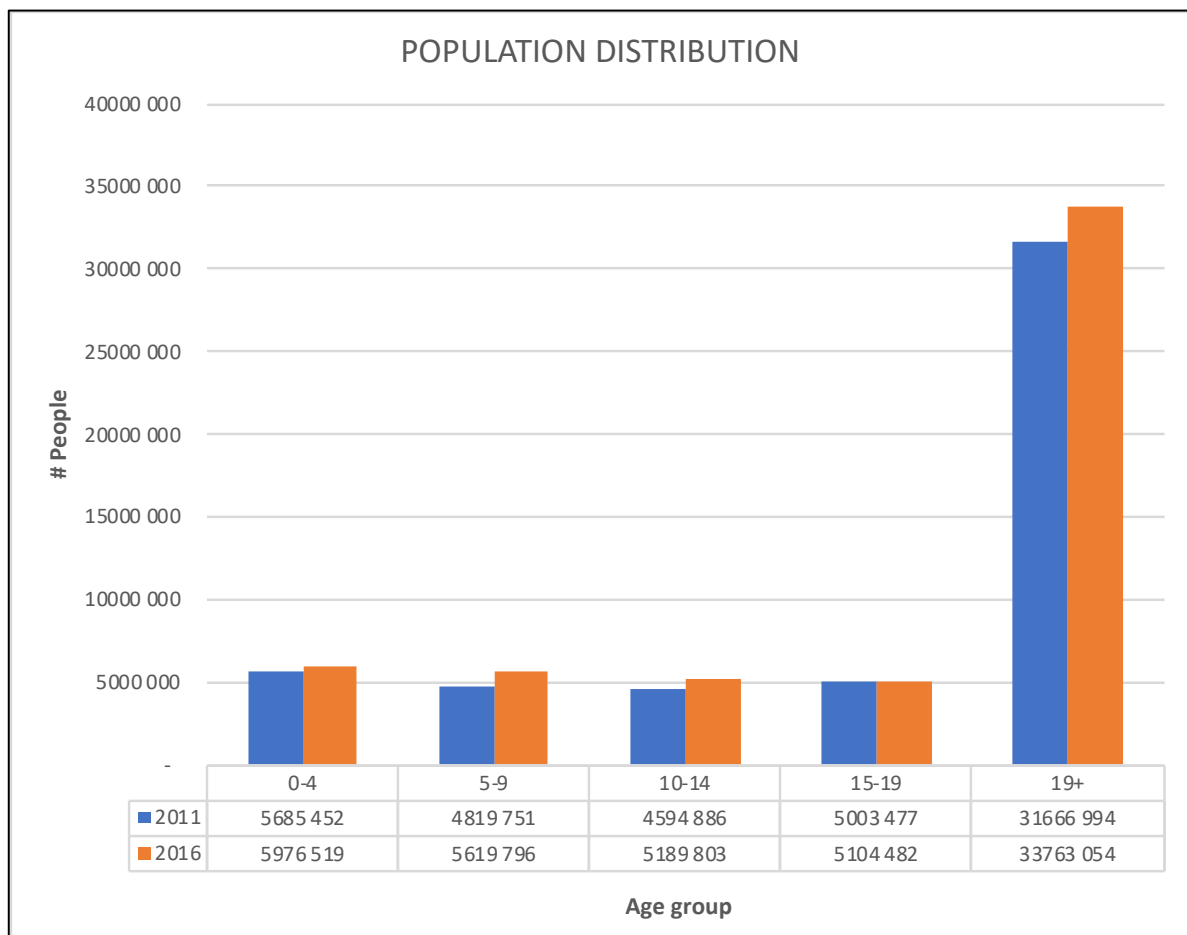


Figure 1: South African population distribution (Statistics SA, 2016)

In South Africa, Atmore, Van Niekerk and Ashley-Cooper (2012) classified early childhood development (ECD) centres into three distinct facility types: (1) public schools, (2) registered community-based ECDCs, and (3) unregistered community-based ECDCs. Public schools typically cater for Grade R only, while community-based centres accommodate children from birth up to and including Grade R. In 2015 there were 25,254 centres nationally, accessed by 1,354,274 children, according to Unicef (2015). The ECD goal is to provide fully comprehensive age-appropriate and developmental-stage-appropriate quality ECD services to all infants, young children, and their caregivers by 2030.

1.1 Problem context

Significant progress has been made in the South African early childhood and Grade R spheres. However, South Africa has a long way to go to meet the needs of majority of its children per Atmore et al. (2012). Various challenges exist in the early childhood sector, as noted by Atmore et al. (2012):

- *Infrastructure availability* – this is to do with basic infrastructure such as running water and access to suitable sanitation.
- *Nutrition* – this refers to meeting a basic physical need through healthy feeding schemes, thus preventing malnutrition and starvation.
- *Number of ECD curricula* – these are the various programmes in the ECD sector that deliver a service to children, ranging from centre-based models to ‘non-traditional’ models such as playgroups and family outreach programmes.
- *ECD teacher skill level* – this addresses the need to promote quality teaching and learning as an essential mechanism for early development.
- *Institutional capacity (IC)* – this concerns effective administrative and management systems for an ECDC.
- *Funding* – this pertains to subsidies that ECDCs receive from government to acquire the necessary resources.

Of particular interest is institutional capacity, and the inability of ECDCs to execute their purpose effectively. Imbaruddin (2003) finds that, by substituting institution as organisation and capacity as the ability of an organisation to pursue its objectives, institutional capacity is defined as the ability to pursue objectives; that is, delivering quality services as assessed by the organisation’s customers. Atmore et al. (2012) further describe institutional capacity in the ECD sector, and, according to the Guidelines for Early Childhood Development Services, it is crucial that administrative and management systems are developed and put in place for the effective management of an ECDC (Department of Social Development, 2006).

The study entitled Tracking public expenditure and assessing service quality in early childhood development in South Africa as cited by Atmore et al. (2012) showed that community-based ECD facilities in South Africa appear to be less advanced in their financial management and governance than ECD facilities in the public school system. In a later publication, Atmore (2013) finds that ECD facilities in the public school sector appear to be more sophisticated than those in community-based ECDCs, and have more structured governance and financial reporting systems. Atmore (2013) and Van Heerden (2016) note that community-based ECDCs lack proper administrative and management systems to meet the minimum standards set by the Department of Social Development. Atmore also mentions that the financial management of many of the community-based ECD facilities is poor; more than half of these centres do not have many of the necessary administrative documents and structures in place.

The number of children with access to ECD services is gaining momentum, but Excell (2016) notes that, although doors are being opened to learning, this does not ensure a *quality* early learning experience for children. Clasquin-Johnson, as cited in Van Heerden (2016), stated that there is an urgent need not only for more early learning centres but also for higher *quality* early learning centres globally and in South Africa. Van Heerden (2016) mentions that, in South Africa, teachers' and parents' views of high *quality* in early learning centres have received little attention despite researchers' and educators' attempts to identify the critical components for high-quality early learning centres. Different terminology is used to describe the systems that educational organisations put in place to classify and determine the quality of early learning centres. Terms that are used are quality assurance frameworks, accreditation frameworks, accreditation systems, rating scales, observation measures, accreditation schemes, and childcare accreditation (Van Heerden (2016). She also mentions that quality assurance frameworks have never been implemented in the South African early childhood development sector.

Enterprise engineering (EE) is emerging as a new discipline to encourage comprehensive and consistent enterprise design (De Vries, Van der Merwe & Gerber, 2017). Since EE is multidisciplinary, various researchers study enterprises from different perspectives, which has resulted in a plethora of applicable literature and terminology, but without a shared meaning (De Vries et al., 2017). The enterprise evolution contextualisation model (EECM), which is discussed in more detail in section 4.6.3, is positioned to guide the development of the enterprise capacity development approach (ECDA) to aid and assist ECD directors in the development of *institutional capacity*.

1.2 Problem statement

The standards for and regulation of an early childhood development centre require the management of such centres to have administrative systems and procedures in place to ensure the efficient management of the facility and activities, according to the Department of Social Development (2006). Further to this, as part of the registration process, the administrator of the ECDC needs to prove that administrative and financial management systems are in place. Failure to do so can result in the rejection of a new application, or the closure of the centre with immediate effect. The national integrated ECD development policy (Republic of South Africa, 2015) stipulates that appropriate management, coordination, and monitoring and evaluation systems are in place adequately to plan for, measure, monitor, and improve availability, for quality and equity of access, and for outcomes for all children. The problem statement is defined as follows: IC, or the lack thereof, is an impediment to operating a quality ECDC. 'IC in ECD' refers to the effective administrative and managerial aspects of an ECDC, and failure to build this capacity impacts the quality of the services delivered.

According to the literature, very few South African community-based centres have successfully managed to display maturity in this regard, let alone operationalise their business management processes and systems. In fact, Atmore (2013) states that more than half of these centres do not have many of the administrative and structural processes in place, even though that is a minimum standard prescribed by the Department of Social Development. Community-based ECDCs do not fall under the Department of Basic Education's mandate, as do public schools (Grade R), and so the administrators of community-based ECDCs most often need to rely on their own expertise and experience to build this capacity.

The national Department of Social Development (DOSD) commissioned a national audit of registered ECDCs in 2013; the scope included conditional and unregistered centres, as outlined in the report (Department of Social Development, 2014). Profound insights from this audit report further support views that the administrative and managerial affairs in many of the ECDCs across South Africa are sub-optimal. The Department of Social Development (2014) identified a lack of administrative recordkeeping, with *less than half* of all registered centres having nothing more than staff attendance records or job descriptions. In addition, the lack of employment contracts and payslips is a cause for concern. Administrative and financial documents are kept by many centres, although the numbers are far from ideal. Without proper records on income and expenditure, operating within the constraints of the

ECDC's budget proves to be difficult, and ultimately affects the sustainability of the centre. Some registered ECDCs are operating without the documents that are currently required for registration. Dramatic shifts in the early childhood development sector, coupled with more stringent regulations, have created a real problem for administrators to run an effective centre. A holistic review of *institutional capacity* frameworks that are effectively implemented elsewhere is warranted to support the most vulnerable people in our society – namely, our children.

1.3 Research questions

The language of business and organisational theory entered the lexicon of the early childhood field as early as 1999. Fast forward to 2013, and the results of a literature search prove that the educational 'business' language has not changed, or at least is perceived not to have changed fast enough. Very few of the best practices and concepts from the ever-evolving business world are making their way into the educational sector, especially in South Africa. The sections that follow present complementary research questions, followed by the thesis statement in section 1.4. The scope, limitations, definition of terms, assumptions, and significance of this study are outlined in sections 1.5 to 1.8.

1.3.1 Primary research question

RQ1: What useful enterprise capacity development approach (ECDA) will improve the quality of service in an ECD enterprise?

1.3.2 Secondary research questions

RQ2: What is the definition and understanding of 'institutional capacity' in the ECD sector?

RQ3: What evidence is there in the literature that institutional capacity was successfully developed, and how was this done?

RQ4: What approaches, mechanisms, and models are associated in the literature with developing institutional capacity at ECDCs?

RQ5: What should be the constructional components of an ECDA to ensure that its development will improve the quality of service?

RQ6: How should the ECDA be implemented?

RQ7: When implemented, how effective is the ECDA in improving quality of service?

RQ8: When implemented, how useful is the ECDA to an ECDC administrator?

RQ9: How well does the ECDA comply with approach design principles?

1.4 Thesis statement

Adapting and adopting an enterprise capacity development approach (ECDA) that focuses on *developing* institutional capacity will improve the *quality of service*, and will be useful to administrators of South African ECD enterprises.

1.5 Scope demarcation and limitations

This study will be scoped to the development and design of the ECDA in an ECDC. The approach will focus predominantly on the organisational domain of the ECDC. Aligned with the enterprise engineering philosophy, the scope will include the design and development of an artefact, but will exclude the operationalisation and embedding of the ECDA, although components of the ECDA will be tested in the ECD environment. The study outlines best-of-breed frameworks and/or approaches from educational as well as non-educational domains that should be suitable in a South African context. This particular study will not deal with any educational spheres other than the early childhood development sector, and is concerned with community-based centres for children aged from birth to (but not including) Grade R. The centres referenced here are privately owned and run in conformance to the Department of Social Development's rules and regulations. This study will not consider advances made in the public school arena, where predominantly Grade R children are accommodated, as this is part of the Department of Basic Education's mandate. The study will not focus on infrastructure, ECD curricula, ECD teacher training, nutrition, or funding. These very important areas of concern fall into the educational-, social- and human-services research domains.

1.6 Definition of terms

The following terms are defined to clarify the terminology used in the remaining chapters.

Table 1: Definition of terms and abbreviations used

Term	Abbr.	Definition
Conditionally registered ECDC	N/A	A centre that has applied for registration with the Department of Social Development as an early childhood development service provider, but, according to the Department, has not complied with all its standards and registration requirements within the stipulated time frame of two years. It may receive partial funding from the Department.
Council for Higher Education Accreditation	CHEA	Education accreditation body in the United States.
Department of Basic Education	DOBE	Government department tasked to guide policy and governance of education from Grade R to Grade 12.
Department of Health	DOH	Government department tasked to guide policy and governance of health services across South Africa.
Department of Social Development	DOSD	Government department responsible to the executive and to the public for providing early childhood services, as well as the design and implementation of policy and regulations.

Term	Abbr.	Definition
Design and engineering methodology for organisations	DEMO	DEMO produces the essential model of an enterprise, or a scope of interest in general (which may cover part of one enterprise or of a network of enterprises). Like every proper methodology, DEMO comprises a way of thinking (WoT), a way of modelling (WoM), and a way of working (WoW) (Dietz & Mulder, 2020).
Early childhood development	ECD	Early childhood development is the process of emotional, mental, spiritual, moral, physical, and social development of children from birth to nine years.
Early childhood development centre	ECDC	Any building or premises maintained or used (for profit or not for gain) for the admission, protection, and temporary or partial care of more than six children away from their parents. Depending on registration, an ECDC can admit babies, toddlers, and/or pre-school aged children. The term 'ECDC' can refer to a crèche, day care centre for young children, a pre-school, and/or after school care. Exclusions are: (1) Grade R classes attached to a primary school, and (2) home-based programmes with fewer than six children run by day mothers and child minders, and/or play groups, and, for the purposes of the audit, those with no children under the age of 6. In the report 'ECDC' and 'centre(s)' are used interchangeably.
ECD sector	N/A	A broad term to describe the involvement of multiple partners across ECDCs, ministries, communities, non-governmental organisations (NGOs), and other stakeholders, including parents and caregivers.
ECD services	N/A	Services or support provided to infants and young children or to the child's parent or caregiver by a government department or civil society organisation with the intention of promoting the child's early emotional, cognitive, sensory, spiritual, moral, physical, social, and communication development.
Enterprise engineering	EE	Enterprise engineering is a new, holistic approach to addressing enterprise changes of all sizes and in all kinds of enterprises (Dietz, Hoogervorst, Albani, Aveiro, Babkin, Barjis, Caetano, Huysmans, Iijima and Van Kervel (2013).
Enterprise evolution contextualisation model	EECM	De Vries et al. (2017) state that EECM is a descriptive model to contextualise an existing approach.
Institutional capacity	IC	IC entails the administrative and managerial <i>functions</i> that cover elements ranging from leadership, human resources, infrastructure such as physical facilities, and programme and process/procedure management, to forming inter-institutional linkages.
Enterprise capacity development approach	ECDA	An artefact, classified as an approach, developed to guide the <i>development</i> of institutional capacity in an ECDC. An approach, according to the Oxford University Press Southern Africa (2010, p. 30), is a way of doing something.
Generic system development process	GSDP	According to Hoogervorst (2018b) in order to design the functional relationship with the provisioning system (black-box) properly, the construction (white-box model) of the using system must be known, and depicted as the generic system development process (GSDP).
Registered ECDC	N/A	A centre that is registered with the Department of Social Development as an early childhood development service provider. In order to attain this status, the centre has to apply for registration and comply with the Department's standards in respect of infrastructure, health and safety (both inside the facility and outside), curriculum, human resources, etc. within a given timeframe.
Quality in ECD	N/A	Quality in child care has been defined as how well the developmental outcomes for children are enhanced through the physical, social, and emotional interactions that are afforded to them in the child care setting (Nupponen (2005).
United States Department of Education	USDE	This department promotes student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access.

1.7 Assumptions

IC is not a new concept in the public sector performance arena, but is not well-defined or researched in the ECD sector (Assefa, 2014). It is assumed that the majority of the ECDCs' administrators have a background in education, with a limited exposure to and knowledge of leadership and business management principles. This assumption is supported by Larkin (1999), who states that “lacking interim steps up a career ladder, a preschool teacher seeking to become an administrator often can move into the leadership role without having prior administrative experience or specialised training themselves”. Learnings from non-educational backgrounds can and will be applicable to the educational domain, especially the ECD environment. The purpose of this study is to address this gap by developing an ECDA as a way to incorporate essential administrative and managerial aspects into the design of an ECDC.

1.8 Significance

The main contribution of this study is to the educational sector, and more specifically to the early childhood development arena through the development of the ECDA. Enterprise engineering as a new scientific approach is positioned to guide the development of IC in ECDCs.

This section relates to the theoretical and practical significance of the study. *Theoretical significance* defines how the work offers a new theoretical explanation for something, or how it validates, refines, or contradicts an existing theory (Hofstee, 2006). *Practical significance*, on the other hand, takes a pragmatic stance in addressing IC in the real world at an ECDC based in South Africa.

1.8.1 Theoretical significance

This study explores the definition and development of IC in an ECDC as a class-of-problems. IC is identified as a key requirement to deliver quality ECDC services, and as useful to many ECDC directors who want to improve the quality of their services. The identification of various approaches/frameworks and solutions from the educational (ECD) and non-educational (non-ECD) domains, and a discussion of those approaches, would be useful, and these form the basis of the ECDA construction. The ECDA is useful in providing a theoretical foundation for how enterprise engineering theories and fundamentals are adopted in the amalgamation of disintegrated solutions and approaches. Enterprise engineering, Hoogervorst's approach, and approach design principles (ADPs) inform the construction of the ECDA. The adoption of the ADPs should also be useful to the

knowledge-base guardian (the research mentor/external examiner) when evaluating the contribution for relevance and rigour. In closing, the ECDA's form and function is outlined in detail, making it easy for approach developers to extend the ECDA in future research studies.

1.8.2 Practical significance

There is insufficient evidence of actual IC implementation as a class-of-problems, making the comparable effect on IC development extremely hard. The development of ECDA is based on sound enterprise engineering fundamentals, and is a leap forward in addressing not only the disintegrated nature of existing solutions, but also contributing in the following ways:

- The approach adopted with the construction of the ECDA will be useful to future approach developers, because it demonstrates how disintegrated solutions/approaches are fused together in an effective manner.
- The adoption and use of ADPs early on in the approach development process resulted in a more thorough and comprehensive design, description, and construction of the ECDA.
- ECDA mechanism and practices will be useful to ECDC directors or CEOs needing to address IC as a problem instance.
- The study demonstrates pragmatism in guiding how the development of IC needs to be approached, in sharp contrast to the existing literature, which simply states what IC is, as well as its characteristics and properties.
- The lack of focus on evolving the information and communications technology (ICT) design domain in the ECDC domain is highlighted, and, through the ECDA, receives much-needed attention in the form of a demonstration. The importance of a holistic design across all design domains is reinforced, especially during times such as the COVID-19 pandemic, when much greater reliance is placed on ICT capabilities.
- The ECDA, because of its design focus, gives equal importance to all classes of systems that need to support the ECD environment, starting with the organisation, ICT, infrastructure, as well as the human skills and know-how design domains.

1.9 Chapter summary

Significant progress has been made in the South African early childhood and Grade R spheres. However, South Africa has a long way to go to meet the needs of the majority of its children, especially with the development of institutional capacity to operate a quality ECDC. Institutional capacity represents the ability of an organisation to pursue its objectives.

Institutional capacity in the ECD sector is a crucial *administrative* and *management* competence, and is needed for the effective management of a *quality* ECDC. The literature states that less than half of South Africa’s community-based centres have successfully managed to display maturity in this regard, let alone operationalise their business management processes and systems. This study is scoped to the development and design of the ECDA in an ECDC; and adopting an ECDA will improve the quality of the services offered. Primary and secondary research questions have been developed in conjunction with the thesis statement, which states that, by adapting and adopting an ECDA that focuses on institutional capacity, the quality of ECDC services will improve; and that would be useful to administrators of South African ECD enterprises. This study has a focus on the educational sector, and amalgamates and incorporates enterprise engineering principles, as well as the IC literature, to form part of the ECDA.

Table 2 provides a roadmap to guide the reader on how the *research questions* are addressed in each chapter. We use dark grey shading in Table 2 to indicate that Chapter 1 has provided an introduction to the defining concepts associated with IC in the ECD sector and, more specifically, has addressed RQ2.

Table 2: Chapter 1 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles				x					
4.8) Method Engineering applied to enterprise approach development				x								
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
		Chapter 6	Demonstration of ECDA					x				
		Chapter 7	Evaluation results						x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning					x				
Stage 4	Formalisation of learning	Entire dissertation					x					

Chapter 2: Research methodology

‘Research’, in common parlance, refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic (Kothari, 2004). The next section explores in further detail the research methodology and data gathering techniques chosen for this study. Section 2.1 explores the literature associated with various research methodologies, and section 2.2 discusses the particular approach adopted for this study. Ethical considerations are covered in section 2.3, followed by the document structure and contents in section 2.4.

2.1 Literature on research methodology

Three research approaches were evaluated with the aim of finding the most effective yet most suitable approach in the ECD environment: (1) action research, (2) design science research, and (3) action design research. Each of these approaches is outlined in the sections that follow, providing brief background to the approach and its relevance to this particular study. Action design research was deemed most feasible, and so was selected to develop a framework to develop IC at an ECDC.

2.1.1 Action research

Action researchers feel compelled to act collectively on and with knowledge. Reason and Bradbury (2001) urge that action research draw power from the premises of pragmatism, that belief that we can know through doing. Further, there is as much, if not more, comfort in knowing through doing as in knowing through conceptualisation. McTaggart (1997) reflects this commitment to action in describing the difference between action research and other forms of inquiry: the crucial difference lies in the commitment of action researchers to bring about change as part of the research act. Fundamental to action research is the idea that the social world can only be understood by trying to change it. Brydon-Miller, Greenwood and Maguire (2003) wrote, “I stay involved with action research because all the theorizing in the world, feminist or otherwise, is of little use without the doing. And action researchers are doers”. Considering the delicate nature of an ECDC, and the fact that it is dynamic, this study should have both theoretical and practical rigour. Therefore adequate time needs to be spent on the rigour of the artefact (i.e., the ECDA), rather than experimenting too early with the artefact.

2.1.2 Design science research

Design science research (DSR) is primarily concerned with the development of an artefact that solves an identified problem, using a method for investigation (Kuechler & Vaishnavi, 2008), and aims to create “solutions to specific classes of relevant problems by using a rigorous construction and evaluation process” (Winter, 2008). Considering the complex nature of the ECD environment, and aligned to the primary research question in section 1.3.1, more than an *artefact design* will be needed to address IC as a class-of-problem, while improving the quality of service. A more interactive pragmatic approach in the particular ECD context and environment would be needed to do justice to this study’s outcome and objectives.

2.1.3 Action design research

Design science research pays scant attention to the organisational context, while existing design research methods focus on building the artefact, and relegate evaluation to a subsequent and separate phase (Sein, Maung K, Henfridsson, Ola, Puroo, Sandeep, Rossi, Matti, Lindgren & Rikard, 2011). Further to this, DSR values the artefact at the cost of organisational relevance, and fails to recognise that the artefact emerges from interaction with the organisational context even when its initial design is guided by the researcher’s intent. Sein et al. (2011) propose action design research (ADR) as a design research method to address this problem. ADR reflects the premise that artefacts are ensembles shaped by the organisational context during development and use. ADR will allow the researcher to design an artefact – in this instance, the ECDA – and test and refine it in the organisational context of an ECDC through participant inputs and involvement.

Mullarkey and Hevner (2019) present an elaborated ADR process model, and also highlight that the classical ‘solution objectives’ phase (from design science research) could be seen as part of ADR’s Stage 1 or Stage 2. The elaborated ADR process may be useful to current and future research teams to develop research designs that better reflect their project goals and support clearer project management and research designs (Mullarkey & Hevner, 2019).

This study, however, aligns itself with the action design research methodology presented by Sein et al. (2011), consisting of the following four stages: (1) problem formulation, (2) building, intervening, and evaluating, (3) reflecting and learning, and (4) formalising and communicating results. The stages are outlined in Figure 2.

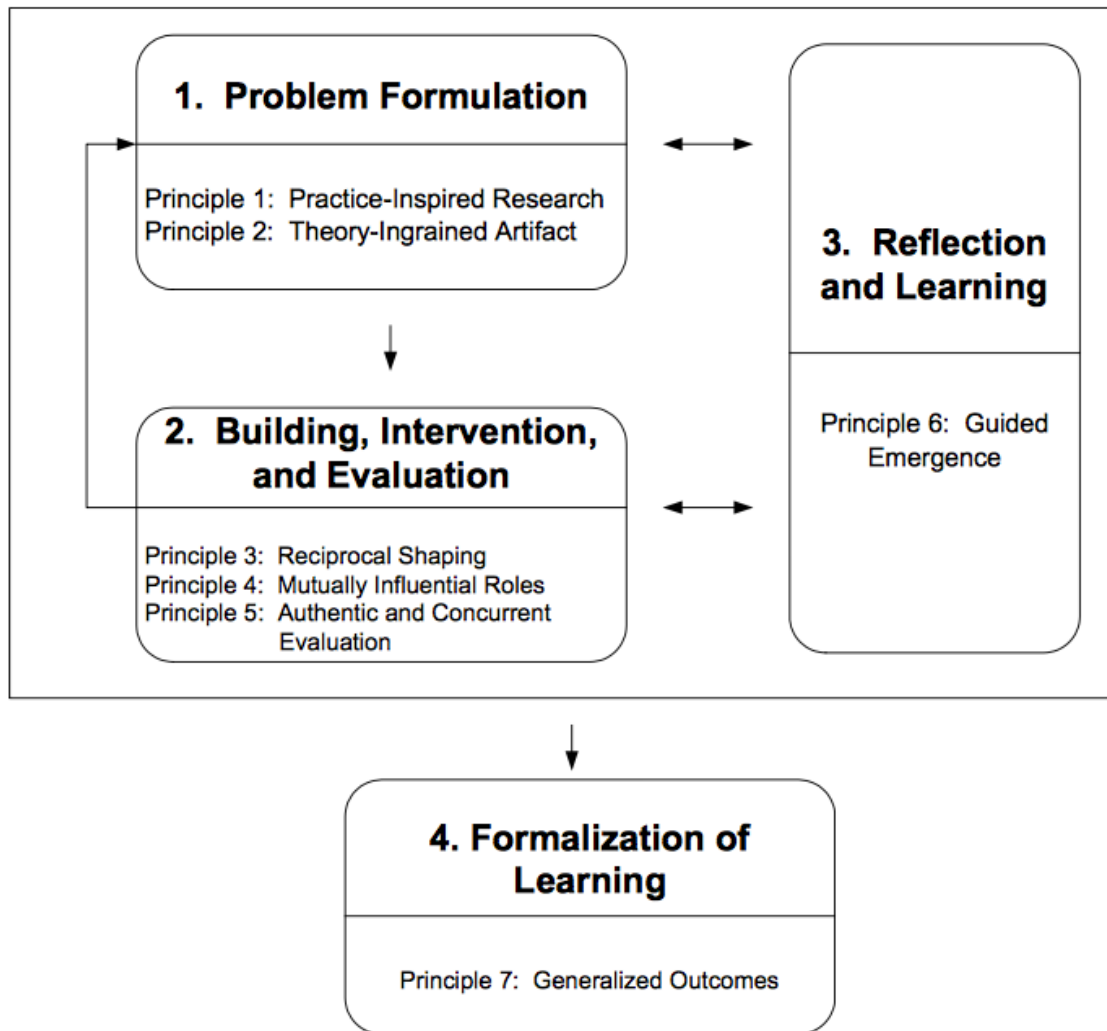


Figure 2: Action design research (Sein et al., 2011)

Stage 1: Problem formulation

The impetus for formulating research efforts is triggered by a problem perceived in practice or anticipated by researchers (Sein et al., 2011). Sein et al. (2011) mention that, once a problem is identified, articulated, and scoped, the problem serves as inspiration for research efforts, and draws on two principles as part of this stage.

Principle 1 – Practice-inspired research views field problems as knowledge-creation opportunities. ADR seeks these opportunities at the intersection of the technological and organisational domains. Further, the intent of ADR is not to solve the problem but to generate knowledge that could be applied to the class-of-problems that the specific problem exemplifies (Sein et al., 2011).

Principle 2 – Theory-engrained artefacts emphasise that the ensemble artefacts created and evaluated via ADR are informed by theories. Sein et al. (2011) reference Gregor (2006) when defining a theory as a system of statements that enables the generalisation and

abstraction of these statements. They add that theories of types IV and V, as defined by Gregor (2006), are good candidates for ADR. Gregor's theory types IV and V are explanation-and-prediction theories and design theories respectively. Existing theories, according to Sein et al. (2011), could be applied in practice to structure a problem or to establish possible solutions, applying type IV theory in both cases. Existing theories can also aid in design, thus applying type V theory.

Stage 2: Building, intervention, and evaluation

The second stage uses the problem framing and theoretical basis discussed in stage 1, to provide a platform for generating the initial design of the artefact in the organisational context (Sein et al., 2011). Stage 2 takes place in an iterative manner in a target environment, weaving between *building* the artefact, *intervention* in the organisation, and *evaluation* (BIE). Further, a design continuum is discussed: at one end the IT-dominant BIE domain consisting of technological design, followed by the organisation-dominant BIE domain concerned with organisational interventions, with three principles applicable to this stage (Sein et al., 2011).

Principle 3 – Reciprocal shaping emphasises the inseparable influences that are mutually exerted by the two domains described earlier. Recursive cycles of decisions at finer levels of detail are a common phenomenon – for example, using design constructs to shape the conceptualisation of the organisational environment. Then the increased understanding of the organisational environment in turn influences the selection of design constructs.

Principle 4 – Mutually influential roles point to the importance of the mutual learning of project participants. Action design researchers bring their knowledge of theory and technological advances, while the practitioners bring practical hypotheses and knowledge of organisational work practices. Moreover, while individuals may play different and even multiple roles, these roles may not be mutually exclusive. Nevertheless, a clear assignment of these responsibilities is important to enable reflection on the experience by each participant.

Principle 5 – Authentic and concurrent evaluation states that evaluation is not separate from building. Instead, decisions about designing, shaping, and reshaping the ensemble artefact and intervening in organisational work practices should be interwoven with ongoing evaluation, although their specific format may vary based on the BIE form.

Stage 3: Reflection and learning

The third stage moves from a conceptual solution for a particular instance by taking the learning to address a broader class-of-problems (Sein et al., 2011). This stage is continuous, and runs in parallel with the first two stages (refer to Figure 2). Sein et al. (2011) add that it is understandable that research is not only about solving a problem, and that reflection on theories, frameworks, and learnings is part of the knowledge base contribution. This stage draws on one principle.

Principle 6 – Guided emergence, as stated by Sein et al. (2011), captures the interplay between conflicting perspectives, *design* and *emergence*. The ensemble artefact will reflect on the evolution throughout the research project, starting with a theoretical preliminary design, reciprocal shaping by researcher and teams, up to concurrent evaluation that could lead to anticipated and unanticipated changes of the artefact.

Stage 4: Formalisation of learning

Stage 4 is the formalisation of learnings, according to Sein et al. (2011). The learnings should be shaped into a general solution, addressing a wider class-of-problems. According to Sein et al. (2011), casting the problem-instance into a class-of-problems facilitates this shift. As an example, researchers outline the accomplishments realised in the IT artefact, and describe the organisational outcomes to formalise the learning. This stage draws on one principle, described below.

Generalised outcomes are challenging because of the situated nature of ADR outcomes that concern organisational change, as well as the implementation of an IT artefact (Sein et al., 2011). The result is that properties from various domains that represent not only the solution but also the problem instance can be generalised. It is crucial for the researcher to move from specific and unique to generic and abstract. Sein et al. (2011) suggest the generalisation of the problem plus the solution instance, together with the derivation of design principles from the design research outcomes.

2.2 Methodology for this study, and document structure

As explained in section 2.1.3, the *action design research* methodology from Sein et al. (2011) is used for the purposes of this study. The four stages discussed in detail above will guide the research cycle in an attempt to find a viable artefact that guides the development of IC in an ECDC, together with demonstrating the impact on the quality of services delivered. To explain better the methodology that was used in this study, Table 3 summarises the ADR objective, coupled with the study interpretation for each of the research stages.

Table 3: ADR stages and study interpretation (Sein et al., 2011)

Stage	ADR objective	Interpretation for this study
Stage1: Problem formulation (and solution objectives)	Identify a problem instance that exist as a class-of-problems in the literature.	IC is identified as an impediment to delivering quality education specific to ECDs, and this serves as inspiration for this research. Two main objectives are identified: (1) the approach should improve the quality of service at an ECDC, and (2) the approach should be useful to an ECDC director. The EE literature is considered to provide prescriptive guidance on developing a <i>useful</i> theory-engrained solution artefact.
Stage 2: Build, intervene, and evaluate (BIE)	Generate initial design of an artefact, implement and evaluate the artefact.	Design the ECDA artefact, and iteratively weave between building the ECDA and intervention in the ECDC, followed by evaluation.
Stage 3: Reflect and learn	Find a solution that addresses not only a particular instance, but a broader class of problems.	Learning and reflection runs in parallel to the first two stages, thinking of all frameworks, methodologies, and theories as contributions to the knowledge base.
Stage 4: Formalise learning	Formalise learning and observations from this particular study.	Shift from the unique and specific (IC at a particular centre) to a more generic and abstract class-of-problems (IC in any South African ECDC) by deriving design principles as part of the research outcomes.

2.2.1 Data-gathering instruments

Aligned with the four ADR stages, various data-gathering techniques were used in this study. According to Marshall and Rossman (2014), qualitative researchers typically rely on four primary methods for gathering information: (1) participating in the setting, (2) observing directly, (3) interviewing in depth, and (4) analysing documents. For this particular study, an in-depth interview with the ECD director was conducted, followed by a survey investigating the measures of quality as well as the quality index of the ECDC, followed by a document analysis, as summarised in Table 4.

In-depth interviewing

Qualitative researchers rely quite extensively on in-depth interviewing (Marshall & Rossman, 2014). Marshall and Rossman (2014) cite Kvale and Brinkmann (2009), who see qualitative interviews as a *construction site of knowledge*, where two or more individuals discuss a *theme of mutual interest*. It is important during an in-depth interview for the researcher to bring skills and sensibilities to the interview, while preparation for the interview is important (Marshall & Rossman, 2014).

Interviews were used for this study during the problem formulation stage, thereby validating and clarifying the problem instance and class-of-problems. During this stage, interview questions were structured to create context around the ECDC director experience, training

and career development, followed by the overall perception of quality of services delivered as perceived by the director and parents. This will allow the researcher to ascertain any disconnect or misalignment between the internal quality perception as well as external quality perspectives. The questions were carefully structured to solicit any forward looking views or perspectives of not only validating the problem instance, but need for a solution to address the class-of-problems early on in the study as elaborated in section 3.2. Stage 2 mostly consisted of the inputs required to build and develop the ECDA, as well as the evaluation of the ECDA in the specific ECDC context, as noted in Table 4.

Data and document analysis

Various kinds of documents can provide background information that helps to establish the rationale for making decisions (Marshall & Rossman, 2014). Marshall and Rossman (2014) state that participant observing, interviewing, and observation are often supplemented with the gathering and analysis of documents for a research study.

Document analysis featured in particular during stage 1 of this study to triangulate and reinforce comments made during interviews, as well as what was observed during the course of this study. Of particular interest were (1) an analysis of the last three years' *business reports*, (2) the ECDC's *prospectus* containing its purpose, values, mission, and values, (3) reviewing the *minutes of meetings*, (4) the ECDC's school rules and governance, and (5) *e-mails*, where applicable.

Surveys

For this study, non-interactive methods such as a survey were used to solicit input and feedback about the measures of quality and the quality index of the ECDC during the first stage. The disadvantage of using a survey was that the researcher had to rely on on distanced interpretation and responses to questions, and some were left unanswered or not fully understood because of the lack of interaction between researcher and participant.

A paper-based survey was chosen to measure the current level of quality in the ECDC, and also to understand the dimensions or elements of quality perceived by the ECDC director, as well as of employees at the ECDC.

Table 4: Data-gathering instruments

Stage	Data-gathering approach	Chapter
Stage1: Problem formulation	Document analysis (including sources from the literature), surveys, plus interviews within an ECDC were used to define the problem instance and to validate	Chapter 1, Chapter 3, Chapter 4

Stage	Data-gathering approach	Chapter
	the problem instance as a class-of-problems. A literature review to guide the development of an approach that would increase the <i>quality</i> of service, and would be useful while exploring <i>solution suggestions</i> applicable to this study.	
Stage 2: Build	Gathering data from the literature and interviews/questionnaires for the construction of the ECDA.	Chapter 5
Stage 2: Intervene	Observations and informal interviews were used to determine the usefulness of the ECDA.	Chapter 6
Stage 2: Evaluate	Gathering data in an interview to determine the usefulness and effectiveness of the ECDA from the main user's perspective, as well as a questionnaire completed by an independent approach developer.	Chapter 7
Stage 3: Reflect and learn	No specific data-gathering used.	Chapter 8
Stage 4: Formalise learning	No data-gathering.	Entire dissertation

2.2.2 Quality and reliability

The researcher, who is acquainted with the ECD director, is very familiar with the ECD's operation and environment, and therefore the data collected through the different means were easily understood and interpreted. In addition to the operational context and understanding, the validity and reliability of the study results were tested against the four quality tests denoted by Yin (2018), as summarised in Table 5.

Table 5: Validity and reliability of results (Yin, 2018)

Quality test	Tactics applied in this study
Construct validity (identifying correct operational measures for concepts being studied)	The key concepts associated with IC were sourced from the literature. A key operational measure was <i>quality in ECD</i> , sourced from the literature, via a systematic literature review. Method and data triangulation were used as follows: <i>Surveys, interviews</i> with the director and caregivers, coupled with <i>document analysis</i> , were used to validate the <i>problem instance</i> and to understand what <i>quality in ECD</i> means in the organisational context.
Internal validity (making invalid inferences – i.e., indicating $x \rightarrow y$ when $z \rightarrow y$)	The study indicates that the designed artefact has a positive effect on <i>quality in ECD</i> by means of a <i>survey</i> , as well as observation and <i>informal feedback</i> from the ECD director.
External validity (knowing that findings can be generalised)	This study demonstrated only one ADR iteration of building, implementing, and evaluating the ECDA in the ECDC context, while an independent approach developer commented on the application and use of approach design principles. One iteration is not adequate to generalise, and future research is needed to apply the ECDA at another ECDC.
Reliability (demonstrating that the operations of the study can be repeated with	The study is transparent about the research methodology, keeping all raw data in a retrievable format in Atlas.ti. A chain of evidence was maintained throughout, relating interim findings to sources and to the initial research questions in section 1.3.

Quality test	Tactics applied in this study
the same results)	<p>The ADR principles (presented in section 2.1.3) were followed during the different ADR stages. In addition, different measures were taken to ensure the reliability of the results during the main stages of the ADR study:</p> <ul style="list-style-type: none"> • Problem analysis (and solution suggestion): (1) using <i>data and method triangulation</i> to validate the problem instance; (2) using a <i>transparent protocol</i> during the systematic literature review (SLR) to validate a class-of-problems and extract existing solution areas; and (3) using a <i>participative approach</i> when suggesting possible solution areas. • Building, intervention, evaluation: Using a <i>participative approach</i> when building and demonstrating the ECDA.

2.2.3 Researcher roles

The researcher fulfilled two prominent roles while conducting this research; and balancing the two roles allowed for a thorough investigation, analysis, and study of the research questions in section 1.3. The first role was that of the financial administrator of the ECDC, allowing full access and exposure to the business's financial health and performance, along with the role of research participant, collaborating in developing the ECDA. In the second role, as the *researcher*, knowledge of the ECDC's context and environment contributed to the richness of this study, and assisted with identifying patterns and trends in the operational context. This also ensured that certain comments and observations were clearly understood.

2.3 Ethical procedures

The necessary application forms and approvals for this study to proceed were obtained, as prescribed by the University of Pretoria. A total of three ethics submissions were made for this study, and *approval* was obtained to conduct research aligned to the research scope and objectives.

2.4 Document structure and content map

This study followed the action design research (ADR) approach, applied in an ECDC environment. The study aimed to develop the ECDA in order to improve its administrative and managerial aspects, called the *institutional capacity* of the business.

Table 4 indicates the four research stages, together with the data-gathering instruments, each aligned with the corresponding chapter of the dissertation. Each of the chapters is briefly explained.

Chapter 1: An introduction to the study, followed by a detailed explanation of the problem statement and the research questions to be addressed. The scope demarcation and the limitations are noted, and the significance of this study is highlighted.

Chapter 2: A detailed explanation of various existing research approaches, narrowed down to the research approach chosen for this study. The approach informs the stages of the study, followed by the data-gathering instruments, thus establishing the dissertation's structure.

Chapter 3: Through on-the-ground immersion and engagement in the ECDC environment, an analysis of various data sources was conducted, and the findings were noted in order to validate the problem instance.

Chapter 4: A detailed systematic literature review (SLR) was conducted on the problem, outlining the research protocol, as well as the findings and conclusions. The literature review informed and confirmed that the class-of-problems exists in the literature, as well as the suggested solution areas. Knowledge areas with no application to the ECD environment were researched as possible solutions to address the class-of-problems.

Chapter 5: This chapter entails the construction of the artefact, known as the ECDA. By adopting Hoogervorst's approach, various IC approaches and the application of *approach design principles* (ADP) ECDA were adopted. Combined with the respective inputs from the main approach user and an independent approach developer, ECDA's *form, function, mechanisms, and practices* are explained.

Chapter 6: One iteration of the ECDA's heuristic is demonstrated in the ECDC environment, and the findings and observations are presented and discussed.

Chapter 7: The demonstration results are evaluated, and the ECDA's comprehensiveness when compared with that of ADPs, as well as its usefulness to ECDC administrators, is evaluated and discussed.

Chapter 8: This chapter allows for reflection on and learnings on the ECDA, as well as the research methodology. The shortcomings are highlighted and discussed in more detail.

Chapter 9: The final chapter considers whether the research objectives and questions were addressed, followed by a discussion of future research opportunities.

The content map shown at the end of each chapter was developed to assist with *navigating* the findings, arguments, and outcomes aligned with the nine research questions, while it acts as a *reference guide* for ease of use.

2.5 Chapter summary

Various research methodologies were reviewed – namely, action research, design science research, and action design research. The action design research (ADR) methodology was identified as the preferred approach for this study, consisting of four stages: (1) problem

formulation, (2) building, intervening, and evaluating, (3) reflecting and learning, and (4) formalising and communicating results. The ADR methodology informed the research cycle in an attempt to find a viable artefact that would guide the development of IC in an ECDC, together with demonstrating the impact on the quality of services delivered. Data-gathering instruments were outlined, explained, and motivated, which entailed participating in the setting, direct observation, in-depth interviewing, and analysing documents. The researcher fulfilled two roles while doing this research: acting in the capacity of financial administrator for the ECDC, and being the independent researcher as part of this study. This allowed a good practical grounding in understanding the operational context. The dissertation's structure (aligned with the ADR), the data-gathering instruments, and the research questions were presented and discussed, and summarised in a content map. Ethical clearance for this study was obtained to allow for a thorough immersion in the ECDC environment through the use of the ADR methodology.

As shown in Table 6, this chapter described the research methodology (dark grey column) in the context of the entire study. Each stage of the ADR methodology aligns with the specific chapters that address the specific research questions.

Table 6: Chapter 2 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles					x				
4.8) Method Engineering applied to enterprise approach development					x							
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
		Intervene	Chapter 6	Demonstration of ECDA				x				
		Evaluate	Chapter 7	Evaluation results					x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning					x				
Stage 4	Formalisation of learning	Entire dissertation						x				

Chapter 3: Problem analysis

This chapter outlines the rigorous research methods that were adopted to investigate the IC challenges in a real-world ECDC in South Africa. Section 3.1 sets the context and background for the selected ECDC, followed by a problem analysis through interviews in section 3.2, and the survey results from the ECDC in section 3.3. Various documents, reports, and minutes are reviewed and discussed in section 3.4, followed by a description of the stakeholders/users who need a solution in section 3.5, suggestions for solutions in section 3.6, and the chapter summary in section 3.7.

3.1 ECDC Background

An ECDC located in Pretoria, South Africa was identified as needing to develop IC in order to improve the quality of the services it offered. This centre is referred to as ‘the ECDC’ throughout this study. The ECDC was also selected because of the rapid speed at which it needs to scale to respond to market demand without compromising the quality of the services it delivers. With 60 children enrolled, the ECDC has the capacity to accommodate 20 more children. A very basic management structure is in place, which, with the overall staff complement, is outlined in Table 7.

Table 7: ECDC management structure

Position	Quantity	Role description
Owner / Director	1	Sets and owns the strategic direction and intent of the centre, and is the ultimate decision-maker for the centre’s curriculum, processes, and business performance.
Manager	1	Responsible for all day-to-day operations, including human resources and parent-related matters.
Receptionist	1	Responsible for basic administration, welcoming parents, taking telephone calls, and managing the main entrance to the school.
Caregivers	6	Caregivers have a basic level of ECD education, and are primarily responsible for the day-to-day activities in class involving all the children. Caregivers design the curriculum and carry out these tasks daily. Caregivers are accountable for the well-being of the children under their supervision.
Class assistant	8	Assistant is responsible for all support activities in class, and acts as the caregiver’s right hand.
Cleaning staff	2	Cleaners maintain the standard and cleanliness of the centre; a rigorous cleaning routine is in place to uphold this standard.

Considering the owner’s role in this centre, an interview with her and a root cause analysis of the centre’s operations were concluded to understand the problem statement, as well as possible causes, in more detail. The study applied interviewing and questionnaires as the main data-gathering instruments, as discussed in section 2.2.1.

3.2 Interview results for validating the problem instance

The director of the ECDC has a formal ECD bachelor's degree and about seven years' teaching experience. This business endeavour, although well-aligned with her educational background, posed new challenges from a leadership as well as business management perspective. The challenges began with the preparation of a business case to secure necessary funding and to hire caregivers for the centre. All of these were things that the director had not dealt with before owning a ECDC. As is evident in the year-end *business reports*, the ECDC is on a steady growth path, and since its inception in 2016 it has tripled the number of enrolled children, as well as the caregiver and supporting staff complement (see section 11.5). Quality is managed effectively, barring two incidents in 2019; but this focus and effort has come at a price, resulting in long working hours and a strenuous non-stop working day. Based on observation, the vision, mission, and prospectus were compiled as shown in section 11.6, but the orientation of all staff towards a common goal is not very *visible*.

Today, the majority of the director's time is spent on *administrative* and *human-resources-related* matters; very little time is spent on the development of a quality education curriculum and programme. Every day brings a *new challenge*, and the culture or behaviour has evolved into one of *crisis management*, thus slowly eroding the ability to do forward planning and to set strategic goals for the ECDC. The management time horizon has shifted to *short term*, losing sight of more strategic, critical factors that need to be addressed as part of the broader 'system'. Thus there is a need for a more *structured and systemic manner* in which the administration and management elements are approached to deliver *quality services* to all the stakeholders concerned.

This section synthesises the results following an in-depth interview with the director of the ECDC (see section 11.2 and Table 8), coupled with the survey results involving the ECDC director, manager, and caregivers. In the table below, the interview questions (IQ) are documented and synthesised.

Table 8: Interview with ECD director

<u>IQ1: Please explain your role or position in this ECDC?</u>
The director believes her role as the owner is predominantly "to monitor and control <i>quality of education</i> , make sure that the right things are done". Combined with taking full responsibility for the <i>well-being</i> of all the enrolled children, the director handles all educational and staff-related matters associated with <i>operational management</i> . According to the director, one of the challenges is that, as a teacher, you do a degree in education, but do not get <i>exposed</i> to the fields of business and operational management. The director feels strongly that there is a need for a degree or course to help better <i>prepare</i> ECD directors or owners to start and operate their own ECDCs.

IQ2: Can you please share your background?
The ECD director has a formal early childhood education <i>degree</i> obtained from a university, and has about 10 years' work experience. This includes experience teaching a class of four- to five-year-olds in a primary school, combined with international experience. The ECD director confirms that she had no experience in <i>management</i> or <i>running</i> an ECD centre, nor was she adequately prepared for it.
IQ3: Do you have any experience in the management of a ECDC?
The director states that she did not have <i>management</i> experience at the time of starting the ECDC, and mentions that, as a teacher, her formal degree focused only on education. She believes that the <i>curriculum</i> needs to change to help those who want to start their own businesses. The director feels strongly that additional <i>training</i> is required to assist teachers to start their own businesses. The conundrum is that one has a great love for teaching and for how one will run classes, but one never has the background of how a business is run or how to handle parents and staff.
IQ4: Is there a big difference between being a caregiver and the owner of an ECDC?
The director believes that there is a huge difference, in that teaching has very little to do with owning an ECDC. As the owner, you don't have enough <i>time</i> with the children, and yet that is in essence where you passion lies.
IQ5: Where do you currently spend most of your time?
The director feels that her role changed as the business evolved, initially spending a lot of time <i>organising administrative</i> matters and staff- and human-resource-related matters, to one of engagement with and proactive <i>management</i> of parents while <i>enforcing</i> the ECDC's policies and rules.
IQ6: How good are your administration and managerial processes, on a scale of (1) immature to (10) excellent?
The director rates her ECDC administration maturity on a seven. She states that each day is <i>different</i> ; not one day is the same. It is not like a factory where you work with a machine, and only one or two things can go wrong. Here she works with people, emotions, and children, so each <i>situation</i> is <i>different</i> and there cannot be a jigsaw for each of the situations. In response to the observation that the centre is a social <i>system</i> , being <i>dynamic</i> and continually <i>changing</i> , the director emphatically confirms this observation.
IQ7: How do you measure the quality of the services delivered at the ECD?
The director believes that more attention should be given to <i>measuring</i> the quality of the centre, as well as documenting and recording results. The key outcome is for <i>children</i> to be <i>happy</i> and looked after. The director feels that the <i>well-being</i> of the <i>child</i> , such as care and <i>emotional welfare</i> , is critical, coupled with the quality and cleanliness of the <i>physical infrastructure</i> .
IQ8: How do the parents measure quality?
<i>Parents</i> also measure quality, mostly by looking at the emotional state of their child – whether the child is <i>happy</i> at the centre and is eager to go to school in the mornings. A visible sign of quality is when a parent drops the child and the <i>child falls into the teacher's arms</i> ; parents' feel that this is the perfect school. The director also mentions that some people do measure it on the <i>activities</i> it carries out, such as the artwork. Certain parents have unrealistic expectations of what quality is, but this is found mostly in parents who have little background in education, or they have read something in books.
IQ9,10: How would you rate the quality of the school, and do you think the quality of the centre can improve?
When asked to measure the quality, such as with a promoter score – for example, '(1) You would not promote the school, (5) Indifferent, or (10) You would promote the school' – the director scored the school as 9. She says that there are always things to work on; but most definitely a nine. The director feels that there is room for improvement specifically in <i>administration</i> -related topics. The director would like more <i>consistency</i> , and this needs to be achieved by <i>adhering</i> to <i>processes</i> . She feels that, by placing more focus on process adherence, the centre would run a <i>system</i> that works every time. She notes that the biggest <i>variable</i> in this system is the <i>human</i> component, and that this needs to be managed very carefully, as it changes daily.
IQ11: Do you think there is an opportunity to enhance and focus on the managerial side of the ECDC?
There is an opportunity to enhance and focus on the managerial side of business, specific to <i>communication</i> , because as a director you have something in your head of how the process must be followed, or how the manager must do it, but then everybody has their own style. The ECD director admits to finding it <i>difficult to hand certain things over</i> , and, being very specific and meticulous, is confronted with this challenge daily.
IQ12: Do you think there is a need for a solution to help address institutional capacity and thereby improve the quality of the ECD service?
The ECD director <i>confirms</i> that there is a need for a model, framework, or approach to guide ECD directors to develop <i>institutional capacity</i> , thereby continually improving the quality of the service delivered. She states, "There is always room to improve, but you have to stay true to the ECDC and conduct it within the framework of the ECDC". The director feels that there is more that could be done to assist people working in the ECD to obtain the <i>management skills</i> to make the day and the <i>management of the class</i> and centre better, because in the end it is about the children.

IQ13: If there were to be a solution in a box that tells you step-by-step what to do to get administrative and management processes in place, and we gave it to the owner of a new ECDC, would that be helpful?

The director *validates* the need for a *solution*, and draws comparisons with how off-the-shelf solutions are bought in the ECD domain, such as curricula for babies and pre-primary schools.

Problem validation synthesis

- Formal educational programmes for ECD do not adequately prepare future ECDC directors or administrators to start and operate an ECDC.
- The lack of a business and operations management background poses a challenge, especially dealing with parents and staff.
- The role of an ECD director is vastly different from that of teaching and, according to the ECDC's director, "it has nothing to do with teaching".
- The ECDC is very dynamic, and no situation is the same; an ECDC is compared with a jigsaw.
- The lack of consistency, and the repetition in doing everything the same every day, hampers the quality of the services delivered.
- Process adherence poses challenges, and often leads to dealing with isolated problems and solutions, thus missing the connecting trends or patterns.
- Administrative and management processes are established in a haphazard manner, in order to address the problems that are encountered.

3.3 Survey results for validating the problem instance

The director, manager, and caregivers were asked to participate in a survey, looking at the measures of quality and the quality index of the ECDC, and posing specific questions about the following four topics:

- Qualifying the measure of *quality* in an ECDC context
- Measuring the existing quality of the ECDC
- Defining and understanding IC in an ECDA
- Understanding the director and manager

A total of six respondents participated, consisting of caregivers, the manager (administrator), and the director of this ECDC, in an attempt better to define and understand the specifics of the measurement and perception of quality in the ECDC. Parents were deliberately excluded from participating in the survey at the request of the ECDC's director, because a similar parent engagement took place earlier in the year. The results of this engagement were unfortunately not recorded in a way that would aid or support the current study. This study's survey results are structured and sequenced in accordance to the survey questions (SQ). The

source data for the results is available in the appendix (section 11.4). The numbering structure aligns with the main survey theme or topic, denoted as *topic A* or *topic B*, followed by a numbering schema aligned with SQ1, SQ2, and so forth within each topic.

Topic A: Qualifying the measure of quality in an ECDC context

SQ1: What are the important quality aspects in an early childhood development (ECD) centre, from the following perspectives?

- *The owner:* Performance, reliability, respect, fairness, ensure that the school is safe, neat, clean, and has sufficient caregivers. Ensure that parents and children are happy, and that the school has good hygiene. There need to be appropriately qualified staff, enough staff, appropriate and adequate resources. Ensure that the ECD programme is up to standard. Management involvement, as well as being visible, is key, coupled with being approachable. It is important for the owner to know all the children and their parents.
- *The child:* Discipline, respect, enjoys coming to school, learns at a suitable pace, feels loved. A loving teacher and assistant, a safe place to learn, safe toys, healthy food, new things to learn. Love, care, and attention. Parents need to see a difference in the child's growth and development.
- *The caregiver/teacher:* Performance, reliability, patience, fairness, to care for and love the children, to ensure a safe and educating environment, to teach the children and help to make their time away from mom and dad fun. Provide a safe working environment, regular quality checks, opportunities for further study, appropriate compensation for work, clear job description. The facilities and equipment to be of a high standard, with quality resources and managerial and administrative support; health and safety.
- *Parents:* Reliability, respect, fairness, positive attitude towards caregiver and school, respect for rules, teachers, and assistants. A healthy and safe place for children to learn and play, affordable, within driving distance. Safety and security at the centre, quality of qualification of caregivers, trust and integrity of the organisation, transparency, accountability, relevant educational programme.
- *Regulations / government:* Performance, reliability, ensure that schools are safe for all children everywhere – i.e., they are up to standard – and that all children receive a quality education. Clear rules and regulations for everybody involved at an ECDC. Registration with the Department of Social Development and with the Department of Education; qualification of caregivers; health and safety compliance.

SQ2: What are the important quality aspects from an *educational* perspective?

- Make sure that children learn what they need to, and that, when a child has a problem, to try to fix it or to get help before it is too late.
- We are teaching at an age that is the most important time of a child's life; so make sure that the job is done the right way.
- A safe and calm environment; if children are distracted or feeling unsafe, they cannot learn.
- The content and topics that are being taught need to be fun, learner-centred, relevant, and age-appropriate.
- Clear and age-appropriate learning framework, as well as toys and learning materials.
- Access to resources to enable and support learning.
- Facilities and equipment to enhance learning opportunities.
- Education and programme has to be according to their needs and interests.
- Teachers' planning must be in on time and be according to school and educational department standards.
- Teachers must be prepared for each day.

SQ3: What are the important quality aspects from an organisational (management) perspective?

- Management needs to make sure that there is a *set structure* for how things need to *run* or *work* at the workplace, and to make sure that everybody follows the structure for how to do things. Only then will everything fall into place and work out.
- Ensure that the ECD facility is up-to-date and is looked after.
- Hygiene, cleanliness, and safety.
- No broken toys.
- Outside playing area in a good condition.
- All staff members should know the processes, rules, regulations, and protocols for all major issues in the school.
- All quality aspects of the ECDC are adhered to, implemented properly, and developed appropriately (in line with changing times, etc.).
- Make sure that the school runs smoothly, with no major issues.
- Make sure that the staff do their work, and follow rules and processes.
- Work and interact with the parents.
- Do regular staff appraisals.

- Keep track of rules and regulations.
- Make sure that processes and procedures are followed, and change them where they do not work.

Topic B: Measure existing quality in the ECDC

The following responses are a summary of the employees' perceptions and opinions about quality in the ECDC.

SQ 1: Are you aware of any quality measure used at this ECDC?

In response to this question, all of the respondents answered 'yes', meaning that there is a level of awareness among the respondents that quality measures exist, as explained below:

- The manager goes to the classes every day.
- The toys get checked, and the teachers have to sign the toys in and out.
- Observation books are completed.
- Daily reports are submitted for every child.
- Staff orientation (meetings and performance appraisals).
- Child orientation takes place.
- Planning is monitored to see if your work is done correctly.
- Meetings to be able to improve things that are wrong or not working.
- Daily planning is submitted; this gets checked, and it is ensured that it is being followed.
- The classrooms and the outside area are constantly upgraded.
- Yes, continuous monitoring of facilities, equipment, and the resources and maintenance of the centre.
- Age-appropriate assessment of learning and development of children and learners.

SQ2: As a caregiver, do you currently measure quality in your class?

The response to this question by all of the respondents was 'yes', with more detail below:

- I do what is asked to be done.
- Planning, making sure that the child gets to learn what he/she is supposed to be learning, and to make sure they reach their milestones.
- I ensure that the children have a stimulating environment, with the best possible care.
- There are no broken elements in class, with a good programme.
- If I see certain activities do not work, I improve on them before the next time they are done.

- Assess and maintain standards of cleanliness, hygiene, organisation, and the layout of classroom.
- Plan and implement lesson structures.
- Assess condition of facilities, equipment, and resources.

SQ3: In your opinion, what is the overall level of quality of this ECDC by adopting the (Department of Social Development, 2006) scale?

In response to this question, and using the formally accepted Department of Social Development scale, respondents were equally divided between ‘acceptable with a few adaptations’ and ‘acceptable’ (see Figure 3). It is noted that *acceptable with a few adaptations* is defined as ‘acceptable, but improvements are required’ by the Department of Social Development (2006).

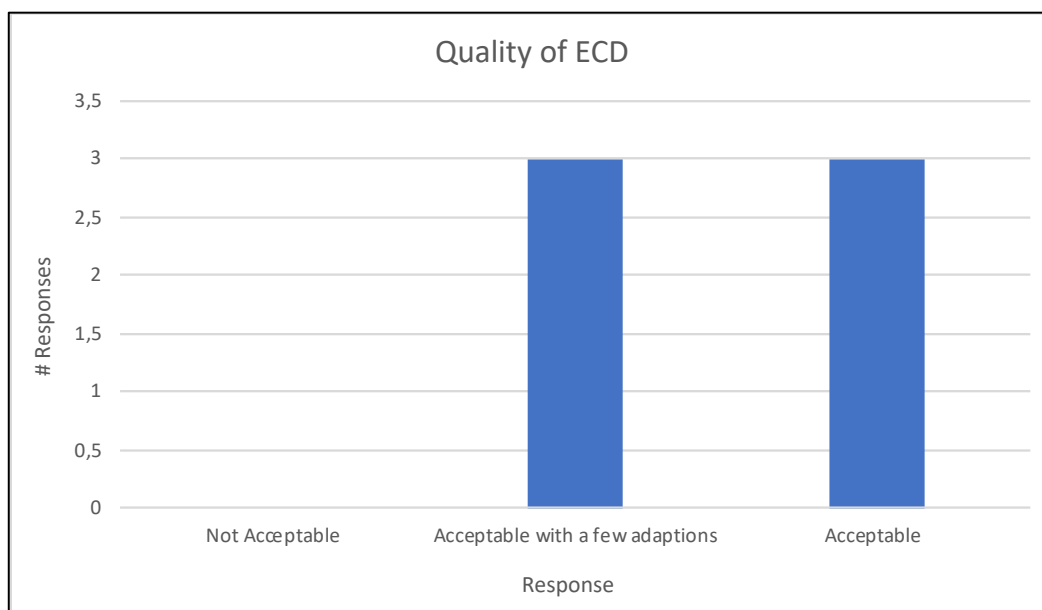


Figure 3: ECDC quality score

SQ4: Rate the quality of each of the following items, based on the PAS (Programme Administration Scale).

This question aimed to elicit a measure of the ECDC’s quality performance, using the PAS as defined in Table 19. The following is a summary of the results for all of the respondents’; refer to Figure 4 for an overall perspective, followed by Figure 5 and Figure 6 for more detailed breakdowns of the results.

The ECDC used for this research scored 68% at an ‘acceptable’ level, followed by 31% for ‘acceptable with adaptations’, and only one per cent at ‘not acceptable’. This provides a baseline for improvements to be realised through the ECDA in order to ascertain its impact

and the degree of change. Note that the three-level scale adopted here uses green (acceptable), yellow (acceptable with adaptations), and red (not acceptable).

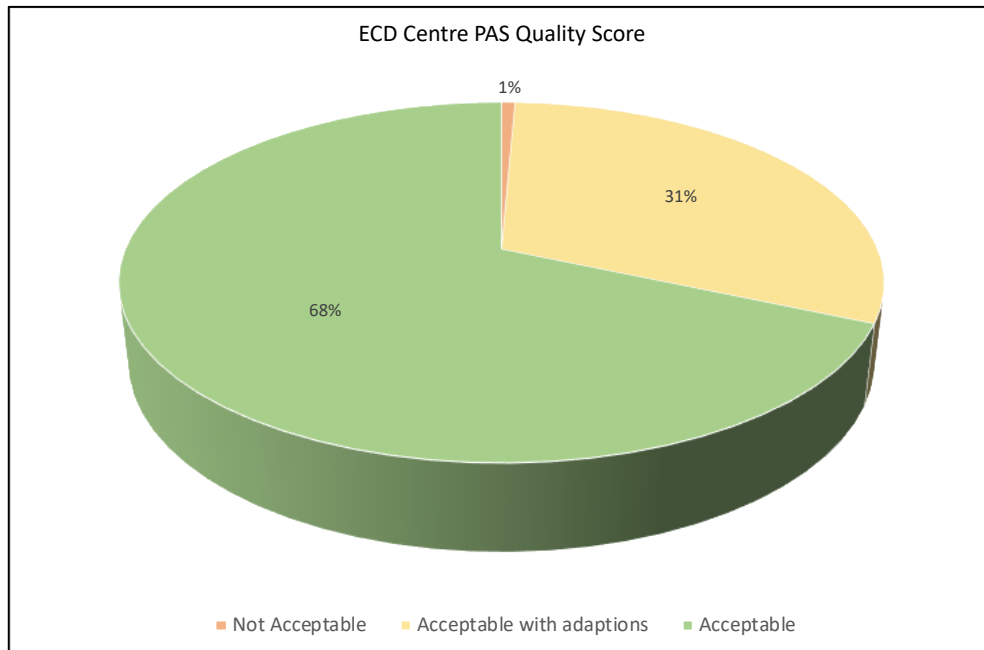


Figure 4: ECD PAS quality score

Fiscal management was deemed the best performance area which is mostly concerned with budget planning and accounting practices, followed by child assessments and programme planning and evaluation. The latter is focused on determining special educational needs as well as the overall educational programme. Centre operations and staff qualifications attracted a 72% acceptable level, while family partnerships and personnel cost and allocation were slightly lower at 67%. Marketing and public relations and technology seemed to be the worst-performing elements.

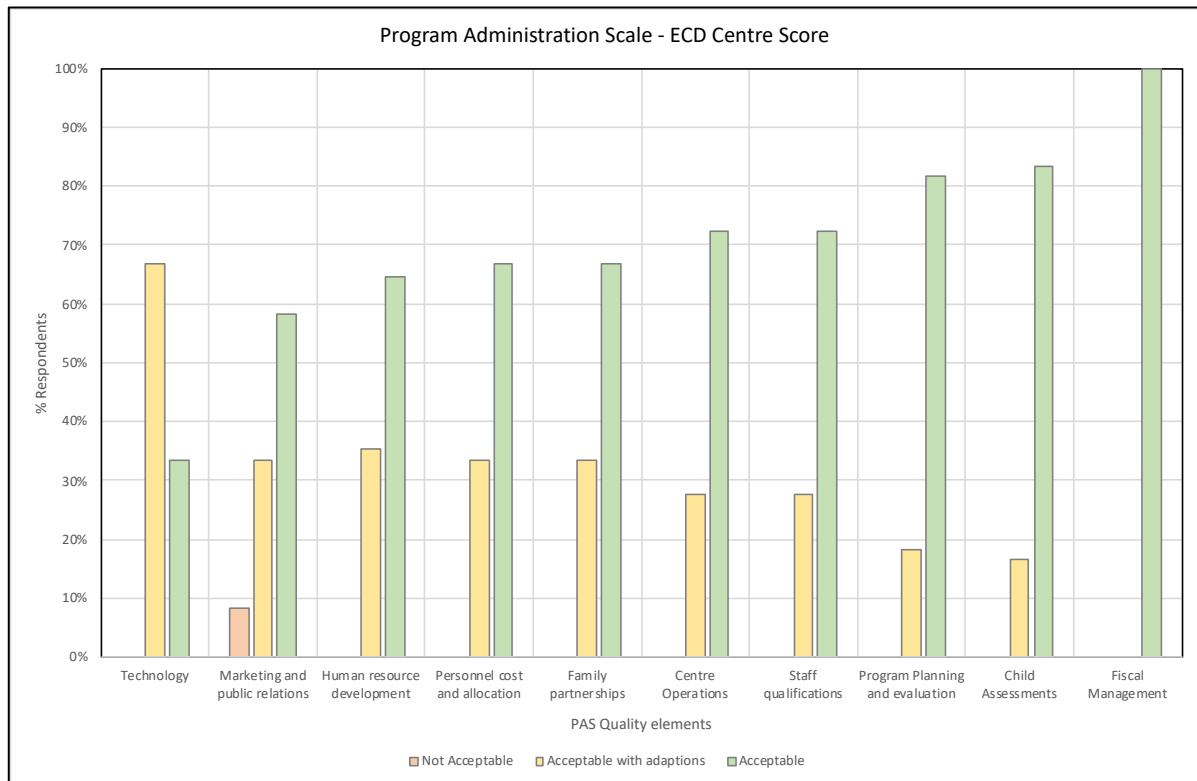


Figure 5: ECDC PAS score

For a more detailed breakdown of the elements discussed earlier, see Figure 6, which illustrates the PAS sub-elements’ performance and overall quality rating, ranked by ascending acceptable scores. This level of data allows for problem and root-cause analysis, taking into consideration that the goal of this study – and of the ECDA – is to improve the quality of the services delivered.

The lowest-performing elements seemed to be concentrated on technology or the use of technology in the ECDC, staff orientation, benefits, community outreach, and caregiver qualifications. As mentioned earlier, fiscal management and educational needs assessment received scores of 100%, followed by the director’s qualifications, programme evaluation, facilities management, salaries, and performance appraisals, which were all above 80%.

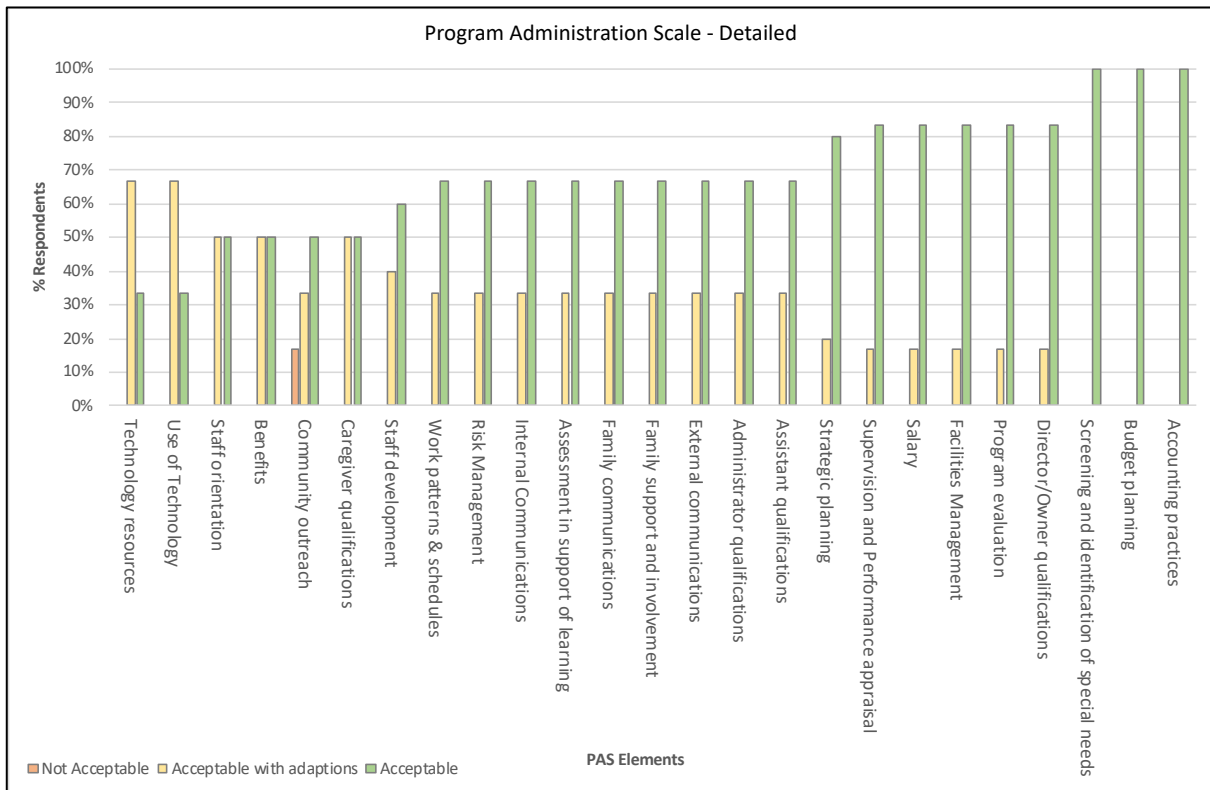


Figure 6: ECDC PAS detailed breakdown score

Definition and understanding of IC in ECD

The gap between educator and business manager is profound, as confirmed by the ECDC’s director in IQ4 (Table 8). This is reinforced by the excessive amount of time spent on administration-related tasks; these take between 15% and 45% of the manager’s time, while the time given to them by the director is much higher at between 45% and 75%. This does indicate that the director holds, and feel responsible for, many tasks that seem to be related to administration.

When asked how much time is spent on the things that matter most, the director felt that only 15% to 45% of her time is spent on them, while the manager was more satisfied with 45% to 75% of the time. The burden of administrative tasks outlined above, coupled with the accountability for all staff-related matters, does impact the director’s time availability, as indicated in the survey response.

Both the director and the manager defined IC as all the *processes* and *procedures* that have to be in place so that the ECDC can run smoothly, together with *adherence* and *conformance* to processes and procedures. They stated that management need to be firm in upholding the school rules, and that no exceptions should be allowed.

It is important to have IC capability in order for everything to run smoothly in an ECDC, and that everyone knows what is expected of them. By following this discipline, the ECDC could

reduce and *eliminate* mistakes, *improve the quality* of its service, set standards, and make it easy for staff to be certain about what is expected of them.

Understanding the director and the manager

The director and the manager who participated in this survey each have more than seven years' work experience. The director completed a formal tertiary education degree, but did not believe that she was adequately prepared for the administrative side of the ECDC's business. Coupled with this, the director felt that orientation into the role was not an option, and that there was not enough time to focus on this aspect of her own development.

On the other hand, the manager followed a more practical route through experiential training and experience rather than a formal structured educational route. This, in turn, made the manager better prepared for and orientated to the administrative side of the ECDC.

Parent and staff issues remained a topic that both the director and the manager were least prepared for, and they remain a daily challenge to master.

3.4 Document analysis results

Document analysis was used to validate the problem instance. This section briefly highlights the key themes that were extracted. Four types of document were reviewed: (1) business reports, (2) minutes of meetings, (3) school rules and governance, and (4) emails.

Business reports for 2018 and 2019

Three business reports were reviewed – those for 2018, 2019, and July 2019 – and each addressed key aspects of the ECDC, ranging from the ECDC's *growth* from its inception in 2016 to a focus on *human resources* appointments and development as a key aspect of the business (see section 11.5). The engagement between the ECDC and *parents* was specifically mentioned, and included other ECDCs in the *environment*. The financial position, budget analysis, and forecasts were reviewed, with evidence that strong *fiscal management* practices were in place.

Two *quality-related issues* were mentioned in the 2019 business report, in which a full investigation together with parents was concluded. Neither the actual incident nor the outcome was mentioned.

The ECDC noticed the need to provide support to the director relating to *operational management* issues, and appointed a manager. As was evident in the minutes of meetings, and in the interview with the director IQ11 in section 3.2), the “ECD director admits to

finding it *difficult to hand certain things over*, and, being very specific and meticulous, is confronted with this challenge daily”.

Specific mention was made in the July 2019 business report that the ECDC *management processes and systems* were starting to stabilise, while staff were becoming familiar with the *quality standards* set by the ECDC and with the focus that the ECD director had placed on educational programme planning and execution.

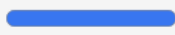

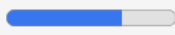

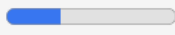

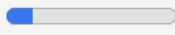
Minutes of meetings from January 2019 to March 2020

Around *15 months'* worth of minutes of weekly meetings at the ECDC were grouped and analysed using a software tool called Atlas.ti. A codebook was constructed, as shown in section 11.8.1, to ensure a consistent interpretation and application of the codes. The most noticeable *code categories* are ranked on the number of observations or instances, as shown in Table 9. The code strategy was aimed at identifying recurring or frequently observed themes and through an iterative process were refined to form the code words or code categories. Once this distinction was made, all documents were screened and coded accordingly. The ranking does not infer importance, but is merely a graphical representation of the most frequently discussed themes. Each of the code groupings, as well as the findings, are discussed briefly.

- *Planning* – The planning focus mostly entails planning around the *educational programme* structure and caregivers' responsibility to plan the following week's curriculum. This apparently requires a lot of discussion and focus, considering that the essence of the ECDC is to provide quality educational care. The ECDC's director spends a lot of time ensuring that staff adhere to its standards and disciplines to ensure that planning is submitted in time for review and approval; this is reinforced by the July 2019 business report.
- *Process* – An emergent pattern from the analysis indicates the reliance on processes to operate a successful ECDC, and the continued effort to ensure that *process adherence* and *consistency* is achieved. The director spends time reinforcing the agreed processes, referring to the ECDC policies and procedures; and it seems that the weekly discussions have a retrospective focus on what went wrong the previous week. Upon closer investigation, the process-related topics were grouped into (1) *management processes* (HR, class operation, sick children, and class and playground readiness), (2) *education* (class processes, educational processes), (3) *ECDC-related procedures* (how to welcome learners, dealing with incidents, and end-of-day processes), and (4) *caregiving* (how to deal with children while giving care).

- *Quality* – The prominent themes were extracted: the quality of the educational programme and reinforcing how to deliver quality *caregiving* to children; the *well-being* of the children; the quality of the ECDC *infrastructure*; and the discipline to *adhere* to, and following the ECDC policies and procedures.
- *People* – This is probably where most of the director’s energy and focus is placed; and this is validated by the researcher’s own observations. An analysis of the meeting minutes points to a constant reminder to staff about what is *expected* from them, the need for adherence to and consistency in executing agreed *processes*, coupled with the discipline of always putting the children’s well-being first. Human-resources-related matters are repeated weekly, such as absenteeism, late-coming, scheduled leave, and policies.
- *Communication* – Weekly *parent* communication letters emerged as topical, in which the theme for the week and the letter’s contents are discussed. Another focus was on where and when communication takes place between *staff* (how to communicate effectively). A third was references to when communication takes place with *children*, and the importance of adhering to the language of education used at the ECDC.
- *Supervision* – The majority of conversations in these meetings about supervision centred on the *structure* of operation in the ECDC, and how a teacher or assistant supervises *children*, inside or outside the class, or how a teacher supervises *assistants*. This is not surprising, given that an ECDC relies heavily on the ability to supervise (monitor) children. This institutional competence has a direct association with the quality of the ECDC, and extends to the quality of care and the well-being of the children.
- *Culture* – A theme emerging throughout the minutes was at an ECDC level, where the culture is reinforced through formal structures such as policies and procedures, and by using examples to drive towards the envisaged state – e.g., “Be proud of your class” – and how teachers and assistants should adhere to the school’s rules.

Table 9: Main code groupings for minutes of meetings

1 Summary_Document Analysis_Meetings.pdf (13)			
◇	○	Planning	 73
◇	○	Process	 73
◇	○	Quality	 50
◇	○	People	 28
◇	○	Communication	 24
◇	○	Supervision	 22
◇	○	Culture	 12

From the document analysis it was evident that there is very little focus on or discussion of the medium- to longer-term aspects of the ECDC, which reinforces the observation that *isolated problems* inform the meetings' agenda and become the focal point. The ECDC does not currently have a *strategic review* or meeting regime in place. Dealing with isolated problems creates a sense of urgency and anxiety in the system, and leads to a feeling of being extremely busy, or even of failure, which is caused mostly by the inability to raise the conversation to a more strategic level (the longer-term horizon) or to address emerging themes in a more sustainable and manageable way. This institutional competence of managing the ECD as a system requires *institutional capacity*, thereby ensuring that quality services are delivered.

School rules and regulations

The ECDC's rules and regulations were formally published in a document developed by the director, and are updated annually. This document is shared with all existing and new parents to familiarise them with the ways of doing things at the ECDC (see section 11.7). The rules and regulations document deals with the following key themes:

- Educational programme
- Child well-being
- Operational and logistical arrangements
- ECDC calendar
- Financial information

Evidently the structure and content of the rules and regulations is seen to be thorough and complete, and is available for all of the ECDC's stakeholders to review. The observation is that all of the rules and regulations refer to the internal arrangement and organisation of the

ECDC, and describe various processes, policies and procedures that not only need to be adhered to, but also need to be managed and controlled.

Email analysis

According to Marshall and Rossman (2014, p. 205), “unless a study is quite narrowly construed, researchers cannot study all relevant circumstances, events, or people intensively and in depth. Instead, they select samples”. In the event that a study is focused on a specific population – in this case, the ECDC’s email accounts – a research strategy needs to be prepared (Marshall & Rossman, 2014).

The ECDC uses three email boxes: (1) reception, (2) owner, and (3) accounts. Each of the email boxes was sampled over a period of one month (all of the emails were sampled for the same month) to understand better the themes and to validate the problem instance, as summarised in Table 10. Evidently the email channel is mostly used for engaging and communicating with parents about updates and logistics relating to the movement of children (with parents), and about matters of a regulatory nature. The email analysis revealed an emphasis on ICT (electronic communication) to create a quality service for parents while running a compliant ECDC.

It is also noteworthy from the email analysis that the administration and management of the ECDC, such as HR, planning, process monitoring, and control, is done face-to-face, and that email is thus not the preferred channel.

Table 10: Email analysis

Email account	#Emails	Thematic analysis	Observation
Reception (Administrator)	127	Regulatory: 36 Class letters: 22 Relating to sick child: 18 Communication: 10 Human resource related: 8 Purchases: 5 General admin: 5 Less Spam: 23 Total: 104	The majority of the emails had to do with direct contact with parents. In the instances of both the regulatory and the class letters, the ECDC communicated with parents 56% of the time. Parents communicated with the ECDC regarding their child’s absence (17%), while general outward emails made up 10%. The observation was that internal admin is dealt with face-to-face, while email is predominantly used as a two-way communication channel with parents.
Owner (Director)	8	Parents: 3 Marketing: 2 Accounts: 2 Regulator: 1	There is a considerably lower volume of email on the part of the ECD director; this is supported by the fact that the administration and management takes place <i>inside the boundary</i> of the ECDC, while most email communication is dealt with by reception. When the director does resort to emails, specifically to parents, they are of a more serious nature, as all the instances involved the well-being of children.

Email account	#Emails	Thematic analysis	Observation
Accounts (Finance)	65	Billing: 58 Purchases: 4 Salaries: 3	The majority of the accounts emails were statements sent to parents, followed by purchases and salaries. This is an indication of the strength of the fiscal management, as shown in the survey results in section 3.3.

3.5 Stakeholders or users who need a solution

The ECDC, when looked at from a holistic perspective, has a wide variety of stakeholders and consumers, and all of these parties will have a certain level of interest in the solution. First, the stakeholders include the government in the form of the *Department of Social Development*, which sets policy and regulates the ECD domain. The immediate *neighbourhood* and/or *local community* also has a vested interest, especially in the form of the parents of children attending the ECDC. *Parents, caregivers, and the director/leader/administrator* of the ECDC have a keen interest in the solution, especially considering the impact the solution could have on the quality of the services they deliver. The most important stakeholder is the *child* who, as a result of the solution, will be cared for from a holistic well-being perspective, and the ECDC will truly feel like ‘a home away from home’. Second, the ECD fraternity, researchers, and academia will have an interest in the development of the ECDA, given that the world of leadership and business management is rapidly moving into the ECD environment, and can no longer be ignored.

3.6 Suggestions for solutions

Institutional capacity is not a new concept or problem to be faced by many enterprises; and so it was anticipated that, through a systematic literature review, learnings could be derived from existing IC approaches within and beyond the ECDC domain. As noted in section 4.3 and section 4.5.2, various IC approaches do exist as solutions that address the problem.

Enterprise engineering, as a relatively new approach, addresses enterprise design and change in a scientific manner, and is positioned to guide the development of an *approach* to develop institutional capacity. The reason that EE constitutes a possible solution is the fact that, in essence, design entails clarity and a good understanding of an enterprise’s strategic intentions, and how internal arrangements need to be designed to achieve this outcome. Enterprise engineering consists of an integrated set of disciplines for building or changing an enterprise, together with its processes. Section 4.6.1 explores enterprise engineering in more detail, while also elaborating on solutions derived from knowledge areas with no application to the ECD domain, such as Hoogervorst’s approach and the generic system development process (GSDP).

The combination of the existing IC solution literature and the systematic and scientific way in which EE suggests the redesign of enterprise design domains lays the foundation for a theory-rich *enterprise capacity development approach* that will be useful to ECDC directors who wish to improve the quality of the services they deliver.

3.7 Chapter summary

Institutional capacity in the ECDC has been confirmed and validated as a *problem instance*, and its directors and administrators need a solution. The survey results showed that quality is measured and defined as children being happy, while the well-being of the child, such as their care and emotional welfare, is critical, coupled with the quality and cleanliness of the physical infrastructure.

The ECDC has seen significant growth, putting pressure on its internal administrative processes and its management systems. Although the ECDC director controls and manages the current operation diligently, and is confident about promoting the ECDC, it comes at a cost, and is unsustainable. The inability to address problems holistically leads to a short-term management horizon, and addressing isolated problems daily has an impact on the quality of the services delivered.

The analysis of documents revealed that the need to provide support to the ECDC director was acknowledged, specifically in respect of *operational management* issues, through the appointment of a manager. Planning and process adherence emerged most prominently from the analysis of the minutes of meetings; the planning entailed the *educational programme's* structure, while the director spends time reinforcing *processes*, policies and procedures; and it is all discussed weekly. The analysis of the ECDC's email accounts indicated its reliance on this platform as a communication channel, both inbound and outbound, and that the majority of the correspondence comprised issues of regulatory compliance, educational class letters, and child logistics and updates. A closer investigation of the director's email account showed that the majority of the time is spent on inside-the-boundary process management and adherence, and only in the most severe cases will parents be engaged using this channel.

In response to RQ2 (section 1.3), the definition and understanding of IC in this ECDC is defined by both the director and the manager to be all the *processes* and *procedures* that have to be in place, together with *adherence* and *conformance* with processes and procedures – e.g., *functions* that should be in place to deliver a quality service.

As shown in Table 11 (highlighted in the dark grey row), Chapter 3 addresses the problem analysis phase and forms a response to RQ2.

Table 11: Chapter 3 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles				x					
			4.8) Method Engineering applied to enterprise approach development				x					
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
	Intervene	Chapter 6	Demonstration of ECDA					x				
	Evaluate	Chapter 7	Evaluation results						x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning						x			
Stage 4	Formalisation of learning	Entire dissertation			x							

Chapter 4: Literature review

The purpose of this chapter is to conduct and report on a thorough systematic literature review (SLR) investigating IC in the education environment. The purpose of the SLR is to validate the existence of a class-of-problems, discussed in section 4.1 and 4.2, and solution areas in section 4.3. Section 4.4 extracts the literature pertaining to quality measurements in the ECD environment, and the SLR results are synthesised in section 4.5. Knowledge areas with no application in ECD are reviewed and discussed in section 4.6, followed by a discussion in section 4.7 of the approach design principles that are used in the construction of the ECDA. Method engineering and situational method engineering focus on formalising methods for systems development; these concepts are discussed in section 4.8. Section 4.9 summarises the chapter, and lays the foundation for the ECDA's design and construction. The content of this chapter was originally published as a conference paper (De Boer & De Vries, 2019).

4.1 Problem validation

The systematic literature review for this study followed eight steps to ensure scientific rigour (Okoli, 2015), which are outlined in the next section.

4.1.1 Research protocol for systematic literature review

The research protocol covers a broad perspective of IC, along with synonyms such as administration and operations management as foundational concepts, together with the quality of an ECDC. The literature review is exploratory in nature, investigating whether IC could be useful to increase the quality of services at South African ECD centres. The SLR as a research method is used to answer the research questions stated in section 1.3.

Following the guidelines of Okoli (2015) on conducting an SLR, the research method follows a three step process: (1) define the SLR's purpose, (2) execute the SLR's protocol, and (3) produce an SLR synthesis (refer to Figure 7). This research method follows an iterative approach up to the point where data saturation is obtained.

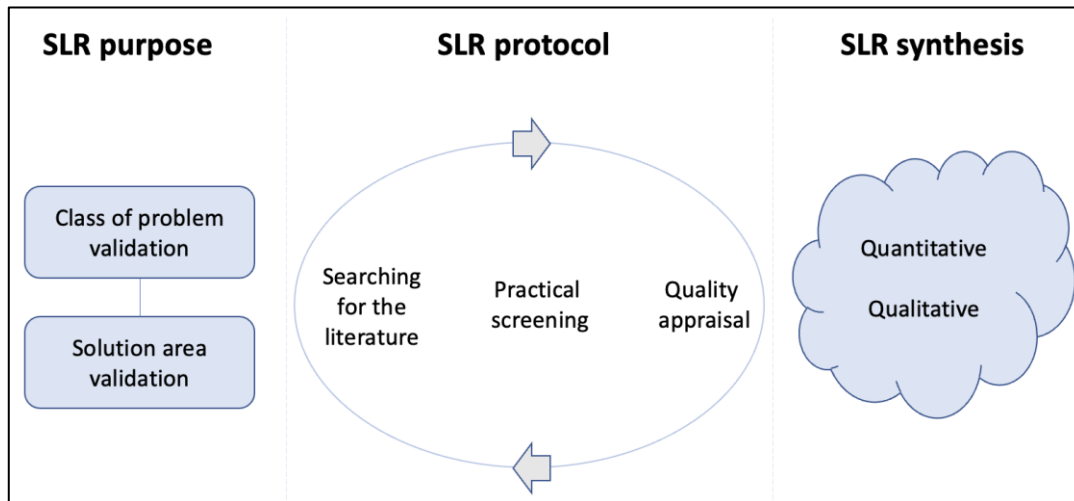


Figure 7: SLR research method (Okoli, 2015)

4.1.1.1 Purpose of the literature review

The purpose of the SLR covers two parts: (a) class-of-problems validation, and (b) solution area validation. The review will shed more light on IC in an ECD centre as a class-of-problems, while empirical evidence aims to demonstrate how the development of IC has been achieved in a similar context, with key outcomes and successes that are specific to the quality of service offered. Another output from the SLR is to understand how IC development should be approached.

4.1.1.2 Protocol and training

Text analysis forms part of this SLR; and the text analysis and interpretation are used to develop the codebook in an iterative way, allowing for new codes to emerge. Two data analysts participated in the coding process to obtain an acceptable level of inter-coder agreement – that is, the extent to which two or more data analysts code the same qualitative data set in the same way, as noted by Guest, Namey and Mitchell (2012, p. 89). The inter-coder agreement test is designed by adopting both a subjective and a per cent agreement approach. Two analysts formed part of this test, and after three iterations and an in-depth discussion of the coding results, the final codebook and definitions were accepted, as noted in section 11.11.

4.1.1.3 Searching for the literature

The initial investigation covered an informal search to find other SLRs that cover a similar analysis scope. Next, the research questions informed a search strategy across various resources to further help define and inform the keywords for this study, as reflected in Table 12.

Table 12: Keywords used for the search

Category	Keywords
Definition or implementation of institutional capacity in ECDCs	Institutional capacity, operations management, capacity development, implementation, quality service, administration, early childhood development

The search strings used to search the literature are given in Table 13, and included all three categories across all resource databases.

Table 13: SLR search strings used

SLR search strings
“Institutional capacity” OR “operations management” OR “capacity development” OR “implementation” OR “administration” AND “quality service” AND “early childhood development”

Various resources were reviewed to ensure a thorough analysis of the existing bodies of knowledge, and included (1) the internet, (2) databases, (3) library catalogues, and (4) educational journals, as shown in Table 14. The search strategy indicated that both a broad approach (full text) and a narrow approach (abstract, title, and keywords) were used to identify most applicable literature for the purposes of this study. Initial indications from the full-text internet search produced a fairly big number of irrelevant results, and a decision was made to prioritise abstracts, titles, and keywords for the remaining resources.

Table 14: Search space and resources consulted

Resources	Search strategy	Date of search
Google Scholar	full text	09 Jan-19
Science Direct	abstract, title, and keywords	28 Jan-19
SpringerLink	abstract and keywords	28 Jan-19
Scopus	abstract, title, and keywords	29 Jan-19
ProQuest, Education database	abstract and keywords	06 Dec-18
<i>Early Childhood Education Journal</i> (SpringerLink)	abstract and keywords	3 Mar-19
<i>Early Education and Development</i> (Taylor & Francis – 1556-6935)	abstract and keywords	3 Mar-19

4.1.1.4 Practical screen

All of the articles identified through the search process were screened for inclusion and exclusion. Through a structured systematic method, aligned with the approach adopted by Schön, Thomaschewski and Escalona (2017, p. 82), the articles were reduced to include only those that were relevant to the SLR objective. As seen in Figure 8, a six-step process was adopted to reduce the overall number of articles from 188,000 to 77. Step 1 (S1) comprised the search string defined in Table 13, searching across all the resources without any limitations or boundaries. A total of 188,000 articles were retrieved. Step 2 (S2) reduced the

total number of articles to 56,000. In Step 3 (S3), we applied selection criteria to guide inclusion and exclusion.

The inclusion criteria were papers that were written in English, that incorporated a well-articulated definition of IC (as well as related words that were included in the search-term string), and that had IC as a key theme in the article. The first iteration of the six-step process only included IC as a keyword, while subsequent iterations included associated words to ensure that all relevant articles were included part of the SLR.

The exclusion criteria were applied to exclude articles for which the full text was not available; full books whose content was not aligned with the research objectives; articles not associated with IC (and the associated key words); sources in which IC as a foundational concept was not well articulated or was minimally articulated, or in which IC was not demonstrated to be a class-of-problems.

Step 3 (S3) scanned both titles and abstracts for inclusion, and this step further reduced the number of articles to 175. A manual screening of both titles (S4) and abstracts (S5) extracted the most appropriate and relevant articles; and at this juncture we identified alternative spellings, synonyms, and keywords from the shortlisted number of articles for an *expanded keyword* search. The overall number of articles was reduced to 103, enabling a manual content scan that produced 77 articles that were the most applicable and relevant to the SLR's objective and purpose.

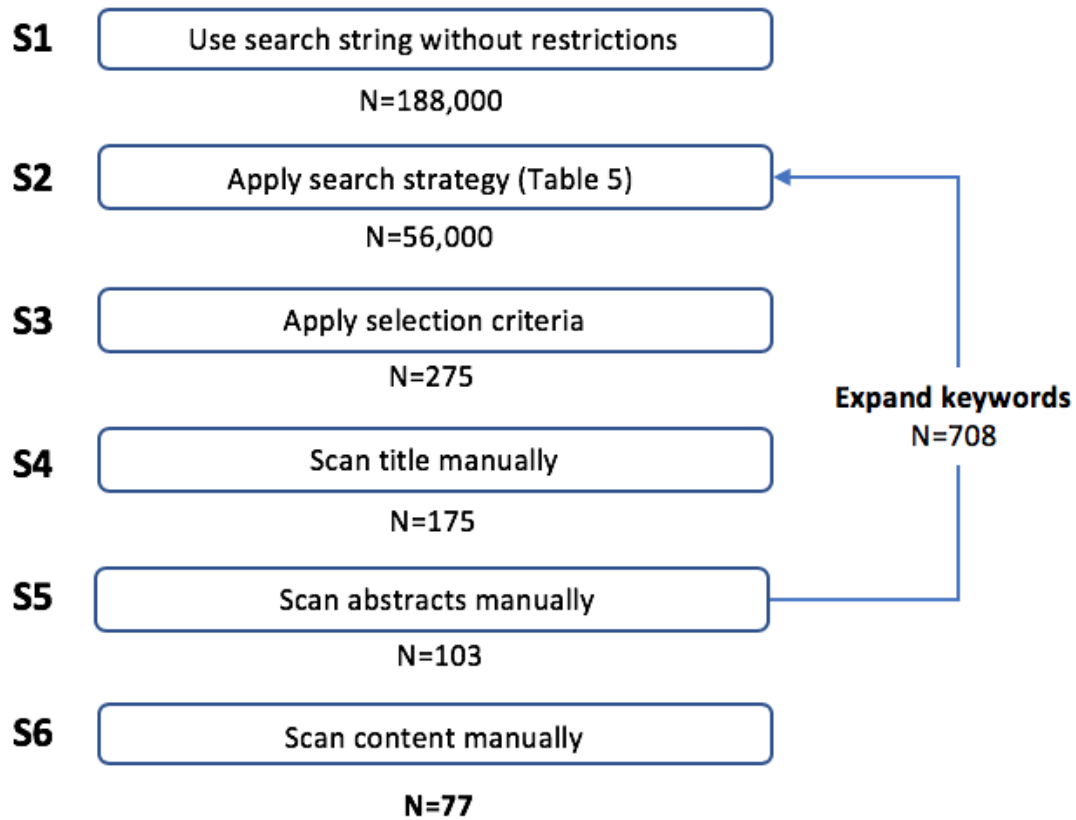


Figure 8: Search process consisting of six phases aligned with Schön et al. (2017)

A total of 77 out of 188,000 articles were included as part of the SLR, with a timeline spectrum ranging from 1991 to 2018 (see Figure 9). Both older and more recent discourse in the domain were incorporated as part of the SLR review and synthesis.

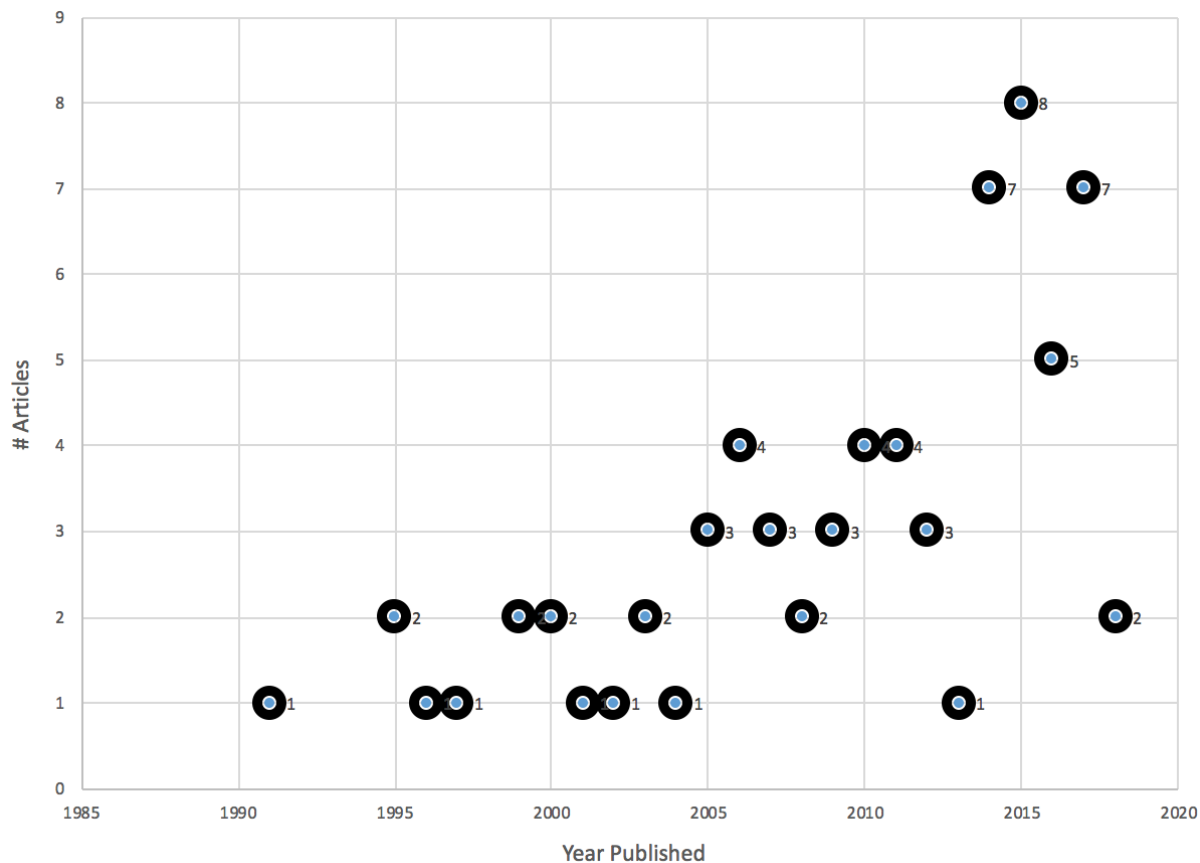


Figure 9: Articles grouped by date of publication

4.1.1.5 Quality appraisal

The practical screening process identified the articles that were best aligned with the intent of the study. In addition, quantitative and qualitative appraisal techniques were used to rank and prioritise articles further for the purpose of this study. This is explained in subsequent sections.

Quantitative

Criteria were developed to test and score articles to ensure that a consistent and replicable approach was adopted for article inclusion. A cause-and-effect table was used to rank and prioritise the articles. To assist with the quantitative approach, a ranking mechanism was used to identify the most relevant documents – i.e., applying a range of weights, where a weight of (1) indicates low importance and a weight of (10) indicated high importance.

- Does the article have relevance for the study in respect of the research questions? (10)
- Does the article clearly outline IC, and present a definition of IC? (6)
- Is the article focused on the educational and, more specifically, the ECD environment? (8)

- Code word count occurrence, being a cumulative number of code words. (8)
- Does the article validate IC as a class-of-problems? (10)
- Does the article suggest solution areas and validation against quality measures where implemented? (10)

Each article was reviewed against the standard and assigned an impact score, with (0) demonstrating low impact, (5) medium impact, and (10) high impact. The impact rating combined with the weighting of each quality criterion mentioned above provided an overall weighting that was recorded in the 'total' column. Applying the scoring process, the 77 articles were reduced to 41 articles.

Qualitative

Analysing the qualitative merit of an article is the first necessary step when going beyond basic design structure and dissecting the logical arguments of the work (Okoli, 2015; Okoli & Schabram, 2010). Hart (1998), cited by Okoli (2015), mentions that every article should be screened for three items: (i) what claims are being made, (ii) what evidence is provided to support these claims, and (iii) whether the evidence is warranted and how well the evidence is supported. Fallacies in arguments at this point could lead to seriously downgrading an article's quality score. The qualitative screening protocol scored all 41 articles that were extracted during the quantitative prioritisation process against the following indices: (-1) absent, (0) not stated, (+1) present. For example, an article could score a maximum of (3) if it met all three criteria, indicating a strong quality article. In contrast, an article could score (-3) if all three criteria were absent, indicating a weak quality article. In Figure 10 a total of 41 articles are plotted against the quality index, illustrating that 19 were of high quality (3), while four were of weak quality (below 0). Articles that scored one to three overall ratings (32 articles) were extracted and probed in detail owing to the nature of their findings and the evidence to support the claims that these articles made.

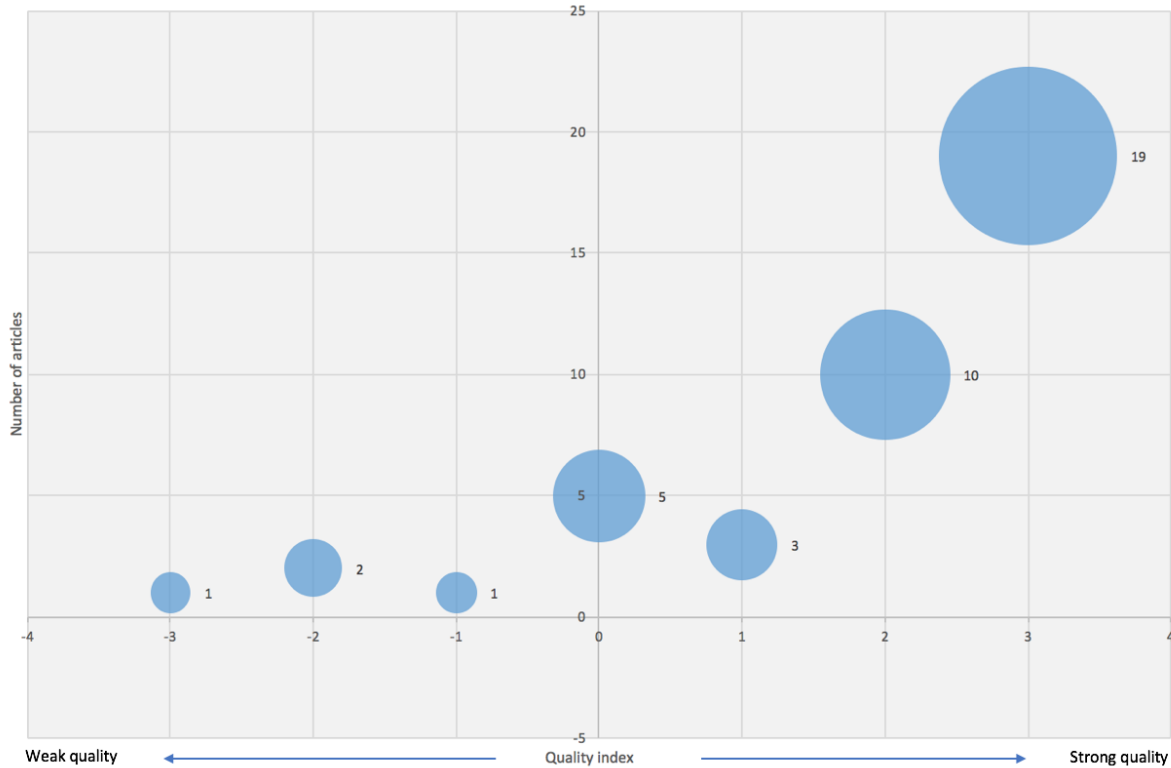


Figure 10: Qualitative appraisal

Up to this point in the SLR, a shortlist of articles was extracted for the final review and data extraction. A detailed extraction form was created that was aligned with the guidelines stipulated by Okoli (2015). Data extraction was informed by the following attributes:

- Basic information (title, authors, publication date)
- Publication data (journal, conference, date of conference, publisher, volume, keywords, and abstract)
- Research method (experiment, case study, lessons learnt, etc.)
- ECD or non-ECD
- Developing or developed country
- Artefacts (models, frameworks, or reports) suggested or used
- Short summary
- Results and contributions

All of the shortlisted articles (32) were taken into consideration for the data extraction process. With a concise extract of the pertinent data from the most relevant articles, the synthesis process began. It is also important to note that the quality process described and outlined did not distinguish as an example between empirical and reviewed as all relevant articles pertaining to the screening protocol were included. Thus, no article were excluded based on the *type* of article as distinguishable attribute.

4.1.1.6 Synthesis of studies

During the synthesis, the content of the analysed articles was consolidated in order to make sense of the large number of studies. Under the guidance of Popay et al. (2006), the synthesis product, at a minimum, is a summary of the current state of knowledge in relation to particular review question(s). A narrative synthesis approach is helpful in the early stages of the review process, and can increase the chances that the product can be used in policy and practice (Popay et al., 2006). The narrative synthesis approach is a form of storytelling. The four elements that guide the synthesis process are the following: (1) develop a theoretical model of how the interventions work, (2) develop a preliminary synthesis, (3) explore the relationships of the data, and (4) assess the robustness of the synthesis product. Table 15 describes the purpose of each of the elements pertaining to the primary research question, noted in section 1.3.1.

Table 15: The main elements in the narrative synthesis, based on Popay et al. (2006, p. 12)

Main elements of synthesis	Development of institutional capacity: objectives
Developing a theoretical model of how the interventions work	a. To inform decisions about the research question and what types of studies to review b. To contribute to the interpretation of the review's findings c. To assess how widely applicable the findings might be
Developing a preliminary synthesis	To organise findings from the included studies to describe patterns across the studies in terms of: - IC definition - the effect of IC on quality of services - class-of-problem / solution area validation
Exploring relationships in the data	To consider the factors that might explain any differences in direction and size of effect across the included studies
Assessing the robustness of the synthesis product	To provide an assessment of the strength of the evidence for: - drawing conclusions about the likely size and direction of the effect - generalising conclusions on the effect's size for different population groups and/or contexts

The ensuing section outlines the SLR results for both the class-of-problems and possible solution areas, together with the measurement of quality.

4.2 Results for a class-of-problems

In answering research questions 1 and 2 (see section 1.3), the literature indicated that the ECD environment is complex, and that there is a need for fresh thinking to develop early childhood education. A case is made to act and think more systemically to deliver higher quality programmes and services that are sustainable over a longer period of time. There is evidence that a class-of-problems exists. That is, although progress has been made in the provision of quality early childhood education via IC, there remains room for improvement,

especially in developing countries. The SLR identified various instances of this class-of-problems, excerpts from which are given in Table 16.

Table 16: Class-of-problems validation

Source	Class-of-problem instance
(Assefa, 2014)	Provision of <i>quality service</i> to the concerned stakeholders and to the satisfaction of the users is one of the manifestations and implications of <i>institutional capacity</i> .
(Atmore et al., 2012)	Atmore et al. state that various challenges exist in the early childhood sector, and among these IC is identified as a class-of-problems.
(Imbaruddin, 2003)	This study confirms previous research findings that clear and realistic organisational objectives, a less-hierarchical management approach, and more participatory decision-making processes contribute to better <i>institutional capacity</i> in terms of an organisation's ability to deliver the <i>quality services</i> expected by the clients or service receivers.
(Hayden, 1997)	Sound <i>management</i> and <i>administration</i> practices reduce staff discontent, decrease turnover, create increased respect and status for the profession, and significantly influence the <i>quality</i> of service delivery.
(Hayden, 1997)	The implication for child care is clear – <i>quality</i> in the early childhood setting is closely linked to the <i>administrative</i> function of the ECD setting.
(Matuga, 2012)	The financial resources available, the management structures, and the procedures and styles employed in the affairs of community schools affect the <i>quality</i> of education provided by either promoting or hindering the <i>institutional capacity</i> of ECE centres.
(Scheepers, 2015)	Put differently, it can be posited that a lack of <i>institutional capacity</i> leads progressively to governance stress and questionable financial viability, which ultimately lead to a service delivery breakdown.

IC results pivot around development, implementation, and scaling-up to meet the increased demand for early childhood care. It entails the business environment, administrative capacities, adequate funding, and process components that have a direct impact on the quality of services delivered. The role of the director (administrator) is becoming more prevalent, given the shift towards a business-type institution. In a study conducted by Hayden (1997), a specific focus was placed on addressing the gap in the understanding of directors of their administration and management functions in childcare and preschool settings. It has become increasingly clear that ‘process’ components that make up the adult work environment have a powerful effect on quality care in child care centres, and that the director plays a central role. The results indicate that, when looking either at leadership and management (Nupponen, 2005) or defining a framework to develop the appropriate skills (Nupponen, 2006), there seems to be a gap in defining the required administrative tasks. This is partly because most directors of child care centres have had no professional training for their leadership and administration roles (Nupponen, 2006), while ECD centres are now required to adopt management practices and business principles that were not essential

previously (Nupponen, 2005). The expansion of child care facilities and the increasing complexity of administrative functions is exacerbating the need to provide support for existing administrators and to develop an infrastructure whereby the pool of potential administrators is enlarged.

4.3 Results for solution areas

In answering research question 2 (see section 1.3), a structured approach was followed to document and compare identified solution areas for the class-of-problems as an outcome of the SLR. In essence, four themes were identified under which the solutions and/or frameworks were classified: (1) systems thinking, (2) leadership, (3) IC assessment, and (4) enablement.

Systems thinking

Findings from the research of Bloom (1991) indicate that a systems approach to describing early childhood centres could lead to a better understanding of the impact of change, and could assist administrators to understand better the significance of their day-to-day roles and responsibilities (see Figure 11).

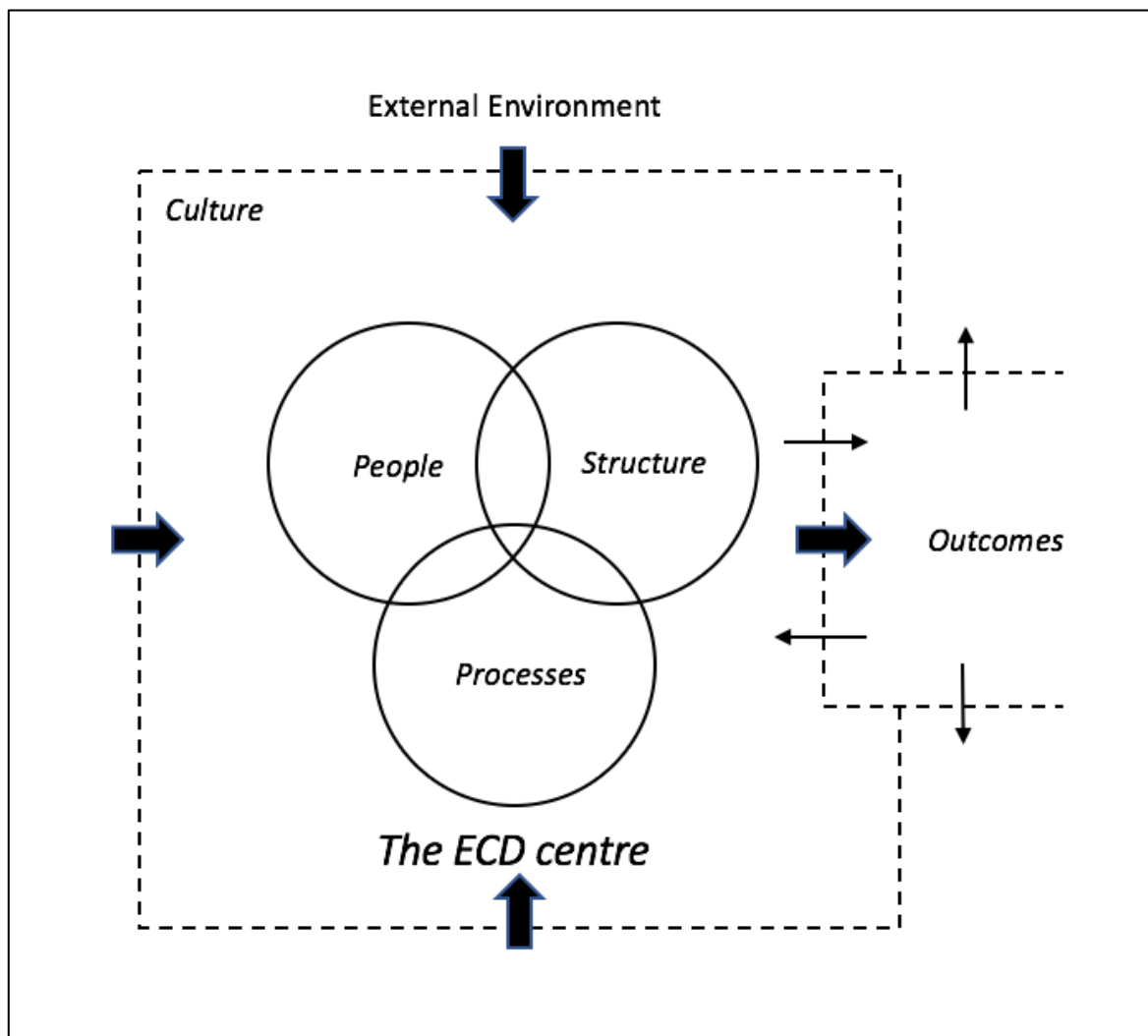


Figure 11: The ECD social system (Bloom, 1991)

The components of the system are summarised in Table 17. They include the environment, people, structure, processes, culture, and outcomes.

Table 17: Components of the system (Bloom, 1991)

Environment
Sponsoring agency, Local community and immediate neighbourhood, Professional community (professional organisations, colleges, unions, other centers), Legislative bodies and regulatory agencies, Economic, social, and political climate, Business community, Technological environment
People
Individuals: Personal history (age, gender, ethnicity, family, background), educational level, specialised training and experience, knowledge and skill, interests and special talents, beliefs and values, dispositions, flexibility and openness to change, energy level, cognitive capacity, learning style, psychological type, communication style, self-efficacy, needs and expectations, adult development stage, career stage, level of commitment, level of motivation, professional orientation, concomitant roles Groups: dominant coalitions

Structure
Legal governing structure, size (student enrolment, total number of staff), program type, hours, services provided, funding structure, division of labour, accountability and decision making, reporting relationships, policies regarding children (enrolment, group size, group composition, ratios), policies regarding parents' roles and responsibilities, policies regarding staff recruitment and training, performance appraisal policies, pay and promotion system, accounting, budgeting, and fiscal management system, written philosophy, program mission, strategic plan, written curriculum, size (square footage), arrangement of space, materials and equipment
Processes
Leadership style, decision-making and problem-solving processes, communication processes, planning and goal setting, group meeting processes, interpersonal relations, conflict management, supervisory and training processes, centre evaluation processes, performance appraisal processes, socialisation processes, teaching practices, child assessment practices
Culture
Shared values, norms, history of the centre, traditions (rituals, celebrations, and customs), organisational climate, ethics
Outcomes
<p>Organisation: reputation of the centre, fiscal viability, internal efficiency, professional orientation</p> <p>Staff: absenteeism, turnover, level of competence, job satisfaction, commitment to centre, professional fulfilment</p> <p>Children: social competence, cognitive competence, overall health</p> <p>Parents: satisfaction with centre, perceived support</p> <p>Community / society service provided</p>

It is important to ensure that the system delivers the intended outcomes. Bergin-Seers and Breen (2002) aim to close a gap in the research, specifically relating to the *performance* of ECDCs from a viability perspective. They suggest a performance framework that includes environmental factors, the centre's performance, organisational factors, and the leader/manager role in the centre. Their paper extends the knowledge of centre operations, and considers the obstacles that hinder performance. The most profound knowledge from this study is the *business performance framework*, which can inform what is needed to support the development of viable child care services, and is applicable to this study (see Figure 12). The performance framework considers elements such as environmental factors, the centre's performance, organisational factors, and the leader or manager role in the centre.

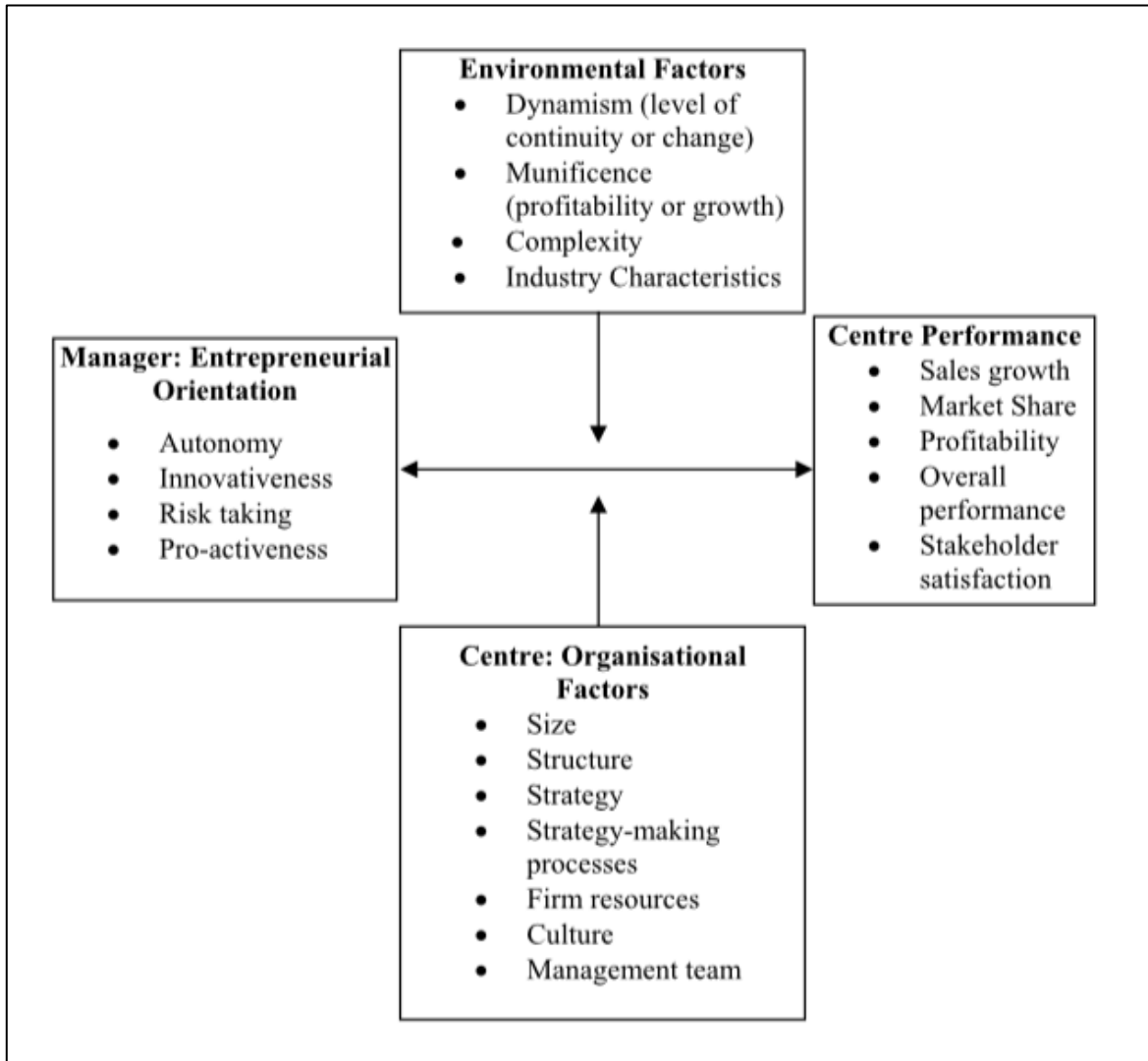


Figure 12: The business performance model (Bergin-Seers & Breen, 2002)

Leadership

The critical role of the administrator or leader in an ECDC cannot be over-estimated; and, according to Scriptor (2010), developing and embedding IC within the education environment requires good leadership. Quality in service delivery is closely linked to the administrative function of the early childhood setting, and the administrator is the key person to influence both organisational effectiveness and quality of care (Hayden, 1997). An increasing recognition of the importance of the administrator calls for research into this role and into the characteristics of those who assume it. The leadership framework developed by Nupponen (2006, p. 156) focuses on (1) relational and pedagogical leadership, (2) intra- and interpersonal skills, and (3) education and training to master these traits. In the context of Bloom's social system, Nupponen (2005) argues that facets of *leadership* and of a *business orientation* to service delivery will be required, and suggests enhancements or adaptations to

the original system construct. As shown in Figure 13, the roles of director and administrator are inserted at the centre of the ECDC.

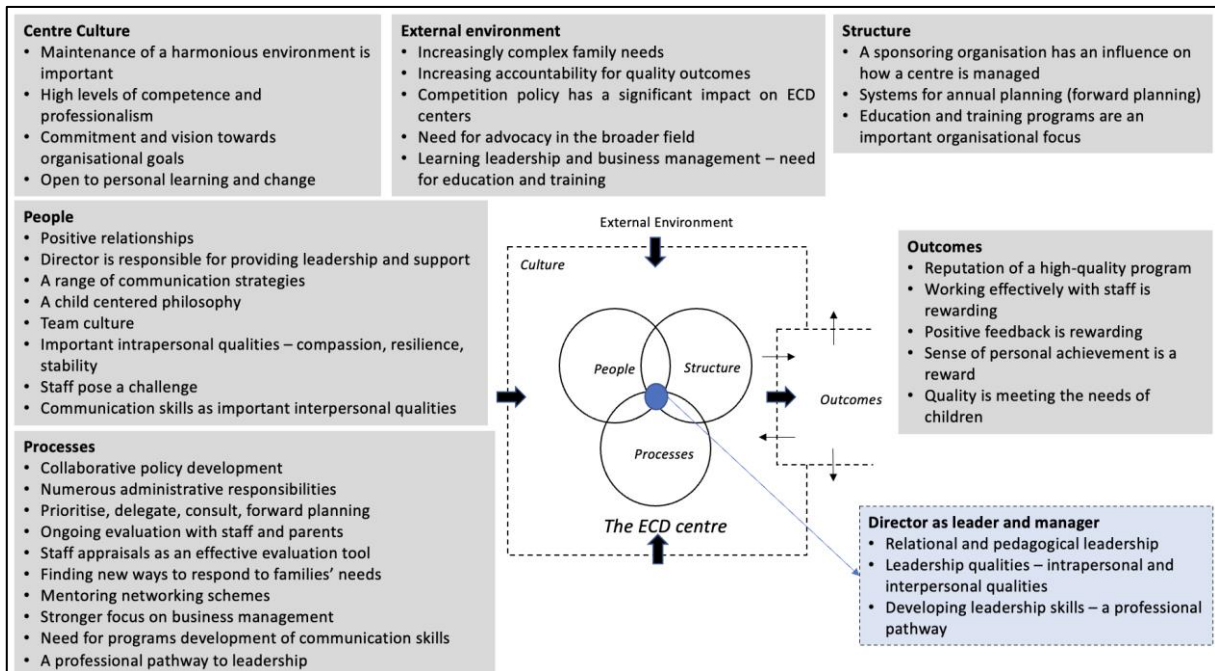


Figure 13: Final social systems model (Nupponen, 2005, p. 187)

Institutional capacity assessment

The five-dimensional framework of Grindle and Hilderbrand (1995) is identified as a very useful systemic method to analyse the determinants of IC (Imbaruddin, 2003, p. 27). The five-dimensional framework groups the factors that influence the capacity of government institutions in five dimensions, as shown in Figure 14. The task network that aims to bring a broader ecosystem together in a collaborative manner is an advantage to be considered for developing IC in an ECDC.

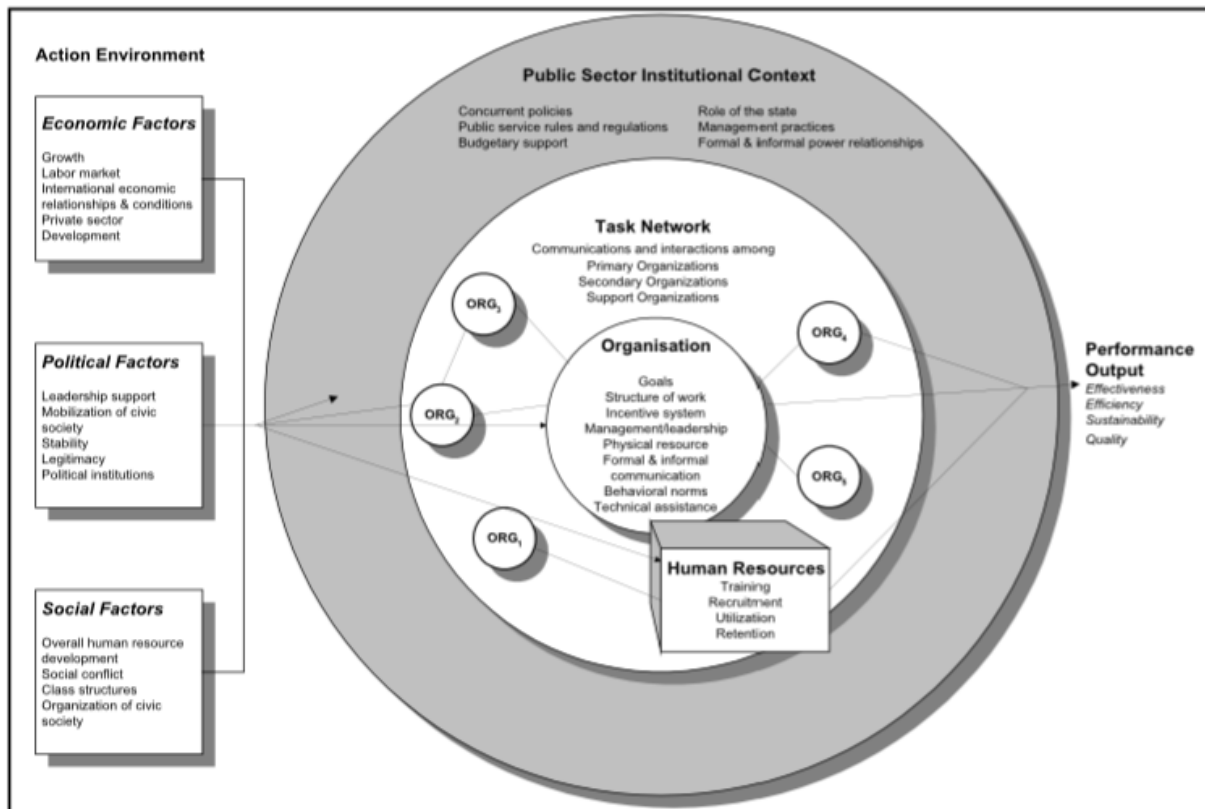


Figure 14: Five-dimensional framework of institutional capacity (Grindle & Hilderbrand, 1995)

However, since the early 1980s, IC analyses have been undertaken in a more comprehensive and systematic way, introducing the three-level approach (Imbaruddin, 2003). The United Nations Development Program (UNDP) applies the same three-level conceptual approach to analyse and assess the capacity of public institutions. Figure 15 describes the three levels as (1) the system, (2) the entity, and (3) the individual.

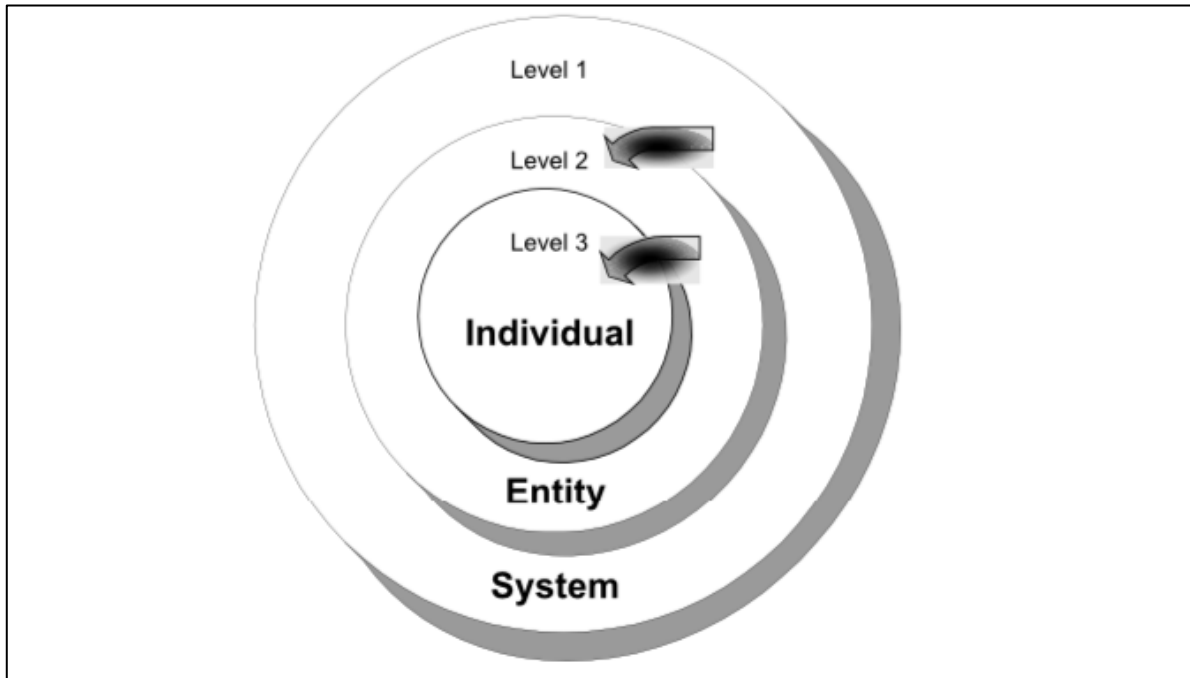


Figure 15: A three-level approach to institutional capacity (Imbaruddin, 2003)

Enablement

Scheepers (2015) refers to work done by Lusthaus, Anderson and Murphy (1995) that describes the elements needed to enable IC: (1) strategic leadership, (2) human resources, (3) financial management, (4) infrastructure, (5) programme management, (6) process management, and (7) inter-institutional linkages (see Table 18).

Table 18: Elements of institutional capacity (Lusthaus et al., 1995)

Strategic leadership	Leadership	Programme management	Planning
	Strategic planning		Implementing
	Governance		Monitoring
	Structure	Process management	Problem-solving
	Niche management		Decision-making
Human resources	Research	Inter-institutional linkages	Communication
	Teaching		Monitoring and evaluation
	Managerial staff	linkages	Networks
	Technical/support staff		Partnerships
Other core resources	Infrastructure		External communications
	Technology		
	Finance		

4.4 ECD quality

In answering research question 3 (see section 1.3), a school's climate quality enhances the emotional and social well-being of the child. The findings suggested that, for parents and

teachers, quality concerns were not about what early learning centres have provided in terms of facilities (input indicators), but rather about the process indicators for how centres promote children’s holistic well-being (Van Heerden, 2016). Various measurement methods exist (see Table 19); but the Program Administration Scale (PAS) is designed to measure reliably and to improve the leadership and management practices of centre-based programmes. The PAS was developed in 2004 by Talan and Bloom to fulfil the need to ‘look beyond classroom quality’ when assessing early childhood programmes. The reason for this is according to (Arend, 2010, p. 49):

While there are several instruments available to measure the quality of teacher–child interactions and the quality of the classroom instructional practices, there does not currently exist a valid and reliable instrument that solely measures the administrative practices of an early childhood program.

Table 19: ECD quality measurements

Method	Source	Areas of concern
1. USDE and CHEA	(Wilkerson, 2017)	(1) Student achievement and continuous improvement, (2) curriculum, (3) faculty, (4) facilities, equipment, and supplies, (5) <i>fiscal and administrative capacity</i> , (6) student support services, admissions, and information systems.
2. Trinidad and Tobago	(Wandili, 2015)	Mixed set of process inputs: Teachers, pedagogy, internal structures.
3. ECD reflection tool	(Excell, 2016)	(1) Teaching and learning, (2) <i>leadership and management</i> , (3) environment, (4) policy and systems frameworks.
4. The framework	(Van Heerden, 2016)	(1) Input (structural), (2) <i>process</i> , (3) outcomes.
5. The metric	(Weinert, 2014)	(1) Programme standards, (2) education standards, (3) <i>quality</i> .
6. Three-point scale	(DOSD, 2006)	(1) Staff, (2) <i>management</i> , (3) premises and equipment, (4) active learning, and (5) observation by reviewer.
7. Program Administration Scale (PAS)	(Arend, 2010)	(1) Human resources development, (2) personnel cost and allocation, (3) <i>centre operations</i> , (4) child assessment, (5) <i>fiscal management</i> , (6) programme planning and evaluation, (7) family partnerships, (8) marketing and public relations, (9) technology, and (10) staff qualifications.
8. Quality components	(Harrist, Thompson & Norris, 2007)	(1) Communication and rapport, (2) caregiver practices, (3) staff characteristics, (4) <i>finances and resources</i> , (5) visibility and involvement, (6) professionalism.
9. Early childhood environment rating scale (ECERS)	(Al-Hassan, Obeidat & Lansford, 2010)	(1) Space and furnishing, (2) personal care routines, (3) language reasoning, (4) activities, (5) interaction, (6) programme structure, (7) parents and staff.

4.5 Discussion of SLR results

One of the biggest impediments to delivering quality ECD services is effective administrative and management systems to operate an ECD centre, and this is validated through the SLR as a

class-of-problems. The inability to build and embed the necessary IC prevents administrators from leading quality ECD centres.

4.5.1 The class-of-problems in ECD

The ECD environment is changing, and there is a need to adapt traditional thinking and approaches to align better with concepts that are more familiar to leaders in the business world. The dynamic environment demands a systematic approach to the management and delivery of ECD services. Administration has not been recognised as a separate skill area from teaching in childcare centres and, as such, has not been allotted sufficient credentials, recognition, or rewards. Three variables have a direct impact on building IC competence: the leadership role, administrative competence, and resources.

4.5.2 Solution areas

Solutions to address IC are not a foreign concept, especially in typical business or non-educational domains. In fact, various approaches and solutions exist and are well-documented. In order to address the class-of-problems in the ECD context, solutions need to be fused together to create an approach that administrators can adopt and use to build and embed IC. The focus on leadership, while adopting a systems approach to describing ECD centres, can lead to a better understanding of the impact of change, but will require an approach for integration and implementation purposes. The IC assessment frameworks provide a perspective on how to assess and make determinations on the level of IC, and act as key input into the development of an ECDA.

4.5.3 Quality measurements

The quality of services in the ECD environment needs to be broader than just the classroom or education. The quality measurement needs to ensure that both educational outcomes and administrative practices are adequately covered. The PAS measurement method ensures that quality is measured beyond the classroom, and that administrative performance is included.

4.5.4 Summary

Various components of a solution to address the class-of-problems exist, but none is structured in a way that informs an approach for administrators to follow. Bringing all the parts together, Figure 16 visually displays the core frameworks/approaches and the latest thinking to help address the development of IC in an ECDC. The core solutions are: (1) The social systems model (Bloom, 1991), (2) the final social systems model (Nupponen, 2005), (3) the business performance model (Bergin-Seers & Breen, 2002), (4) the five-dimensional framework (Grindle & Hilderbrand, 1995), and (5) a systematic way to assess IC

(Imbaruddin, 2003), while Scheepers (2015) suggests (6) IC elements. Each of these contributions not only shapes and informs the approach to leading and managing a quality ECDC, but also draws on experience and expertise from non-traditional education domains to address the lack of IC in ECDCs in the South African context as a class-of-problems. The combination of all the elements from these contributors forms the basis of the *enterprise capacity development approach* (ECDA).

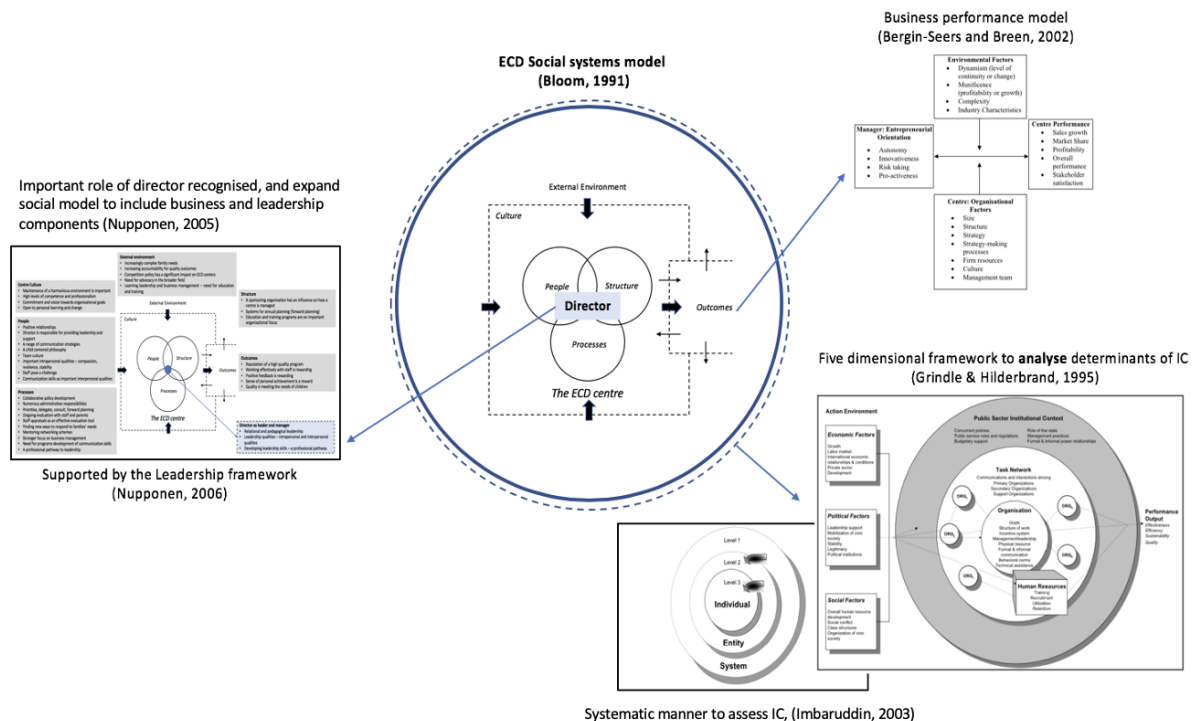


Figure 16: Various solutions impacting IC

4.6 Knowledge areas with no application in ECD

The use of enterprise design and change theories and frameworks is positioned to approach the ECDC evolution through the construction of the ECDA in a systematic manner. Section 4.6.1 presents enterprise engineering (EE) as a discipline, and reviews its theories and fundamentals; this is followed by a description of Hoogervorst’s approach in section 4.6.2. The enterprise evolution contextualisation model (EECM), explained in section 4.6.3, is discussed to provide descriptive guidance for a new enterprise change approach. Last, section 4.6.4 discusses the generic system development process (GSDP) in light of the using and provisioning systems.

4.6.1 Enterprise engineering

Enterprise engineering as a relatively new approach that addresses enterprise design and change in a scientific manner, and is positioned to guide the development of the ECDA. The application of EE fundamentals and theories is discussed in more detail in the next section.

Enterprise engineering as a discipline

Dietz et al. (2013) make a case for a new scientific, intentional approach to addressing enterprise change. Criticism is aimed at scientific management, raising ethical questions about human capital deployment and about the efficiency and effectiveness of enterprises. According to Dietz et al. (2013), various approaches have been proposed over the years to address those criticisms; but, based on reviews of these approaches, successes are limited.

Enterprise engineering is a new, holistic approach to addressing enterprise changes of all sizes and in all kinds of enterprises (Dietz et al., 2013). According to Martin cited in (Dietz et al., 2013), “*enterprise engineering* is an integrated set of disciplines for building or changing an enterprise, its processes, and systems”. An enterprise is an intentionally created cooperative of human beings with a certain societal purpose, and the intentional character of enterprise creation requires design activities. According to Dietz et al. (2013), for some, the term *design* in the context of enterprises has uncomfortable connotations, as it is associated with mechanistic approaches to enterprises, arranging them as if they were machines. Indeed, as emphasised earlier, we consider design to be an activity that is based on enterprise learning, through which enterprise members cope with the unexpected (Dietz et al., 2013). Dietz et al. (2013) mention that design in essence entails clarity and a good understanding of the enterprise’s strategic intentions, and how internal arrangements need to be made to achieve this outcome.

Enterprise engineering theories

Dietz et al. (2013) outline the theories that form part of the EE discipline, and state that some of the theories are mature; others need development and improvement; and new ones need to be added. Four classes of theory – (1) ideological, (2) technological, (3) ontological, and (4) philosophical – are seen as foundational to the discipline of EE. The theories are related to each other, as shown in Figure 17 (Hoogervorst, 2018a). The theories in the class on the ‘arrow’ side are based on a number of theories on the ‘shaft’ side.

- *Philosophical* theories are those that address very basic conceptual matters, and are evaluated on their truthfulness in a chosen area.
- *Ontological* theories address explanatory and/or predictive relationships in observed phenomena and, specifically, the interest in cause-and-effect relationships in systems.
- *Poietical* theories address means–end relations between phenomena, and form the basis for design methods, often called methodologies.

- *Ideological* theories address the goals that people in society – and, specifically in this study, enterprises – want to achieve; and this is fuelled by convictions, vision, and beliefs.

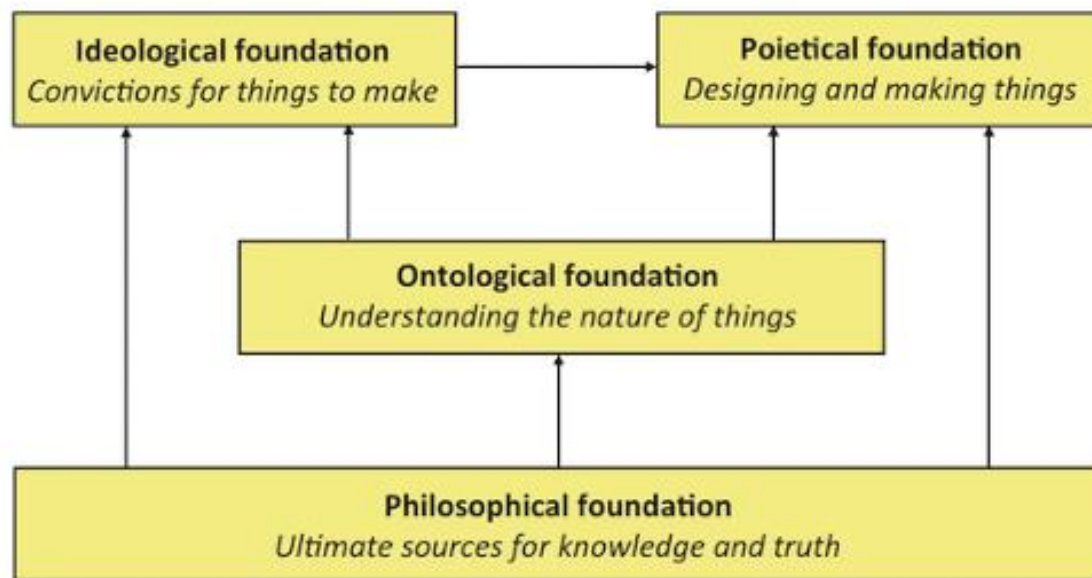


Figure 17: Foundations for enterprise governance and engineering (Hoogervorst, 2018a, p. 69)

Dietz et al. (2013) discuss the methodological foundations of EE, and specifically the role of scientific methodologies in EE, and the distinction between *natural sciences* and *design sciences*. Natural sciences are concerned with understanding and explaining observable phenomena around us. Examples of natural sciences are the physical, biological, social, and behavioural sciences. Specifically regarding enterprises, the social and behavioural sciences seek to understand, explain, and predict organisational and human phenomena (Hevner, March, Park and Ram (2004), cited by Dietz et al. (2013)). Therefore the natural sciences belong in the class of ontological theories in Figure 17.

Dietz et al. (2013) state that design science is concerned with devising artefacts or other intentionally created results. Therefore these sciences belong to the class of technological theories in Figure 17. To illustrate further the distinction between natural sciences and design sciences, Dietz et al. (2013) cite Hevner et al. (2004) that one might say that the natural sciences are about finding out how things are, whereas the design sciences are about finding out what is effective.

4.6.2 The Hoogervorst approach

The purpose of this section is to outline briefly Hoogervorst's approach as a foundation for further discussion when developing and describing the ECDA.

Hoogervorst's perspective

Hoogervorst (2009) criticises the mechanistic, reductionist approach that is evident in other enterprise design approaches, and suggests an organismic approach to design and governing the enterprise. The organismic way of organising is *directed to adaptation, flexibility, and the ability to change in the light of unforeseen requirements*. A shift is required from top-down control to a bottom-up empowerment (Hoogervorst, 2009). Hoogervorst (2009) developed an approach that is iterative, emergent, creative, and non-algorithmic, and his multi-disciplinary inquisitive approach starts with the strategic context, defining the preliminary design aspects, which are translated into areas of concern and requirements.

Hoogervorst (2018b) adds that a morphogenic development is needed:

Unlike the mechanistic or *organismic* metaphors, the *morphogenic enterprise conceptual model* enables to address the three essential concepts that fuel and determine enterprise developments: human agency (especially employee agency), reflexivity, and reciprocity. Through this model, the ever-present circular relationship between enterprise members and their context can be understood (shape and being shaped), thereby understanding the essential nature of enterprise change processes.

Hoogervorst (2018b) describes four main design domains in which the main functional domain is *business*, and the main constructional domains are *organisation, information, and information technology* (Figure 18). In this context, the business domain is classified as the 'black box' (function), while the organisation domain refers to the 'white box' (construction), discussed in section 4.6.1.

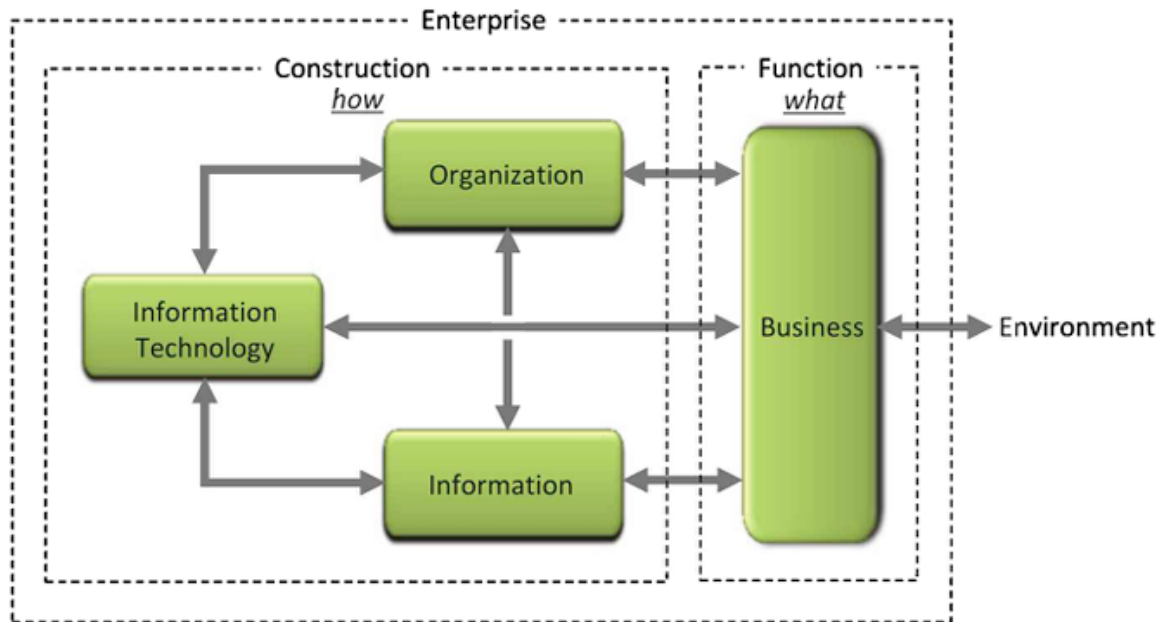


Figure 18: Main enterprise design domains (Hoogervorst, 2018b, p. 290)

The main enterprise designs are briefly summarised, using Hoogervorst (2018b)'s classification and definition:

Business – Refers to the main functional design domain, and concerns the functional relationships of the enterprise with its environment.

Organisation – Classified as the constructional design domain that is concerned with white-box properties, and the internal arrangement and operation of the enterprise that brings the black-box properties forward.

Information – Information is a crucial factor in establishing the white-box constructional properties. Aspects that plays a role are the type, structure, and quality of information, management of information, and utilisation of information.

Information technology (IT) – Technology is an important aspect in carrying out the material production activities of transactions. This domain is concerned, therefore, with the design of the overall enterprise IT system that provides information services to the enterprise organisation. Technology supports all the business, organisation, and information domains, and thus is critical to the enterprise construction. IT is used to support transactions – specifically those that are infological and datalogical.

The lack of unity and integration is identified as the core reason for failing enterprise (strategic) change initiatives. To achieve unity and integration, coherence and consistency within and between the design domains is required (Hoogervorst, 2018b).

Construction of the environment

Functional relationships need to be explained, given that an enterprise functions as a system: the enterprise is the *provisioning system* and the environment is the *using system*, as discussed in section 4.6.2. The white-box properties for the using system are shown in Figure 19, with the wants and needs that define the functional relationship with the black-box properties of the enterprise (Hoogervorst, 2018b). Hoogervorst (2018b) states that the importance of various white-box properties is dependent on the type of enterprise and the products and services provided, and is better classified as the *strategic context*. The strategic context outlines more specifically the enterprise's purpose, vision, mission, goals, and strategic desirables, which are seen as an important input into the constructional design of the enterprise.

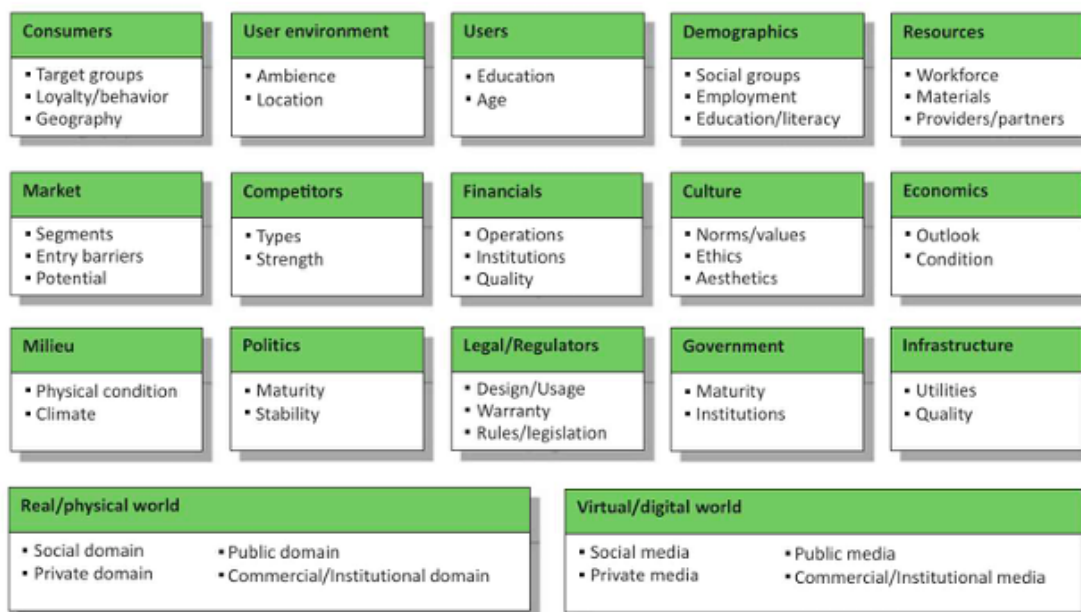


Figure 19: White-box properties of the environment (Hoogervorst, 2018b, p. 305)

Construction of the business domain

Hoogervorst (2018b) describes the design aspects as a set of initial and preliminary attention areas or enterprise design, which are formulated on the basis of the strategic context, as explained earlier. Business design aspects, depicted in Figure 20, concern the *functional relationships* between the enterprise and its environment, derived from statements, intentions, or reasoning about the strategic context, such as revenue models or channels.

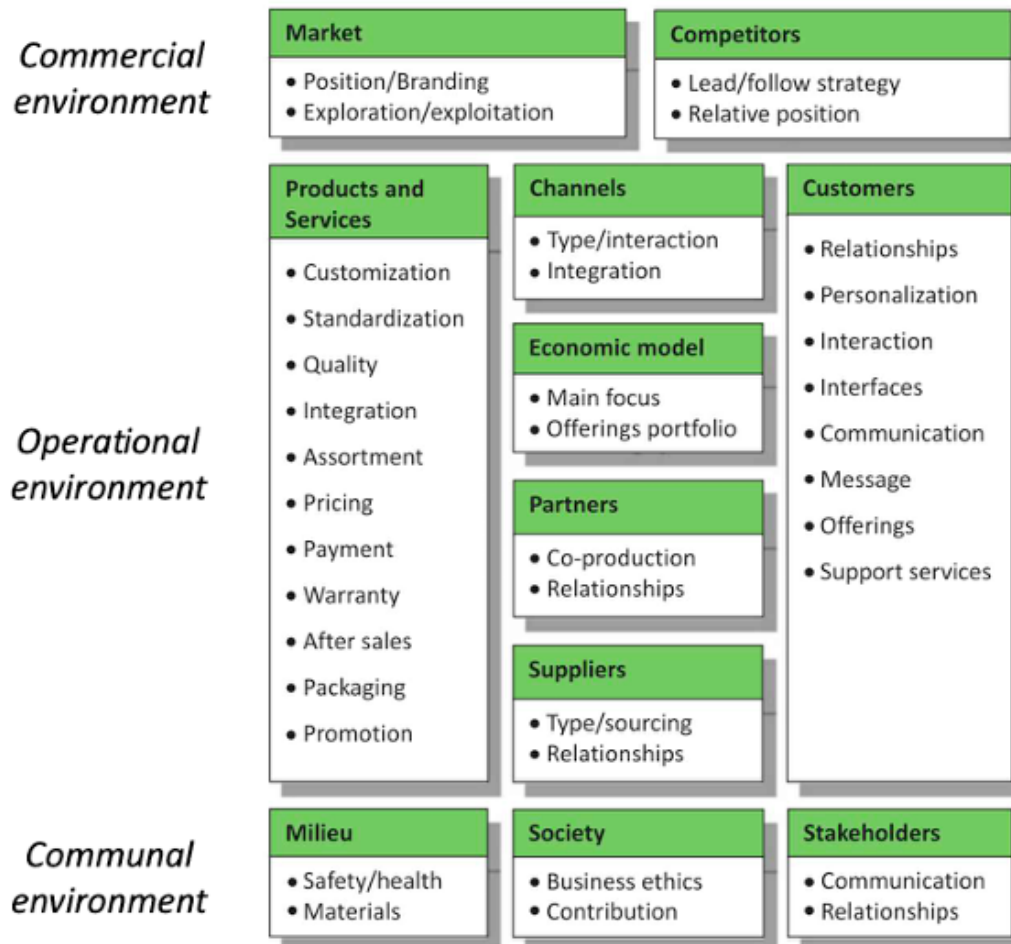


Figure 20: Business design aspects (Hoogervorst, 2018b, p. 307)

Construction of the organisation domain

Hoogervorst (2018b) specifies the organisation design aspects (shown in Figure 21), and classifies them according to social, behaviour, and structural-functionalist contexts. The importance of the design aspects is to identify important topics of indirect design and important areas of concern, such as behaviour and motivation, and to stress the importance of design aspects beyond the traditional structural-functionalist topics.

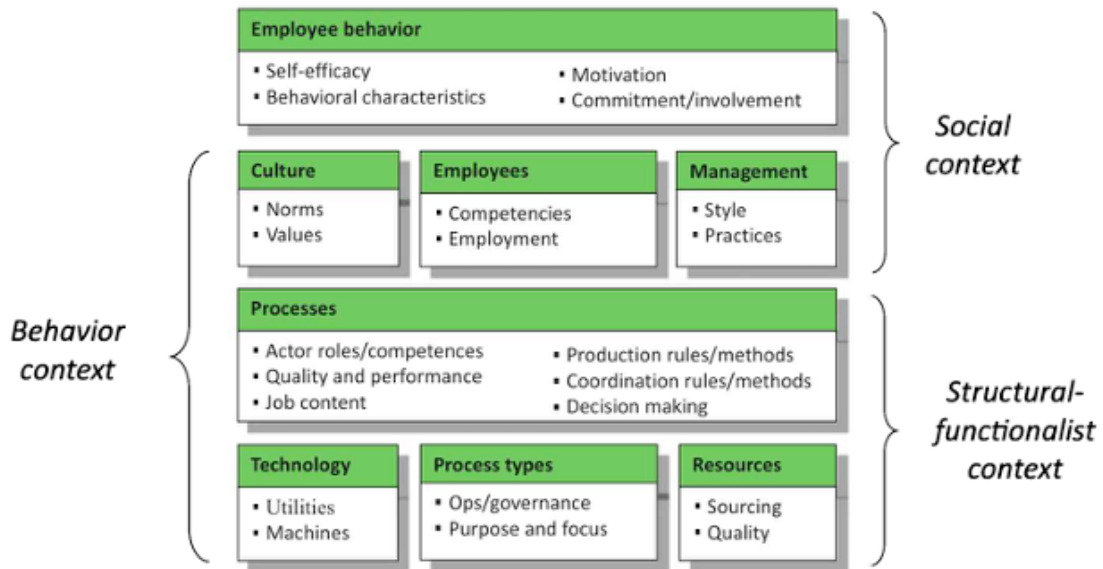


Figure 21: Organisation design aspects (Hoogervorst, 2018b, p. 307)

Construction of the information domain

According to Hoogervorst (2018b), the information design aspect concerns the utilisation and administration of information (data), with a focus on describing the utilisation, the administration, and the foundation, as shown in Figure 22.

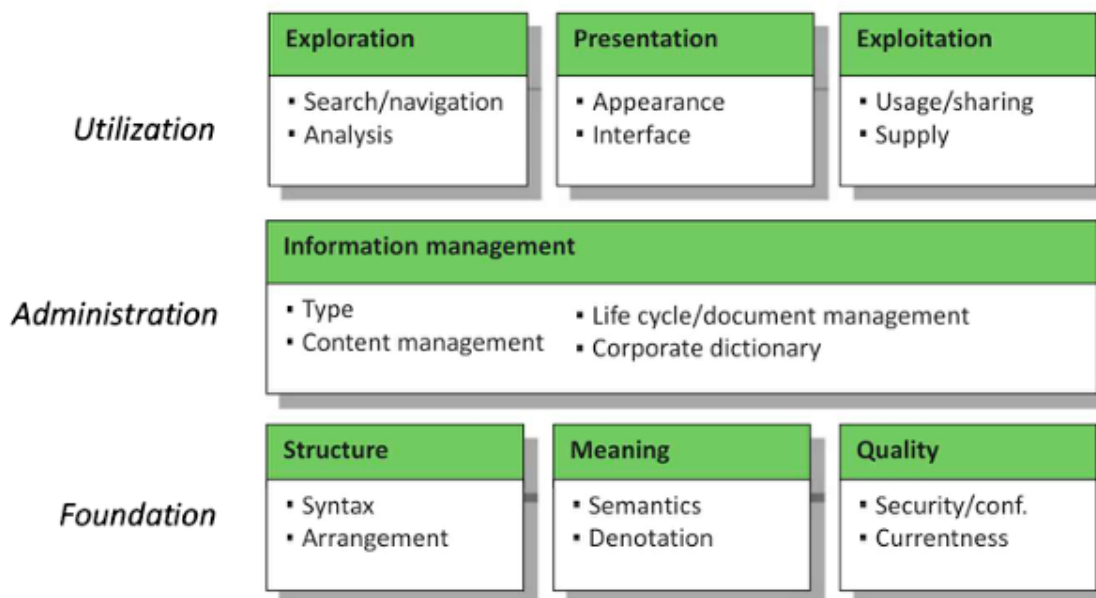


Figure 22: Information design aspects (Hoogervorst, 2018b, p. 309)

Construction of the IT domain

Hoogervorst (2018b) classifies the IT design aspects as the use of IT systems and their infrastructural characteristics (shown in Figure 23).

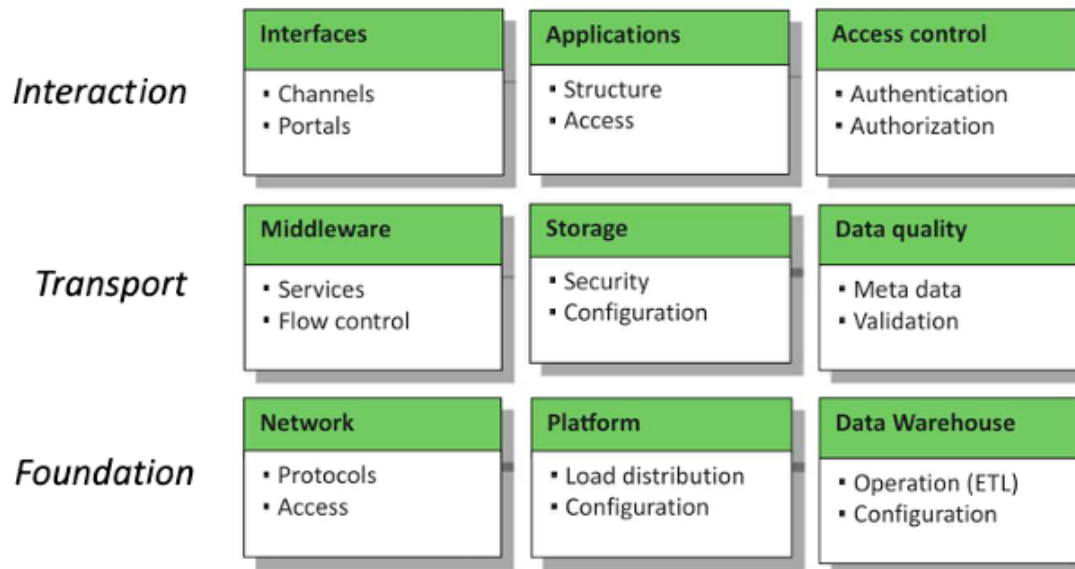


Figure 23: IT design aspects (Hoogervorst, 2018b, p. 309)

4.6.3 The enterprise evolution contextualisation model

The enterprise evolution contextualisation model (EECM) is descriptive in its nature. Its contribution to the development of the ECDA is discussed below.

EECM

Enterprise engineering (EE) emerged as a new discipline to encourage comprehensive and consistent enterprise design. Since EE is multidisciplinary, various researchers have studied enterprises from different perspectives, which has resulted in a plethora of applicable literature and terminology, but without a shared meaning (De Vries et al., 2017). De Vries et al. (2017) further suggest that the emerging EE discipline aims to address a broader scope of design, and that the need to address knowledge fragmentation is encapsulated in an enterprise evolution contextualisation model (EECM). EECM addresses the following objectives:

Objective 1 – To provide the setting in terms of a descriptive model to serve as a common reference model to understand and encapsulate the EE knowledge base fully.

Objective 2 – To contextualise a broader set of enterprise design/alignment/governance approaches.

Objective 3 – To enable an EE practitioner to describe, understand, and compare different enterprise design/alignment/governance approaches in evolving or changing an enterprise.

De Vries et al. (2017) state that EECM is a descriptive model (refer to Figure 24 for a graphical representation of the EECM) to contextualise an existing approach and to

contextualise approaches that address a broader scope of enterprise evolution. The content of an existing design/alignment/governance approach typically answers three questions:

- Question 1: Why should the enterprise use the proposed approach to evolve?
- Question 2: What should the enterprise evolve?
- Question 3: How should the enterprise evolve?

Approach content could be classified according to four main components, which also answers the three questions above (De Vries et al., 2017):

- Component 1: Concept of enterprise and paradigm of creating value (Figure 24, foundation ellipse) (answering Question 1).
- Component 2: Three dimensions (Figure 24, three panes of the block) to define the scope of evolution (answering Question 2) in terms of three dimensions: design domains, concerns and constraints, and enterprise scope.
- Component 3: Supporting mechanisms and practices (Figure 24, bottom triangle) to ensure the desired evolution across the three dimensions (partially answering Question 3).
- Component 4: Approach classifiers (Figure 24, callout) that influence the selection of appropriate mechanisms and practices (partially answering Question 3).

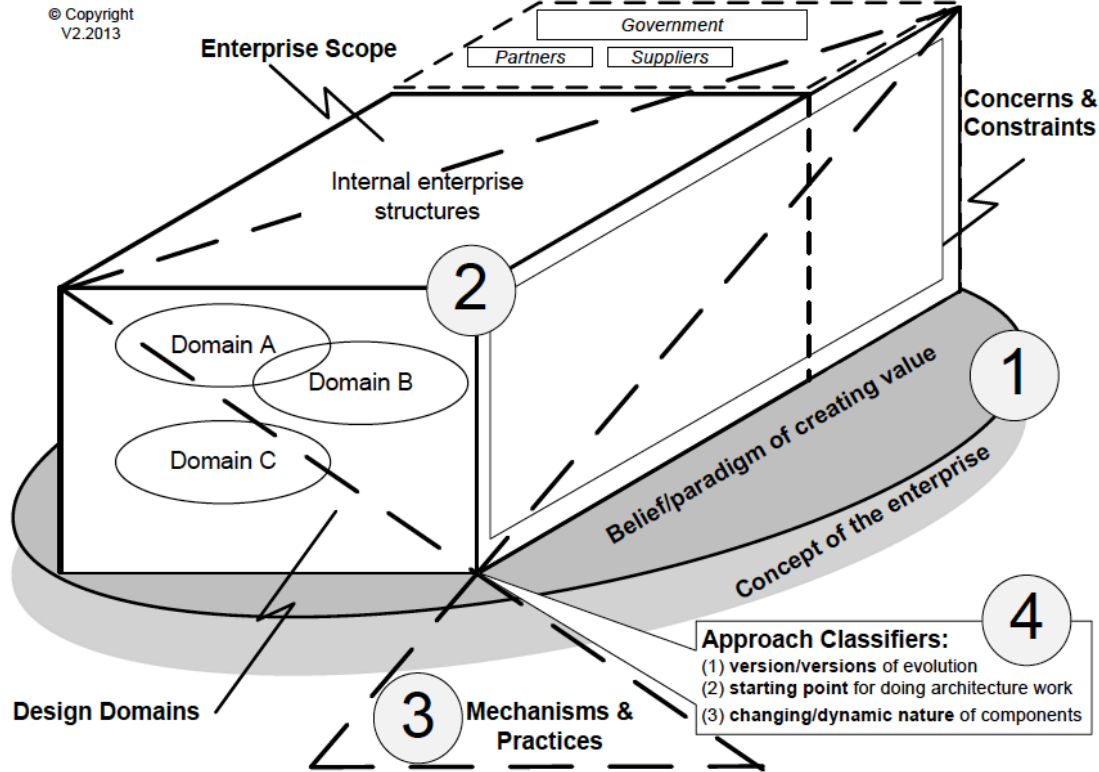


Figure 24: The EECM (version 2) (De Vries et al., 2017, p. 23)

Component 1 – concept of enterprise and paradigm of creating value

The concept of the enterprise is expressed through analogies that are often used by approach authors to define the enterprise. The paradigm of creating value relates to the philosophical dimension of a paradigm, providing the *why* of the enterprise design/alignment/governance approach (De Vries et al., 2017). Authors of approaches base their proposed approach on defensible value propositions or offerings. The authors' ways of thinking, paradigms, and belief systems typically motivate the development of an approach in an enterprise context.

The concept of the enterprise might differ depending on the approach author's viewpoints and beliefs. It is important, therefore, to understand the approach author's definition of the enterprise when interpreting or using the specific approach they have developed.

Component 2 – dimensions

The literature reveals many different conceptualisations of design domains (De Vries et al., 2017). This component represents three dimensions that are needed for design activities, displayed on the front, side, and top panels shown in Figure 24. *Design domains* are the areas that an approach aims to (re)design, while the *concerns and constraints* contain the functional and constructional requirements that need to be addressed during the design of one or more design domains. The *enterprise scope* reflects the extent of design, alignment, and governance in terms of the internal enterprise structures (De Vries et al., 2017).

Component 3 – mechanisms and practices

Mechanisms and practices support specific design/alignment/governance approaches that are described by this component. The mechanisms and practices are underpinned by the belief and paradigm of creating value (Component 1), as well as the alignment strategy that enables design/alignment/governance across relevant dimensions (Component 2) (De Vries et al., 2017). De Vries et al. (2017) extracted categories of mechanisms and practices from existing approaches:

- Architecture description, reference models, and modelling practices for design domains
- Selection and measurement of concerns
- Methodologies
- Governing principles and standards
- Governing bodies and governing practices
- Transformation roadmaps
- Analyses (e.g., gaps/impact)
- Maturity models
- Skills/learning requirements
- Software tools and/or guidance

Component 4 – approach classifiers

EECM provides three classifiers to differentiate how they ensure consistent design/alignment/governance (refer to Figure 24). Component 1 (beliefs and paradigms of value creation) directly influences the approach, which in turn influences Component 3 (mechanisms and practices), which is required in combination with the design/alignment/governance approach (De Vries et al., 2017). Four classifiers are discussed:

Version(s) of evolution – Refers to the version of the architecture description, in which some approaches focus on the *as-is* state with a view to identifying improvement opportunities, while others take a forward-looking *to-be* state view.

Starting point for carrying out architecture work – Approaches will have their own starting points, whether top-down or bottom-up, in designing the domains.

Changing/dynamic nature of things – Enterprises are dynamic and are subject to constant change, and different means need to be defined to deal effectively with these dynamics over a period of time. The approach needs to be cognisant of the nature of things, and to define the adequate response.

De Vries et al. (2017) mention that the EECM allows an approach designer to position an approach in the broader scope of enterprise design and to use the contextualisation results to identify the possible deficiencies of a specific approach. The contextualisation results could thus lead to extensions of an existing approach to address shortcomings prior to its application/implementation in the industry. Since EECM is *descriptive* rather than prescriptive, additional assistance is required to guide practitioners towards improving their existing enterprise-specific approach.

Guidelines for using EECM

The theoretical design/governance/alignment approaches presented in the literature differ from those in industry, which exist as tacit knowledge in the minds of employees. The process for identifying the underlying paradigm of value creation for an industry approach requires a different or more complex method (De Vries et al., 2017). An approach developer needs to test two conditions, as defined by De Vries et al. (2017):

(1) Evaluate the concept of the enterprise and paradigm of value creation

- Step 1: Consult the introductory chapters of the published work to search for enterprise *definitions* and *analogies* that are used to define the enterprise.
- Step 2: Consult the introductory chapters of the published work to identify the core enterprise design/alignment/governance problems that the approach author(s) intend to address. The approach author(s) usually argue that existing approaches (or frameworks, methods, practices, etc.) do not address the core problems sufficiently.
- Step 3: Evaluate the consistency of the concept of the enterprise and value-creation paradigm:
 - When approach authors use multiple contradictory definitions and analogies to define the enterprise, there is an inconsistent concept of the enterprise. When approach authors intend to address unrelated or different kinds of problems, there is an inconsistent value-creation paradigm.

(2) Evaluating possible design domains

Design domains are those aspects of an enterprise that approach authors deem important or necessary for a design. The following steps are suggested for identifying and evaluating approach-specific design domains:

- Step 1: Consult the content that describes *possible design domains* that need to be designed/aligned/governed. Different terminology may be used to indicate the existence of a design domain – e.g., components, facets, items, entities, or systems.

- Step 2: Assess the validity of possible design domains against validity indicators:
 - *Indicator 1* – evident design activities are applied cross-structure: According to Hoogervorst (2018b), “design domains are enterprise facets where design needs to take place, guided by architecture and thereby dealing with requirements”. Thus the approach should elucidate design activities or phases for designing each design domain separately or concurrently across enterprise structures, departments, or business units.
 - *Indicator 2* – associated concerns (i.e., requirements) are defined: Valid design domains are associated with multiple concerns (functional and non-functional/constructional) that need to be addressed during enterprise design. A concern could be addressed by more than one design domain.
 - *Indicator 3* – evident architecture descriptions exist: Design activities for valid design domains usually produce architecture descriptions in the form of graphical representations/models. Content that relates to architecture description/models adds evidence for the existence of a design domain.
- Step 3: If possible design domains are invalid according to the assessment in the previous step, then a single design domain exists – i.e., the entire object system/entity that needs to be designed. If, for example, the approach intends to provide guidance on designing the entire enterprise (as the object system/entity), then the single design domain is the enterprise.

4.6.4 Generic system development process

Design aspects in a systems context are typically revealed in an inquisitive process, and for this reason it is important to discuss the system development process and its contribution to the construction of the ECDA. Design aspects are merely initial and preliminary attention areas for design; they must be formalised in *functional* and *constructional requirements*, and in *areas of concern*. Requirements and areas of concern are addressed in system design domains through system design (Hoogervorst, 2018b).

Hoogervorst (2018b) describes the system to be designed as the *provisioning system*, also identified as the *object system*: the object of design. The provisioning system has a functional relationship with its environment, also called the *using system*. The using system is dependent on a functional relationship with the provisioning system, discussed in section 4.6.1. In order to define properly the functional relationship, the wants and needs of the using system must be precisely known. Thus, to design properly the functional relationship with

the provisioning system (black-box), the construction (white-box) of the using system must be known, depicted as the generic system development process (GSDP) in Figure 25.

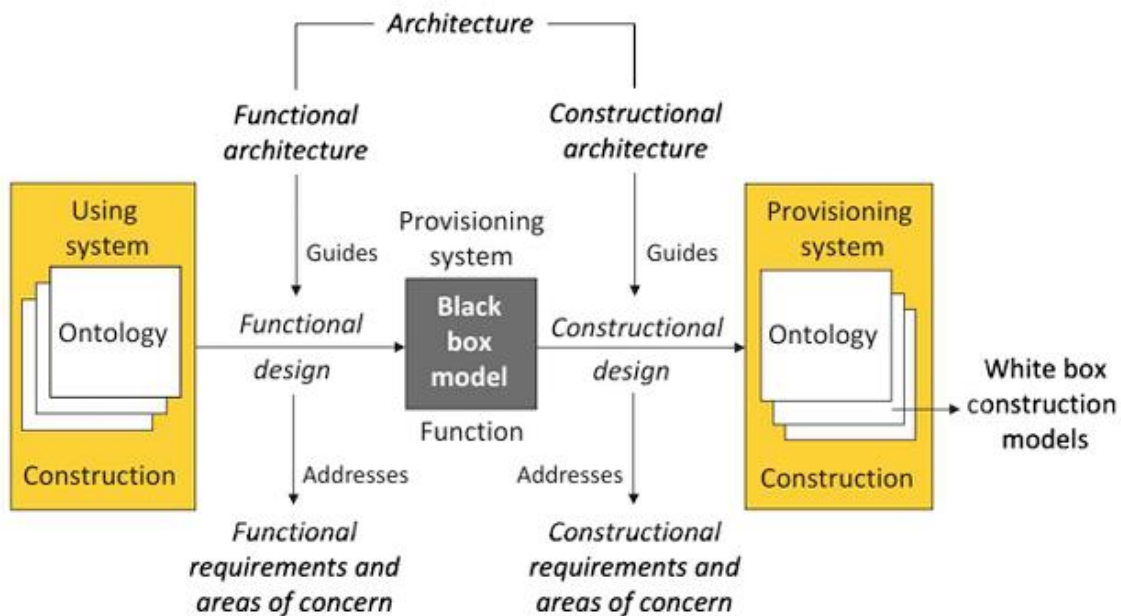


Figure 25: Generic system development process (Hoogervorst, 2018b, p. 256)

Hoogervorst (2018b) notes that functional and constructional design is a sequential activity, but *iterative* as constructional issues impact functional design, and vice versa. After the functional design of the provisioning system, the constructional design can be accomplished. Architecture guides functional and constructional designs, while addressing requirements and areas of concern. In order to comprehend fully the notion of construction, the following key terms are defined by Hoogervorst (2018b):

Constructional design – Aimed to create white-box properties to enable the use of black-box properties in view of the functional relationships.

Constructional decomposition – The breakdown of the main constructional domain in a complete and necessary set of detailed constructional design domains that enables a comprehensive constructional design.

Constructional design domain – A concrete constructional facet of a system for which constructional design must take place.

4.7 Approach design principles

Enterprise engineering is an emerging discipline; and the need to describe an enterprise in a holistic manner has led to various studies over the past years that have focused on defining the EE domain (De Vries, 2016). Prior to constructing a new approach, researchers usually

present evidence of the existence of a phenomenon and of the inability of existing approaches to address the phenomenon adequately. Rather than stifling the emergence of new enterprise design approaches, De Vries (2016) encourages the enterprise designer to define his/her own ideologies in respect of enterprise design, and to identify the stakeholder concerns that will be addressed by their approach. This includes the conditional use of the approach in the specific enterprise context and demarcated design scope. In this study, De Vries (2016) developed approach design principles (ADPs), and Van der Meulen, De Vries and Gerber (2017) evaluated these ADPs using a DEMO-based EE methodology to guide approach developers when designing and explicating new approaches, thereby improving the usability of the approach while contributing to the EE knowledge base.

Eleven principles are briefly explained and, based on De Vries (2016) are now introduced.

4.7.1 Principle A: Explicit concept of the enterprise

Statement: A design approach should indicate how an enterprise is perceived or conceptualised.

Rationale: De Vries et al. (2017) explain that different analogies are used to conceptualise the enterprise, such as machines, biological systems, and psychic prisons. The conceptualisation of the enterprise has an influence on how an approach author demarcates design domains, while it also provides a descriptive representation of the enterprise.

Implications: Provide a description of the enterprise using analogies, together with the underlying theory for the particular enterprise contextualisation.

Prerequisites for applying to an ECDA: It is important to state the prerequisites for adopting the ECDA (Van der Meulen et al., 2017). An example of a prerequisite for an ECDA is that the ECDC must be functional and operational, as the ECDA is not best-suited to a start-up or new operation.

4.7.2 Principle B: Explicit phenomenon

Statement: A design approach should provide evidence for a phenomenon or class-of-problems – that is, similar kinds of problems.

Rationale: As noted by Van der Meulen (2017), if a phenomenon is not fully understood, it cannot be properly addressed and improved.

Implications: Produce sufficient evidence that an existing phenomenon or class-of-problem exists, but that it is inadequately addressed by theory or application.

4.7.3 Principle C: Explicit paradigm of creating value

Statement: A design approach should state a *paradigm of value creation* as a testable proposition for addressing an existing *phenomenon* or *class-of-problems*.

Rationale: Creating testable propositions for existing and new approaches creates a starting point for the expansion of the enterprise engineering knowledge base.

Implications: State the paradigm of value creation – i.e., if the approach is instantiated, it will achieve the intended value.

4.7.4 Principle D: Explicit means (ways) of demarcating and representing design scope

Statement: A design approach should clearly define and motivate the way to demarcate design scope (enterprise scope, design domains, and concerns/requirements) that is relevant to the approach.

Rationale: The demarcation of design scope for a design approach is contextual, and will depend on the intentions of the approach developer.

Implications: Define the way to demarcate design domains, as well as the concerns per design domain.

4.7.5 Principle E: Well-demarcated and well-defended design scope and using scope

Statement: A design approach should define and defend the intended design scope to achieve the intended value creation.

Rationale: The approach should have a clear demarcation of the scope to achieve the intended value creation, and relate to existing theory with a similar scope.

Implications: A clear distinction between inside-the-boundary complexities versus outside-the-boundary complexities, design domains, and areas of concern for the intended industry.

4.7.6 Principle F: Representations of design scope

Statement: A design approach should clearly define and motivate notation standards that are used to describe/represent the design scope adequately.

Rationale: Multiple language and notation standards already exist to represent different perspectives of design domains of the enterprise. Notation standards are based on the idea about the nature of the enterprise and its sub-systems. A deviation from known standards may be required as the particular enterprise context changes.

Implications: Define notations to describe design domains, and motivate any deviation from the standard.

4.7.7 Principle G: Approach form and function

Statement: A design approach should clearly define the constructs and features of the approach.

Rationale: Every approach has a definite set of constructs that describe the detail of the approach. De Vries et al. (2017) propose the use of the four EECM components as a meta-model to identify and define the constructs of an approach.

Implications: Define the overall structure and organisation of the approach, together with the mechanisms, practices, and roles.

4.7.8 Principle H: Justificatory knowledge

Statement: A design approach must provide explanatory knowledge that links the *paradigm of value creation* with its constructional components.

Rationale: Provides an explanation of why an artefact is constructed the way it is, and why it works, while providing pointers to researchers for kernel theories or future research.

Implications: Define kernel theories on which the approach is based.

4.7.9 Principle I: Approach mutability

Statement: A design approach should clearly state the possibilities for tailoring the approach within the pre-defined design scope.

Rationale: It is not always possible to develop or design multiple instances of an approach – in this instance, the ECDA. It is important for the approach developer to identify the possibilities for tailoring the approach, especially as enterprises are dynamic and ever-changing.

Implications: Define iterations or versions of the approach – i.e., constructs that could change.

4.7.10 Principle J: Principles of implementation (conditional)

Statement: A design approach may incorporate guidance for implementing the approach.

Rationale: This principle is conditional, and the approach developer needs to decide whether additional advice will add value – e.g., for how the approach will be used in a different sector from the intended one.

Implications: Define tailoring advice and advice for introduction into real-life settings.

4.7.11 Principle K: Expository instantiation (optional)

Statement: A design approach may incorporate an instantiation.

Rationale: This principle is optional; the realistic implementation of an approach can aid in identifying problems in the approach's design, and can also be a concrete demonstration of the value of the approach. Implementation results do not necessarily form part of the construction of the design approach.

The principles outlined above will be useful when approaching developers in guiding them during the development and construction of the new or adapted approach. Currently, the principles only provide guidelines for the construction of a new or adapted enterprise design approach, and it is believed that, through *action design research (ADR)*, further guidance on the evaluation of the design will be obtained (De Vries et al., 2017).

4.8 Method engineering applied to enterprise approach development

Method engineering and situational method engineering focus on formalising the use of methods for systems development (Henderson-Sellers & Ralyte, 2010, p. 424). Even though method engineering and situational method engineering focus on formalising methods for systems development, we believe that their concepts are also applicable to the development of an enterprise approach and, more specifically, of an ECDA. Formal techniques have been incorporated into situational method engineering – in particular, meta-modelling approaches at various scales – from full-method to single-fragment descriptions (Henderson-Sellers & Ralyte, 2010). Multiple dimensions of modelling exist; in particular, models can be stacked in terms of their abstraction level. Meta-models provide a way to define the rules at a higher level of abstraction; and this, in essence, acts as an introduction to the abstraction levels adopted in this particular study.

EECM as a meta-model

The general conceptual modelling framework provided by Dietz and Mulder (2020) assists in explaining how the ECDA was constructed and elaborated on in a paper by De Boer and De Vries (2021).

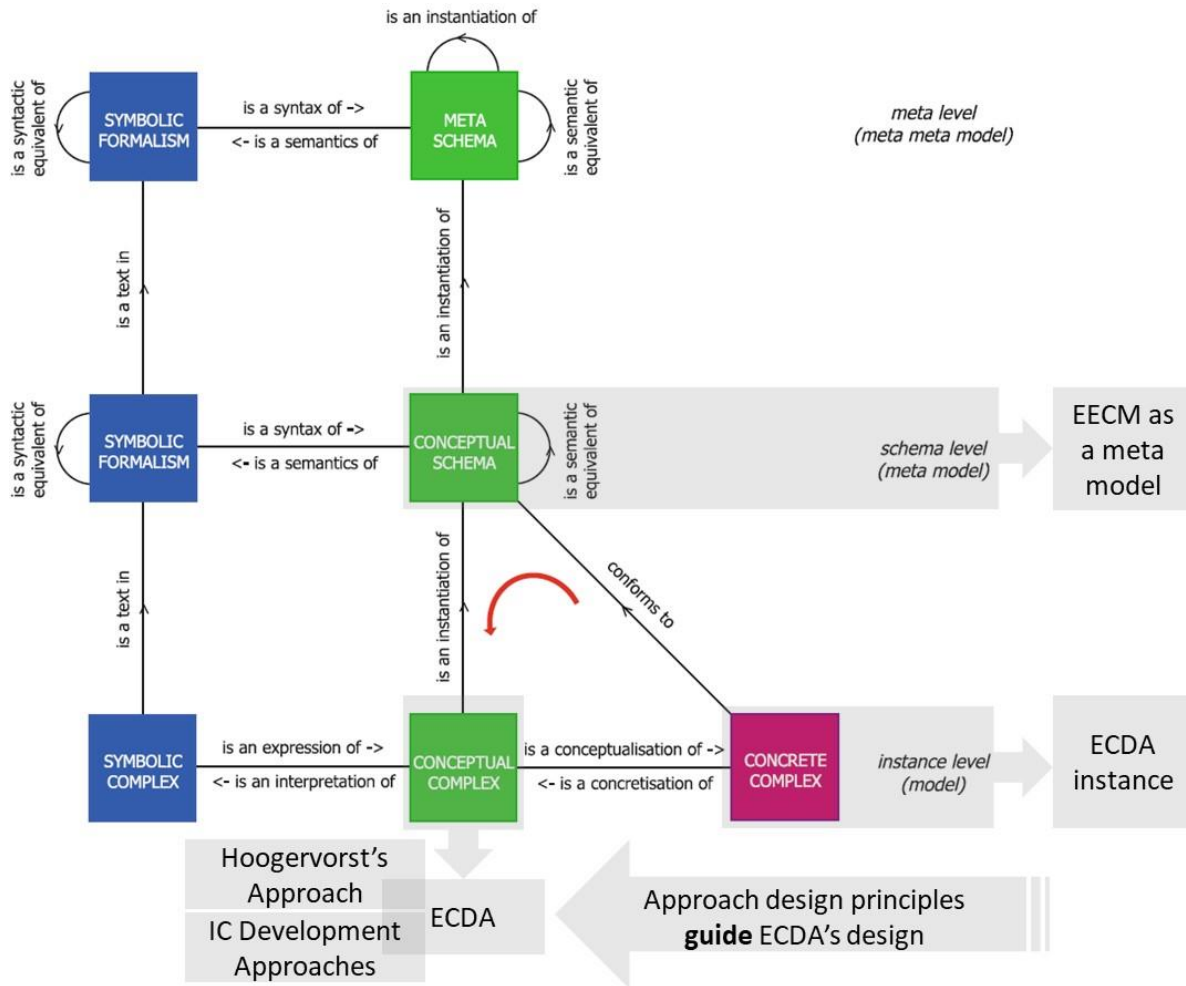


Figure 26: The general conceptual modelling framework of Dietz and Mulder (2020), applied to ECDA

With reference to Figure 26, we believe that the enterprise evolution contextualisation model (EECM) is a meta-model for enterprise design approaches, since EECM was developed inductively and elaborated on in section 4.6.3. Both Hoogervorst's approach, discussed in section 4.6.2, and the IC development approaches, introduced in section 4.3, are instantiations of EECM.

4.9 Chapter summary

This chapter has addressed the problem formulation of the ADR methodology, and more specifically has addressed RQ2, RQ3, and RQ4 as marked in dark grey rows in Table 20.

In response to RQ1, the main research question, and in addressing which enterprise capacity development approach would improve the quality of services, a plethora of *solutions* and *approaches* does exist; but none of them specifically addresses enterprise capacity development (section 4.5 and Figure 16). The identified *approaches* were listed as: (1) the social systems model (Bloom, 1991), (2) the final social systems model (Nupponen, 2005),

(3) the business performance model (Bergin-Seers & Breen, 2002), (4) the five-dimensional framework (Grindle & Hilderbrand, 1995), and (5) the systematic way to assess IC (Imbaruddin, 2003), together with (6) Scheepers (2015), who suggests IC elements. Addressing enterprise capacity development holistically will remain a challenge in its current fragmented form.

In order to address and satisfy RQ1, knowledge areas with no application in the ECD environment (section 4.6) were researched. As an example, enterprise engineering as a new scientific and holistic approach to enterprise design was positioned and substantiated, and is positioned to inform and guide the response to RQ1. Further to enterprise engineering, the descriptive nature of EECM, combined with the prescriptive guidance of ADPs, provided the necessary design guidance in developing an ECDA that would focus on a key paradigm of value creation – i.e., to improve the quality of services in the ECD arena.

In response to RQ2, and as discussed in section 4.1, IC was defined as the administrative and managerial *functions* that cover elements ranging from leadership to human resources, infrastructure such as physical facilities, programme and process/procedure management, and forming inter-institutional linkages.

In response to RQ3 and RQ4, the fragmented manner in which solutions and mechanisms and practices aim to address IC was reflected in Figure 16. Each of the listed contributions (approaches) influenced the evolution of the enterprise capacity development approach (ECDA), and were discussed further and demonstrated in Chapter 6. It was noted that there is little evidence of *actual implementation*, making the comparable effect on IC extremely difficult, but which this study aims to address.

Extracting knowledge from the existing literature to guide the design of an ECDA, and in response to RQ5, the prescriptive guidance of the ADPs (section 4.7), together with method engineering, was discussed. An ECDA as an instantiation of EECM, and EECM as the meta-model, provided a common frame of reference for the development of an ECDA, enriched by Hoogervorst's approach and by existing IC development approaches. The actual development of an ECDA to address RQ5 is presented in Chapter 5.

This chapter has validated institutional capacity as having a direct impact on the quality of the services delivered in ECDCs, and that developing IC in ECDCs remains a challenge. Knowledge areas from outside of the ECD arena, such as enterprise engineering, were researched to guide the development and evolution of the ECDA.

Table 20: Chapter 4 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles				x					
			4.8) Method Engineering applied to enterprise approach development				x					
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
	Intervene	Chapter 6	Demonstration of ECDA					x				
	Evaluate	Chapter 7	Evaluation results						x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning						x			
Stage 4	Formalisation of learning	Entire dissertation			x							

Chapter 5: Construction of the ECDA

Building on Hoogervorst's approach, as well as on existing IC development approaches, this chapter presents the function (in section 5.1) and form (in section 5.2) of the ECDA, following guidance from the approach design principles discussed in section 4.7. Approach tailoring is discussed in section 5.3, while interview feedback from both an independent approach developer and the ECDA's main user are presented in section 5.4. Section 5.5 validates the ECDA's comprehensiveness, followed by the summary in section 5.6.

5.1 ECDA introduction (function)

The ECDA adopts the morphogenic enterprise paradigm from Hoogervorst (2018b) to address the three essential concepts that fuel and determine enterprise developments: human agency (especially employee agency), reflexivity, and reciprocity. The ECDA also acknowledges that the ECDC is a social system, in accordance with Bloom (1991).

Objectives and intended value

According to EECM (De Vries et al., 2017), an enterprise design approach has to answer three questions. The ECDA answers the three questions as follows:

Why should the ECDC use the ECDA to evolve? The ECDA should provide constructional guidance for the evolution of South African ECDCs, improving the *administrative and management function* associated with the *enterprise functions* to increase the quality of service delivery. The ECDA is comprehensive enough for the early childhood development context, since it synthesises knowledge from existing IC approaches and from an existing EE approach – i.e., that of Hoogervorst.

What should the ECDC evolve? The ECDA focuses on developing the *inside-the-boundary* complexities of an ECDC (as the provisioning system) for the environment (as the using system). Four main design domains are included: (1) organisation; (2) information, communication, and technology (ICT); (3) infrastructure (i.e., facilities); and (4) human skills and know-how. The ECDA also acknowledges the existence of *other facets* that evolve at an enterprise, but that cannot be designed via a system development process.

How should the ECDC evolve? The ECDC will evolve by applying the ECDA, implementing a key mechanism – namely, a *heuristic*.

Scope

Hoogervorst (2018b) calls the system to be designed the *provisioning system*. The *provisioning system* has a functional relationship with its environment, also called the *using*

system. Using the *generic system development process* (GSDP), the ECDA facilitates the constructional design of the provisioning system, as indicated by Figure 27.

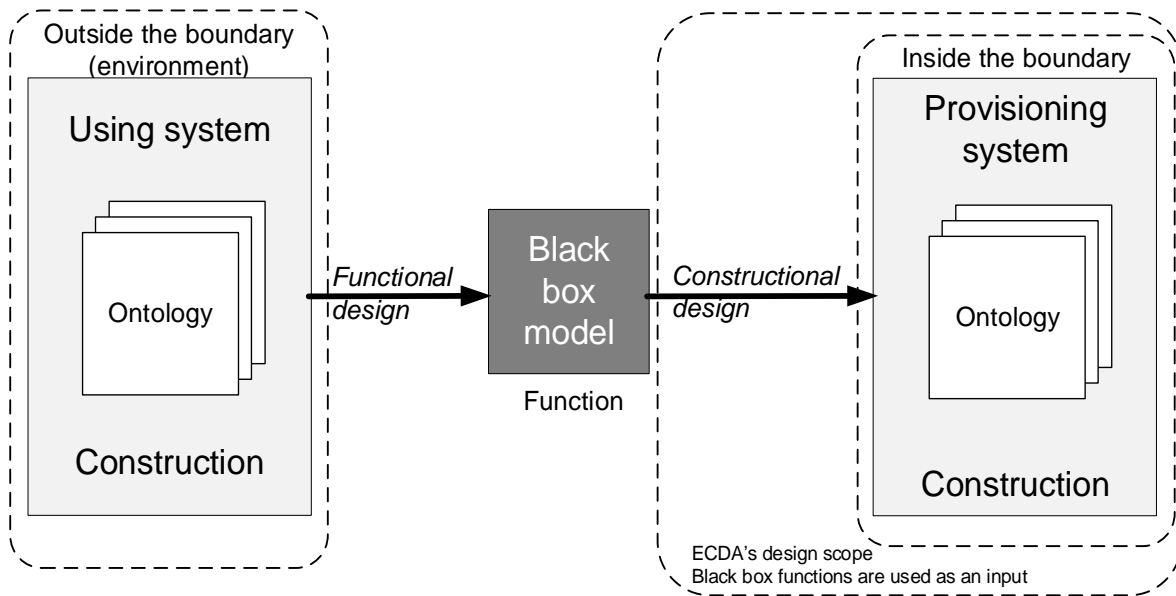


Figure 27: The ECDA design scope based on Hoogervorst (2018b)

In order to define the functional relationship properly, the wants and needs (*functions*) of the *using system* must be precisely known. In addition, the construction (white-box model) of the using system (i.e., the environment) must be known. Hoogervorst (2018b) defines *function* as a relationship (R) and not as a system property, whereas construction is a system property.

Using Hoogervorst (2018b), we provide two examples in the ECDC context:

F (function): Using system (need, purpose) R provisioning system (properties)

F (child caregiving): Child (need, purpose) R ECDC (properties)

F (child caregiving): Parent (need, purpose) R ECDC (properties)

Child caregiving as the *function* in the two examples refers to the operating function of child caregiving, as well as its management, which should be enabled through various design domains in the ECDC, delivering on various stakeholders' needs and purposes.

Role players and users

The ECDA will be useful to both enterprise engineers and design teams. ECDC administrators will find the ECDA useful to develop IC in order to improve the quality of the services delivered. The main user of the ECDA will be the early childhood development director/administrator – typically the role accountable for the quality of the ECDC operation.

Prerequisites for using the ECDA

The following are identified as prerequisites for using the ECDA: (1) the existence of a problem/deficiency related to the *administration and management* of one or more functions at the ECDC; (2) the need and desire for change is clearly established; (3) buy-in from the director; (4) the ECDC functions have already been determined from the environmental (using system) context; and (5) the director is aligned with the ECDA's concept of the enterprise – i.e., the morphogenic paradigm defined by Hoogervorst (2018b) and the social system paradigm presented by Bloom (1991).

5.2 ECDA mechanisms and practices (form)

The ECDA adopts a heuristic, as indicated in Figure 28, using multiple enterprise functions ($f_1, f_2 \dots f_n$) as the main input to perform four main activities via multiple cycles.

A function is defined as the utility or capability that must be addressed via enterprise design. Conversely, the enterprise and its design domains or constructs must operationalise one or more functions (De Vries, 2020). The function should be specified using adjective(s) + noun, also associating the function with the entire enterprise or with a particular design domain or construct, indicating how an input should be transformed into an output (De Vries, 2020).

Next, we present the heuristic's four activities in more detail. We used letters of the alphabet as a quick reference to the activities, but the alphabetic sequence is not an indication of the execution sequence. Once the enterprise functions have been identified, the heuristic may start with either A or B. As indicated in Figure 28, representations of constructional design exist for current designs as well as for future designs. Activities that are associated with future design are grey-shaded.

It is also noted that different role players or skill sets may be required to support the design domain(s)'s construction. As an example, a system analyst will be required to assist with system specifications when constructing the ICT domain, while a civil engineer might be needed in support of buildings as part of the infrastructure domain. Similarly, a human resources practitioner might be required when reviewing the people capabilities and competencies in support of the human skills and know-how domain.

A: Execute construction design cycles for selected design domains

Design domains are those aspects of an enterprise that approach authors deem important or necessary for design (De Vries et al., 2017). De Vries et al. (2017) suggest that design domains are demarcated in a consistent way, using the generic system development process.

The ECDA adopts the design domains as described by De Vries et al. (2017) as a means to represent an ECDC's constructional design.

As discussed in De Vries et al. (2017), design domains cannot all be classified as systems. Using the definition provided by Dietz and Mulder (2020), a homogeneous system consists of elements that are of a similar kind. When human beings are considered to be social elements, then an organisation system's construction can be defined by its kernel elements, boundary elements, environmental elements, and structural bonds between elements (Dietz & Mulder, 2020). Depending on the analyst's purposeful demarcation of a system boundary (Giachetti, 2010), an organisation system includes human beings as kernel elements (within the boundary), boundary elements (on the boundary), and environmental elements (outside the boundary). Humans who form part of an organisation's construction have structural bonds, since they collaborate to produce new production facts. Likewise, other systems also exist in the enterprise, but their elements are of a different kind. The ICT is constructed from hardware and software elements, whereas infrastructure (i.e., facilities) is constructed from building-construction elements. The enterprise thus consists of multiple sub-systems, each of which needs to be designed using the *generic system development process* (GSDP). The GSDP that was also illustrated in Figure 27 starts with the construction of a *using system* to derive black-box functions for a *provisioning system*.

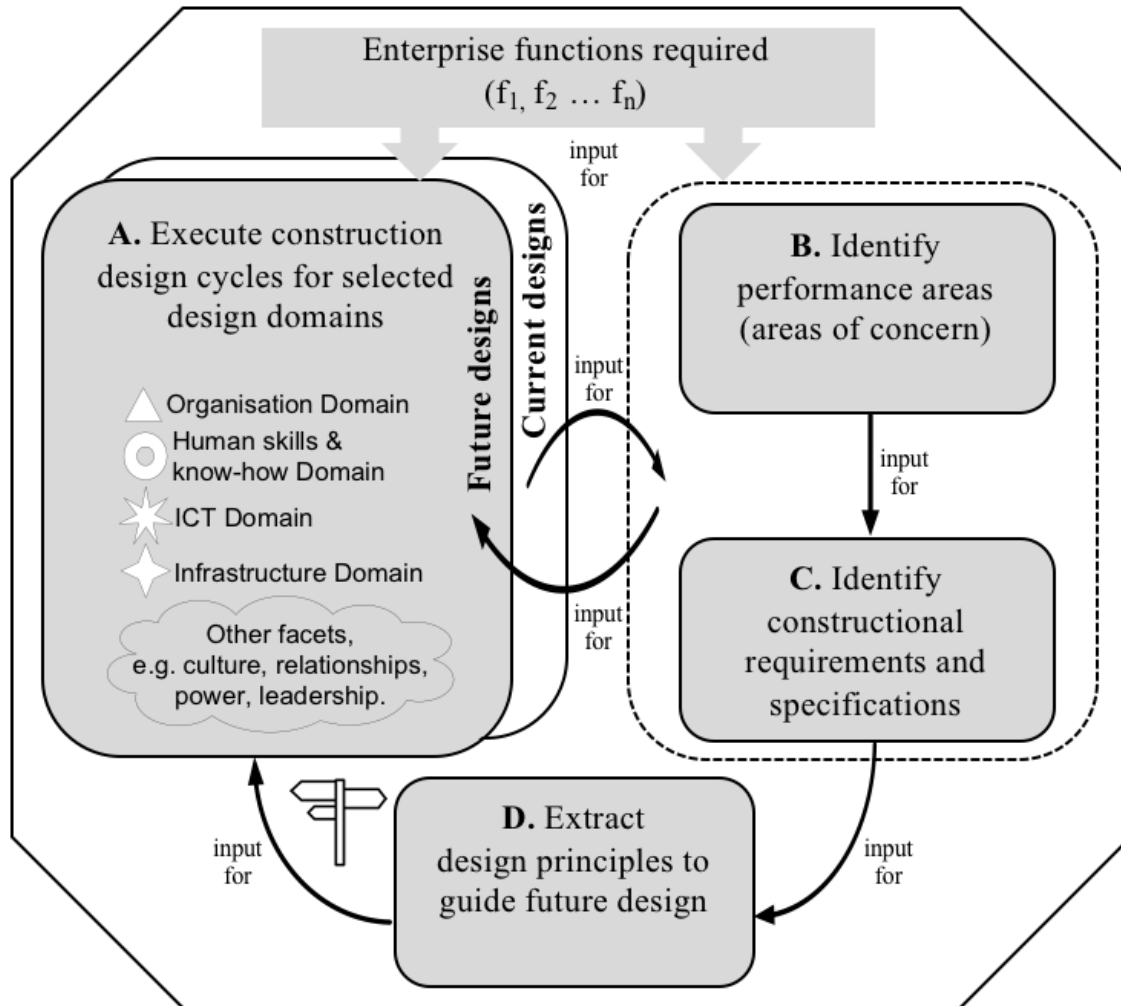


Figure 28: ECDA's heuristic in the GSDP based on Hoogervorst (2018b)

Figure 29 provides a simplified view (De Vries, 2017) to illustrate how the GSDP was used, starting from the *using system* (i.e., *the environmental context*) to design the provisioning system (i.e., *the enterprise*). The GSDP is also used to illustrate how multiple enterprise sub-systems are developed concurrently. Each *support* arrow in Figure 29 represents an iterative GSDP that exists between a using system and a provisioning system.

Figure 29 illustrates two of the *support* arrows, highlighted in black, with the following interpretation: (1) the *enterprise* (as provisioning system) supports *the environmental context* (as using system); and (2) the *ICT sub-system* (as provisioning system) supports the *organisation sub-system* (as using system). To explain the last-mentioned 'supports' arrow in terms of the GSDP, illustrated right next to the 'supports' arrow in Figure 29, the construction of the *organisation sub-system* is used as a starting point to perform the *functional design* of the *ICT sub-system*. Then the *functions* of the *ICT sub-system* are used as input to perform the *constructional design* of the *ICT sub-system*.

As indicated in De Vries (2017), the notion of *system* alone is not sufficient to describe the enterprise, its construction, and its behavioural complexities. An enterprise consists of many *facets*, such as human skills and know-how, culture, relationships, power, and leadership (Hoogervorst, 2018b). Figure 29 represents *facets* with cloud constructs. We believe that some of these facets may also be classified as design domains when it is possible to follow the GSDP to design a future version of the *facet*. Thus we believe that *human skills and know-how* need to support the *organisation sub-system*, and should therefore be designable. Yet we acknowledge that the GSDP is less useful when other facets, such as culture and power, need to be ‘designed’.

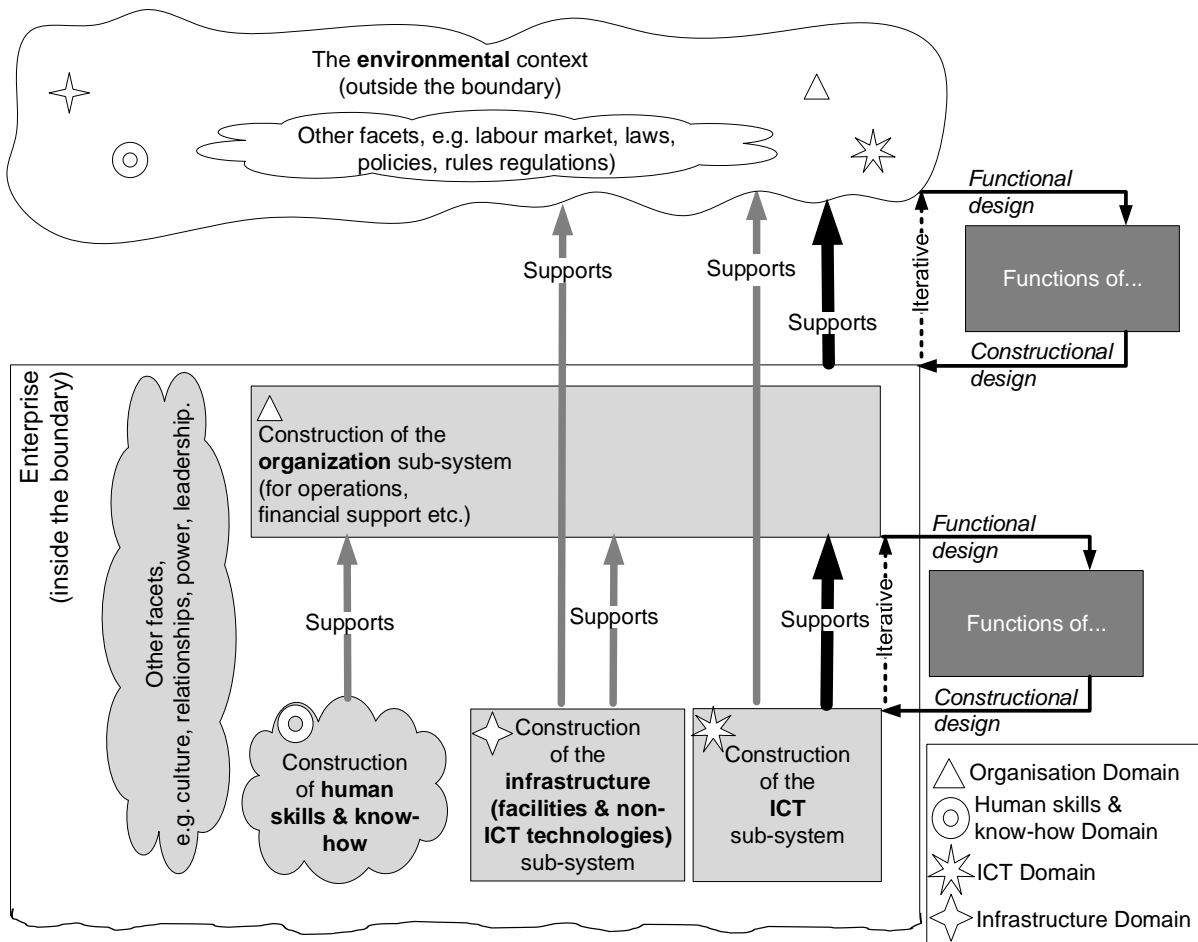


Figure 29: The main EE domains, based on De Vries (2017)

Figure 29 includes several grey-shaded constructs to indicate the envisaged design scope for the ECDA, such as organisation, ICT, infrastructure, human skills and know-how, and other facets. Next, we provide the ECDA’s interpretation and the way to represent the four design domains.

Organisation domain

Dietz and Mulder (2020) define the *organisation* of an enterprise as a *social system* – i.e., actor roles, implemented by human beings, form relationships through their collaboration to produce production facts. In this context, Dietz and Mulder (2020) describe the design and engineering methodology for organisations (DEMO) – that it produces the essential model of an enterprise, or, in general, of a scope of interest (which may cover part of one enterprise or of a network of enterprises). DEMO comprises a way of thinking (WoT), a way of modelling (WoM), and a way of working (WoW). The ECDA adopts four aspect models (Dietz & Mulder, 2020) to represent the essence of enterprise operation in a coherent, comprehensive, consistent, and concise way. The four aspect models are shown in Table 21.

Table 21: The DEMO aspect models (Dietz & Mulder, 2020)

Aspect model	Description
The cooperation model (CM)	The CM of the organisation is a model of its <i>construction</i> – that is, of the transactor roles (the elements) and the coordination structures (the influencing relationships) between them.
The action model (AM)	The AM of an organisation is a model of its <i>operation</i> – that is, the manifestation of the construction over the course of time.
The process model (PM)	The PM of an organisation is a model of the (business) <i>processes</i> that take place as the effect of acts by actors.
The fact model (FM)	The FM of an organisation is a model of the <i>products</i> of the organisation.

The relationships between the four models are depicted in Figure 30, illustrated by a triangular shape that is divided into the four aspect models. The CM and AM cover both coordination and production, while PM covers only coordination and FM only production. The PM connects the CM and AM as far as the coordination between actors is concerned, while the FM connects the CM and AM as far as production is concerned (Dietz & Mulder, 2020).

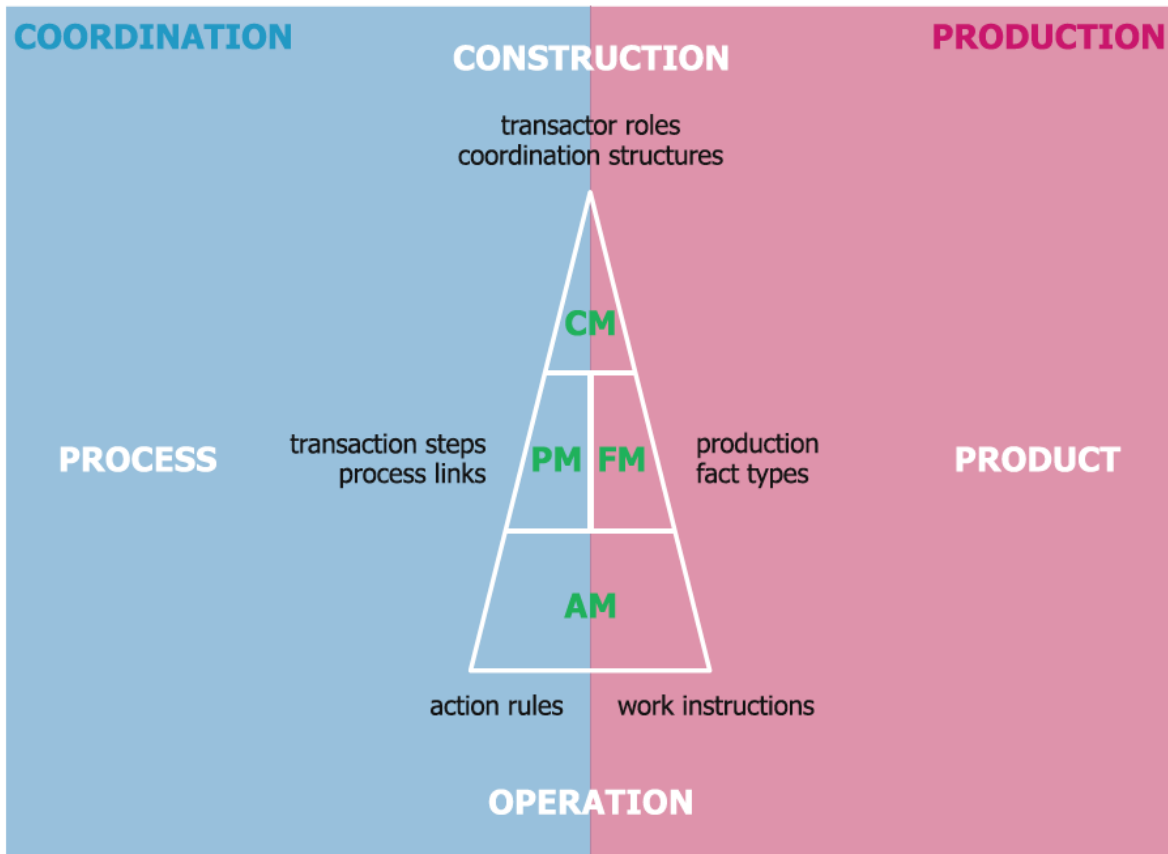


Figure 30: The integrated DEMO aspect models (Dietz & Mulder, 2020, p. 267)

Since the ECDA will only represent the organisation domain, using the cooperation model, we explain the basic constructs and underlying theory of the CM.

The CM of a scope of interest is the ontological model of its construction, and thus also the identified transactor roles and the coordination structures among them (Dietz & Mulder, 2020). Dietz and Mulder (2020) state that actor roles in the focus organisation are called ‘internal’ – i.e., the kinds of transaction of which both the initiator and the executor are internal actor roles are called ‘internal’. In case one of the actor roles is not internal, the transaction kinds are called ‘border transaction kinds’, and the non-internal actor role is called ‘environmental’. Three coordination structures among the transactor roles are identified as (1) the interaction structure, (2) the interimpediment structure, and (3) the interstriction structure (Dietz & Mulder, 2020).

The interaction structure. This structure consists of initiator links between the transactor roles and the transaction kinds. (Note that the executor links are implicitly specified by the notion of transactor role.) Through this structure, trees of transactor roles emerge (Dietz & Mulder, 2020, p. 269).

The interimpediment structure. This structure consists of wait links from actor roles to transaction kinds. A wait link indicates that actors in the connected actor role have to wait

for a specific progress in transactions of the connected transaction kind before they can proceed with their work (on their own transactions). In other words, the initiators or executors of these transactions impede actors in the connected actor role for as long as the wait condition (i.e., a particular progress) holds. A wait link is expressed by a dashed arrow from a transaction kind to the impeded actor role (Dietz & Mulder, 2020, p. 269).

The interstriction structure. This structure consists of access links from actor roles to transaction kinds, which are now conceived of as transaction banks. An access link indicates that actors in the connected actor role have reading access to the contents of the transaction bank. Access links are represented by dashed lines between actor roles and transaction kinds (Dietz & Mulder, 2020, p. 269).

The CM of an organisation is expressed in a coordination structure diagram (CSD), supplemented by a transactor product table (TPT) and a bank contents table (BCT), as depicted in Figure 31. Dietz and Mulder (2020, p. 269) state that “the TPT is a list of the identified internal and border transaction kinds, their product kinds and their executor roles”, while the “BCT of an organisation is a list of the P-fact types, both independent and dependent, whose instances are created or used by the initiators and executors in transactions of the identified transaction kinds”.

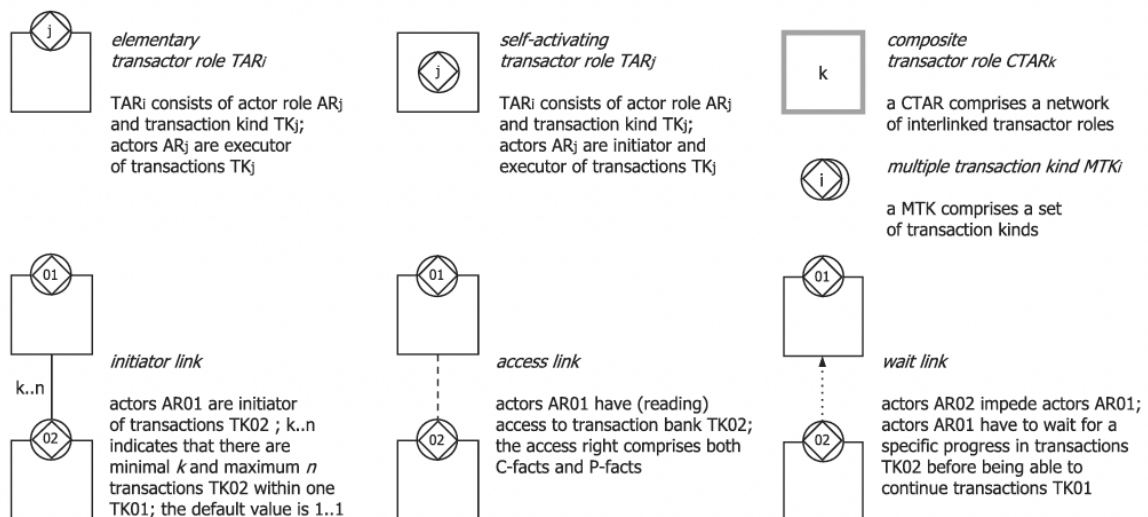


Figure 31: Legend of the coordination structure diagram (Dietz & Mulder, 2020, p. 270)

As previously outlined, a transaction is carried out by actors in two roles: the initiator and the executor. The executor brings about the product of the transaction to the benefit of the initiator (Dietz & Mulder, 2020). Because of the inherent connection between an actor role and the transaction kind, of which the filler are the executor, the combination of the two is called the ‘transactor role’. The time attributes of the coordination facts are the *creation time*

and the *event time*, defined as the time at which the fact comes into existence (Dietz & Mulder, 2020).

Dietz and Mulder (2020) define the general ontology specification language (GOSL) as a first-order logic language for specifying the state space and the transition space of a world, therefore GOSL is a symbolic formalism for expressing conceptual schemas and meta schemas. It is noted that the *event type* is typically associated with *event time*, and should typically be included and reflected in the TPT for completeness. This observation is marked with a red circle in Figure 32.

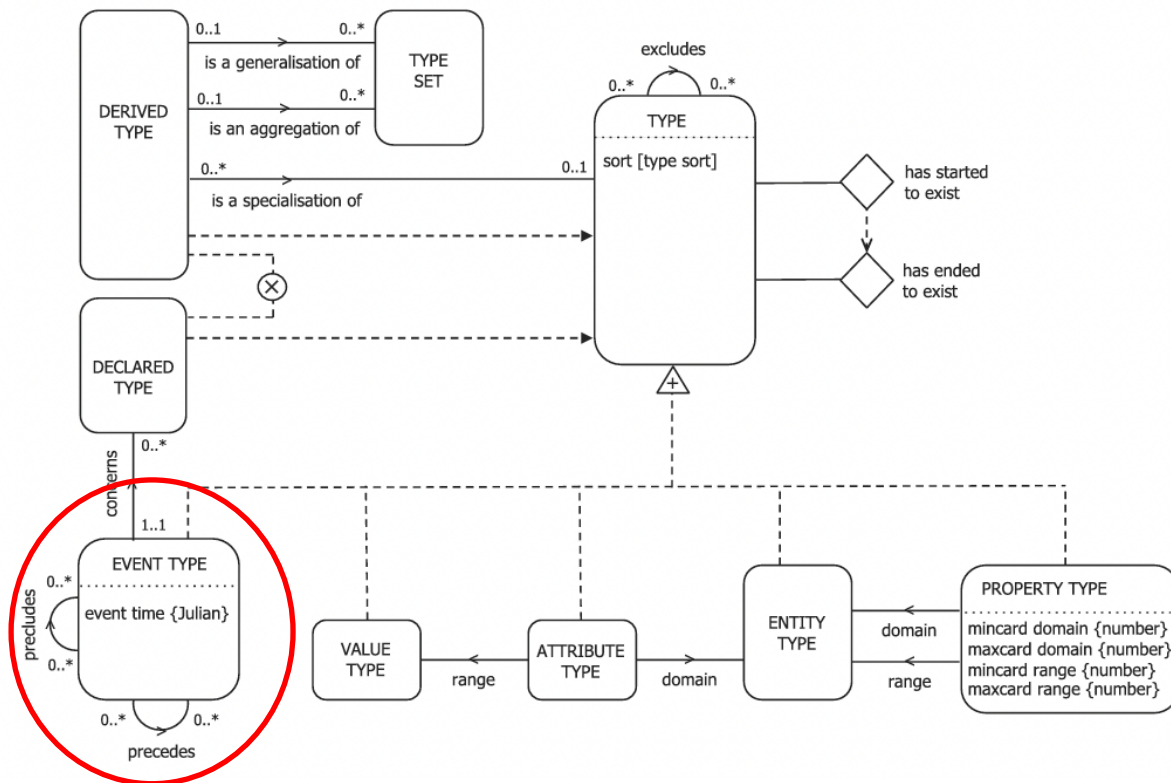


Figure 32: The GOSL meta-schema (Dietz & Mulder, 2020, p. 89)

With reference to the case library exercise, Dietz and Mulder (2020) specify multiple variables for a particular or unique instance of a production kind of event type – namely, annual fee payment (see Figure 33).

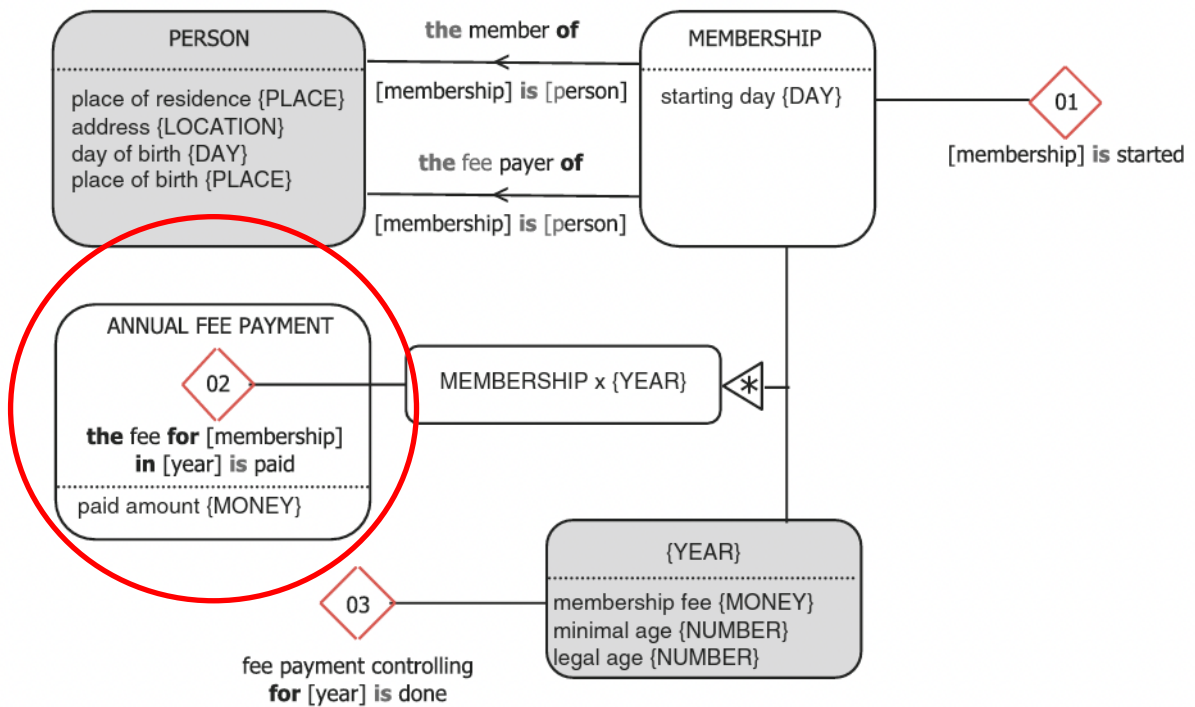


Figure 33: Illustration of an object fact diagram (Dietz & Mulder, 2020, p. 354)

ICT domain

Software applications, databases, and ICT hardware are included (Dietz & Mulder, 2020). ICT can be designed in the context of different using systems, such as the construction of the organisation or of the environment. Hoogervorst (2018b) describes IT design aspects as the use of IT systems and their infrastructural characteristics.

The entity relationship diagram (ERD) is the most widely used technique for data modelling. It starts with the designer capturing entities, their attributes, and the binary relationships between the entities (Hingorani, Gittens & Edwards, 2017). The ERD is also one of the most popular approaches for conceptual modelling. ERDs have a layered approach to organising information in accordance with entities, attributes, and relationships, which can only be structured in certain ways (Amran, Mohamed & Bahry, 2018). It is not the goal of this study to explain the detail of using ERDs, but rather to note that it is a useful tool when communicating the concept design of the database for the ICT design domain. Similarly, Van der Meulen (2017) emphasises that the ERD may not be the only model needed when designing or informing ICT. The ECDA is not prescriptive in suggesting models to represent ICT constructs.

Infrastructure domain

Facilities and other non-ICT technologies that support actor roles and their production acts are included in this design domain. Enterprises in different industries may require different representations of the infrastructure, based on the type of production acts that should be supported (De Vries, 2017). The ECDA is not prescriptive in suggesting models to represent infrastructure constructs.

Human skills and know-how domain

‘Human skills and know-how’ relates to the human abilities and skills that are required when executing production acts and coordination acts (De Vries, 2017). Based on the identified functions, the enterprise design team needs to devise specifications for the required contextual knowledge, experience, skills, and working styles (e.g., perseverance, stress resistance, and self-control) to perform coordination acts and production acts. The three-level capacity development approach of Imbaruddin (2003) identifies the individual (level 3) as the skills, experience, and knowledge that allow each person to perform. Some of these are acquired formally through education and training, whereas others come informally through doing and observing. Bloom (1991) refers to the people component as a psychosocial subsystem, meaning the interrelation of social factors and individual thought and behaviour. The description of this component includes elements such as the values, attitudes, motivation, morale, and personal behaviour of each individual.

B: Identify performance areas (areas of concern)

Areas of concern are the generic characteristics that the black-box or white-box enterprise properties must manifest (Hoogervorst, 2018b). De Vries (2020) states that, because of the negative connotations of the word ‘concerns’, ‘performance areas’ should be used instead. In this context, a performance area is a generic characteristic of an enterprise that must be addressed via enterprise design. A design domain must operationalise one or more performance areas. The performance area must be stated in terms of a variable that can increase (improve) or decrease (deteriorate) (De Vries, 2020). In this step, in consultation with the ECDA’s main user, performance areas or concerns, such as internal efficiency, fiscal viability, or the quality of caregiving, are documented.

C: Identify constructional requirements and specifications

The constructional requirements express certain wants and needs that the system construction must fulfil in view of the intended black-box properties and the performance areas (Hoogervorst, 2018b).

As indicated by De Vries (2020), it is difficult to distinguish between constructional requirements and design principles (used in the next activity – activity D). Both provide guidance on how the design of design domains or their embedded constructs must be developed. Usually a constructional requirement is defined for a narrow design scope – i.e., designing one particular construct, such as a software application. If a constructional requirement is generic in nature and is applicable to a larger design scope, such as the entire ICT domain, the constructional requirement is transformed into a design principle, as indicated in activity D.

Constructional requirements will be defined by the ECDA’s main user. The requirements have to be associated with the performance areas that were identified and effected through design cycles when (re-)designing the design domains.

Constructional requirements need to be stated in a prescriptive format, using words/phrases such as ‘should’, ‘must’, or ‘may not’. The phrase ‘must be’ is useful to indicate that the prescription needs to be verifiable (De Vries, 2020).

D: Extract design principles

White-box system properties result from the system’s construction. Guidance for the constructional design is informed by the constructional architecture, also called the *design principles* (Hoogervorst, 2018b).

Existing constructional requirements, identified in activity C, will be used during activity D to identify the requirements that are generic and useful to guide the future development of applicable design domains. We believe that general design principles may also be extracted from the IC literature.

5.3 Approach tailoring

As noted in section 4.7.9, the ECDA should clearly state the possibilities for tailoring the approach in the pre-defined design scope. Such possibilities have been considered, together with possibilities for extending the ECDA. The three levers that require ECDA tailoring are summarised in Table 22.

Table 22: ECDA tailoring

<p>1. The ECDA may be applied to a different sector, industry, or operational context from that of an ECDC.</p>
<p>The change of a sector, industry, or operational context will have an impact on the construction of the using system. Given that the construction of the using system is the starting point for the design, this will result in the ECDA design cycle being repeated for this particular <i>instance</i>.</p>
<p>2. The essence of the enterprise or belief might drastically change, requiring a restatement of the paradigm of value creation, impacting the enterprise design, requirements, and possibly the architecture.</p>
<p>This lever could impact both the using and the provisional system context. Keep in mind that, in (1) above, the using system’s impact was discussed; the focus is now placed on the provisioning system. If the enterprise belief of value creation changes, it is anticipated that the areas of concern and the associated requirements will change. This will lead to the (re)design or manifestation of new design domains that impact system properties and their realisation. In essence, the ECDA heuristic needs to be repeated, aligned with this new belief.</p>
<p>3. The ECDA may need to include the functional system (black-box) perspective in its scope, meaning that the business domain functions will be considered for (re)design.</p>
<p>The ECDA is currently not aiming to (re)design the business domain – i.e., to open up new markets, customers, channels, or products and services. If the focus shifted to include this aspect, the design of the business domain and its functional relationship with the environment would need to be incorporated into the ECDA’s scope. The white-box perspective of the ECDA would now change to bring the black-box model properties to the fore.</p>

5.4 Interview feedback and construction refinement

An interview with the ECDA main user (MU) and the inputs and feedback from an independent approach developer (IAD) were reviewed, discussed, and incorporated, aligned with the ADPs, as described in section 4.7. The inputs from the MU and the IAD at this stage of the ECDA construction provided much-needed information to refine the approach further. The detailed transcripts and inputs from both sources are given in section 11.12, and extracts are summarised in Table 23 below.

Table 23: ECDA interview feedback

<p>Principle A: Explicit concept of the enterprise</p> <p><i>MU:</i> The ECDC is a living organisation consisting of staff, children, and parents. This means that there is always change and that it is a dynamic organisation. Hoogervorst’s description of enterprises as organised complexities – i.e., “they are highly complex, as well as highly organised” – is accepted by the MU. The MU states that an ECDC is a very complex business, and because people are involved, it cannot be too mechanistic. There are differences in people’s principles or even their definition of quality or outputs, depending on the task at hand, and this makes the ECDC very complex.</p> <p><i>IAD:</i> The conceptualisation of the ECDC is clear and, the IAD understands the perception of the enterprise and that it aligns with Hoogervorst’s point of view. The IAD suggests that the enterprise be strengthened from a morphogenic perspective and approach, such as Holacracy. The conceptualisation of the enterprise has an influence on how an approach author demarcates the design domains, but the IAD is struggling to understand <i>how</i> this has helped with the demarcation of the current design domains.</p> <p>The IAD views an enterprise as an organism in a larger ecosystem, and any organism must perform a certain action in its environment to remain sustainable in that environment, even if this action is to be a parasite. If the function that the organism performs is not necessary in the environment, or if there is another organism that performs this function better or more efficiently, then it will not survive (this is why start-ups fail). Thus an ECDC performs a function in the social justice space so that large enterprises/individuals/government do not have to perform this action; and it gives money in the form of grants or charity, thus justifying its position in the ecosystem.</p> <p><i>Design implications:</i> The ECDC is perceived as a social system. It is also perceived as a living organism as defined in a morphogenic paradigm (see section 4.6.2). The ECDA does not aim to be prescriptive, but inputs from the respondents suggest other tools or approaches to strengthen the enterprise as a morphogenic system. The ECDA does not demarcate new domains, but rather re-uses the consistent set of main domains presented</p>

by De Vries (2017).

Principle B: Explicit phenomenon

MU: No responses recorded for this principle.

IAD: The IAD felt the ECDA was hovering between creating (1) an *ECDC design tool* and (2) an *enterprise design tool* demonstrated at an ECDC. Based on the explicit phenomenon so described, the ECDA is not limited to ECDCs, as most non-profits and small businesses struggle with these problems for various reasons. The IAD suggested changing the title to “An enterprise capacity development approach demonstrated at an early childhood development centre”, and to use this to find the literature that indicates common themes of problems.

Design implications: First, an explicit phenomenon in ECD is validated by Atmore et al. (2012), who state that various challenges exist in the early childhood sector, among which are IC being identified as a class-of-problems (refer to section 4.5). Second, the title of this dissertation was changed following the IAD’s suggestion, given that the ECDA is an enterprise design approach, to “An approach to develop enterprise capacity at an early childhood development centre”.

Principle C: Explicit paradigm of value creation

MU: The ECDA will impact children, parents, and the community. More effective staff will result in more time being spent on caring for children and their development, while parents will see how much attention is given to their children, which will be visible in how they develop over time. The ECDC will establish a reputation for delivering quality services, and so will have a positive effect on the community and on broader society, which will know that there is a quality centre where children are cared for and looked after.

When developing the ECDA, factors need to be considered to ensure that value creation is realised. The MU suggested that the factors to be considered included *how many staff* the ECDC has, the *sizes* of classes, and the *environmental context* of the community it serves. For example, is the ECDC located in a low income area, or in a very wealthy community with access to resources? Another aspect is how the implementation will be approached while normal work still needs to be done. Another question is about when the ECDA will be implemented: after or during school? Will it use one class and stagger the implementation? Or do you upset everyone or the whole school? These are the main factors to consider.

IAD: The IAD’s understanding is that the ECDA aims to provide something to the people in an ECDC to help them get clarity on what they need to do in order to add IC into their enterprise, by guiding them through the process of gathering functional requirements and turning them into constructional designs that they can implement.

According to the IAD, the factor to consider when implementing the ECDA is how to deal effectively with complexity: if one expects the ECDC’s administrators to go through the process on their own without guidance from a consultant or someone in a similar role, the process needs to be intelligible to someone who has not studied the field of EE. This can be done by providing a *user guide* or *training* or similar support, depending on the complexity or depth of the process.

Design implications: Define the type of ECDC in terms of size, complexity, and market (typical black-box model), followed by an implementation approach. In order to deal with complexity, a user guide or training needs to be incorporated. The training aspect will be addressed through a demonstration (discussed in Chapter 6). The development of a training manual can be explored for further development, but is outside of the scope of this study.

Design action: *Paradigm of value creation needs to be reassessed for every new instance of implementation – e.g., if the instance of implementation change from an ECDC in an affluent environment to one in a resource-constrained environment. The ECDA, through a heuristic, enables ECD directors to transition effectively from functional requirements to constructional design in order to develop IC.*

Principle D: Explicit means (ways) of demarcating and representing design scope

MU: The admin of the school, meaning its daily tasks and legal (regulatory) things that need to be done such as attendance registers, medicine files, and the management of the school behind the scenes, must form part of the scope. The MU confirmed that the organisational domain as described in section 4.6.3 is adequate and complete.

When considering and discussing the areas of concern or performance areas (outlined in section 4.5), the MU mentions Bloom’s to be comprehensive, more complete, and broader. The MU notes that the norms and values of the ECDC, employee involvement, teamwork, and the cleanliness of the ECDC should receive more attention. Knowledge sharing, as well as the processes that needs to be at a specific standard and quality, is also a critical area of concern. In general, more focus must be placed on working with and managing the employees to make the centre more manageable.

The MU wishes to add emotional health under the product classification and management effectiveness to be specific areas of concern. Beyond this, Bloom’s areas of concern are deemed appropriate to measure the quality of ECDCs.

IAD: Clarity is required about whether an approach is developed for a generic enterprise or for an ECDC. If it is specifically for an ECDC, then the organisation design domain does not need to be part of the approach, as the DEMO construction model for multiple ECDCs will end up being an (at least near-) identical model. The implementation of the organisation design domain will differ according to the available technology, the scale

of the operation, etc. If the latter is envisaged, effort might be better spent creating a good piece of ECDC software and implementing that to help ECDCs with IC.

On the other hand, if an approach for multiple different types of enterprises in this ecosystem is developed, one definitely needs to start with the environment for functional requirements, and use that to determine the functional and constructional needs in the enterprise for the other design domains. If the latter holds true, the IAD agrees that the design domains outlined in section 4.7.4 provide a comprehensive approach.

Design implications: The ECDA aims to be generic enough to be applied to various enterprises (*multiple instances*), but will only be tested at a single ECDC instance in this study. If the business context changes (e.g., additional services, such as baby-care training, are now offered to parents at the ECDC), new DEMO aspect models need to be created; and therefore the aim is not to create a comprehensive set of aspect models that will cover all ECDC instances. It is confirmed that Bloom's areas of concern, barring the addition of emotional health and management practices, inform the *areas of concern*, and act as validation during the design cycle.

Design action: The ECDA adopts the design domains described in section 5.2 as ways to represent an ECDC's constructional design (activity A of the ECDA's heuristic).

Principle E: Well-demarcated and well-defended design scope and using scope

MU: The ECDA must focus on the *inside* of the ECDC, because perceptions of the ECDC can only be changed by focusing on inside-the-boundary elements, where one creates a culture and a work ethic. The MU suggests that its scope should be the management or organisation side of managing staff, regulations and processes, and protocols. The MU recommends that the ECDA be targeted at stakeholders such as the managers, owners, or even principals of ECDCs.

IAD: The IAD validates that it is more apparent what is designed; however, a clarification of the scope is still required. If the scope is only for ECDCs, then the design scope can be smaller; e.g., the user would not need to gather the requirements every time they start a new ECDC, but make the set of standard requirements part of the approach. But if the intention is to use this in different environments, the boundaries that are described as part of this principle are well placed.

Design implications: The ECDA used the *generic systems development process* (GSDP) to facilitate constructional design of the provisioning system (refer to Figure 27).

Principle F: Representations of design scope

MU: The MU states that no particular notation standard or modelling language is used in the ECDC, and that it seems very technical for this environment. The MU notes that there is a lack of notation standards and modelling in ECDCs; regulations are provided by the Department of Social Development (DSD), but it takes years for a school to put their processes and procedures in place. There is a lack of these disciplines in ECDCs, and the MU would like to use more engineering-inspired tools and practices in this environment.

IAD: The IAD notes that notations are used merely to convey the feasibility of the design process, and that more detail might be required depending on who will develop the actual solution. The notation should actually be understandable/useable to the person who has to implement it.

Design implications: It is noted that, at the time of obtaining feedback from both the MU and the IAD, certain assumptions were made about design domain representations. The ECDA, owing to its nature, does not aim to be prescriptive in any respect, and therefore gaps are left for further exploration. The use of DEMO aspect models for the organisation, floor plan layouts for infrastructure, and CVs for human skills and know-how were adopted for this study.

Principle G: Approach form and function

MU: Each of the five ECDA steps is discussed, and the MU suggests the use of a user manual as well as training to guide the user throughout the approach. The training must be practical, needs to have ample examples, and should be filled with case studies in order to convey the message in a simpler manner for staff to relate to and understand. An example could be a *case study* of how you would handle the principles and apply it to the test case, so ensuring everything in the ECDC aligns with being practical.

IAD: The IAD suggests the use of examples to understand exactly how these steps will be executed, as shown in Figure 28. In theory the ECDA steps make sense, but it is difficult to make them tangible without seeing an example.

The IAD requires further clarification about how the user would go through the design process between design domains. The IAD highlights a strong dependency on knowing the construction of one domain before really being able to design the next. Design is always iterative, but there needs to be a logical flow, otherwise you are simultaneously collecting requirements for a lot of domains and trying to design them.

Design implications: The ECDA's function is described in section 5.1, and its form (i.e., a heuristic) is presented in section 5.2.

Principle H: Justificatory knowledge

MU: The MU states that the ECDA aims to create and/or improve quality in an ECDC, resulting in better caregiving for children. The MU also mentions that most ECDC directors, owners, or principals come from an educational background or have a foundation phase education degree, with no background in running or managing a business (processes and protocols). If the ECDA were to act as the guideline from the beginning, it would make it a lot easier to start and manage ECDCs from the outset.

The MU believes that the ECDA could work if it were implemented effectively, because all the employees would know what was expected from them, while the manager would know what to look for, and everyone would be on the same page. The MU strongly believes that the ECDA will support a culture of quality in the ECDC.

IAD: No responses recorded.

Design implications: As indicated in Figure 26, the ECDA is a theory-ingrained artefact that is guided by approach design principles (discussed in section 4.7), and informed by Hoogervorst’s approach (presented in section 4.6.2) and by existing IC development approaches (summarised in Figure 16).

Principle I: Approach mutability

MU: The MU mentions that the structure of the ECDA won’t change, but that the context in which it is implemented might be different – for example, if the ECDC’s operations were affected, and it could not fulfil its duty towards children or the community (i.e., it were no longer an ECDC). COVID-19 was used as an example: the quality and services delivered historically on the premises changed dramatically to more virtual or distance learning. The ECDC cannot offer services that are aligned with the normal operating model, which could necessitate a new ECDA *design cycle*.

IAD: The IAD expressed the points previously that the approach (ECDA) is not focused on a sector, but is demonstrated in an ECDC. Therefore, having the sector as mutable doesn’t really make sense. In essence, a different sector means different requirements, but the process won’t change.

Design implications: The ECDA focuses on developing IC in an ECDC, and makes use of the literature from within the ECD sector. Application to a different sector or enterprise would necessitate soliciting new requirements that were applicable to that sector or enterprise.

Principle J: Principles of implementation

MU: Advice will be required for the practical application of the ECDA. It will be important to create and develop this in ways that include all staff, because the ECDC does not have a big hierarchy. The tools needed to implement the ECDA will be a *training course*, and a *facilitator* who knows an ECDC, and either has worked in an ECDC or has experience in the industry. Emphasis is placed on someone coming from the industry who is familiar with situations that can change unexpectedly. A user *manual* will be required for reference, enabling people to go back to it when needed during the implementation process. It will be important to incorporate feedback loops during the implementation, in order to go back to the drawing board and assess any challenges that are experienced. The aim has to be to become more time-effective (efficient in implementation).

IAD: The practitioner should provide guidance on how to move between design domains in the form of user manuals and examples.

Design implications: The demonstration discussed in Chapter 6 addresses the need for a user manual.

5.5 Validating ECDA’s comprehensiveness

The SLR presented by De Boer and De Vries (2019) indicated that numerous IC development approaches exist, each focusing on different performance areas and functions in a disparate way, as noted in section 4.3. We include these learnings and contributions in the ECDA. Table 24 depicts a different representation of the ECDA’s heuristic, indicating how the ECDA incorporates existing IC development approaches. The construction design cycle (activity A) adopts an iterative process of suggesting the (re-)design of constructs. This step encapsulates various elements of the IC approaches, demonstrating the ECDA’s comprehensiveness. During the ECDA’s further development and refinement, the existing IC literature will be useful to shape the ECDA further.

Table 24: ECDA’s heuristic, synthesising existing IC approaches

ICDA	EE main design domains	IC in ECD*			Other IC approaches*		
		A	B	C	D	E	F
Activity A	Execute construction design cycles for selected design domains						

ICDA	EE main design domains	IC in ECD*			Other IC approaches*		
		A	B	C	D	E	F
	Environment	X	X		X	X	X
	Enterprise boundary				X		
	Organisation sub-system (Operations)	X	X			X	X
	Organisation sub-system (Financial support)	X					X
	Organisation sub-system (Skills support)		X	X			
	Organisation sub-system (Human support)					X	X
	Organisation sub-system (Maintenance)	X					
	ICT sub-system	X					X
	Human skills and know-how sub-system	X		X	X		X
	Infrastructure sub-system	X					X
Activity B	Identify performance areas (areas of concern)						
		X	X	X		X	
Activity C	Identify constructional requirements and specifications						
Activity D	Extract design principles to guide future design						

(*A=Bloom (1991), B=Bergin-Seers and Breen (2002), C=Nupponen (2006), D=Imbaruddin (2003), E=Grindle and Hilderbrand (1995), F=Scheepers (2015))

We also validate the comprehensiveness of the ECDA as an enterprise design approach, indicating that the ECDA addresses the eleven *approach design principles* from De Vries (2016). Section 7.3 presents the validation of the ECDA against the ADPs.

5.6 Chapter summary

Chapter 5 presented the construction of the ECDA in accordance with the approach design principles (De Vries, 2016). The first part presented the introductory knowledge of the ECDA (function), followed by the ECDA's construction in further detail (form), therein addressing RQ5, RQ6, and RQ9, as shown in the dark grey row in Table 25.

Table 25: Chapter 5 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles				x					
			4.8) Method Engineering applied to enterprise approach development				x					
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
		Intervene	Chapter 6	Demonstration of ECDA				x				
		Evaluate	Chapter 7	Evaluation results					x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning					x				
Stage 4	Formalisation of learning	Entire dissertation			x							

In response to *RQ1*, the morphogenic enterprise model in a social system context was used to conceptualise the enterprise and used as the premise for the construction of the ECDA. EECM was used during the construction of the ECDA in order to satisfy four main objectives: (1) act as a descriptive model to integrate the EE and IC literature to address the class-of-problem, (2) incorporate a broader set of domain knowledge, (3) enable the ECDA's main user to develop IC to improve the quality of the enterprise, and (4) adopt the ECDA as an enterprise design tool. The *generic system development process* was used as the basis to inform and communicate the ECDA's scope, mostly focused on the *constructional design* facet of the system development process.

In response to *RQ5*, the ECDA adopts a heuristic, as indicated in Figure 28, using multiple enterprise functions ($f_1, f_2 \dots f_n$) as the main input to perform four main activities via multiple cycles. The ECDA consists of five activities, and these align with the descriptive guidance provided by EECM and by Hoogervorst's enterprise engineering fundamentals and practices, together with IC determinants and solutions. The activities consist of (A) execute construction design cycles for selected design domains, (B) identify performance areas, (C)

identify constructional requirements and specifications, and (D) extract design principles to guide further design.

Interview feedback from both the MU and the IAD suggested the use of training manuals, user manuals, and or case studies to demonstrate how the ECDA must be implemented, and, in response to *RQ6*, will use a demonstration in a real-life setting to fulfil these requirements.

The development of the new approach, called the ECDA, is influenced by the descriptive guidance of the EECM developed by De Vries et al. (2017), and by the eleven ADPs defined by De Vries (2016) and expanded on by Van der Meulen et al. (2017). The ADPs provide prescriptive guidance to approach developers in the development of new enterprise design approaches. The IAD interview feedback was further used to refine and improve the ECDA's construction, thereby addressing *RQ9* in improving the *alignment* with the *ADPs*.

Next, Chapter 6 demonstrates the use of the ECDA at an ECDC, addressing the final construction principle, expository instantiation.

Chapter 6: Demonstration of ECDA

Chapter 6 provides a demonstration of how the ECDA is applied in a real-world setting by: (1) applying the ECDA in an ECDC, and (2) discussing how the ECDA heuristic informs and guides enterprise capacity development. The content of this chapter is based on our work, published as *Springer Lecture Notes* (De Boer & De Vries, 2021). Chapter 6 is subdivided into the following sections (as indicated in Figure 34). Section 6.1 presents the first ECDA heuristic iteration, moving through activities A, B, C, and D for the pre-selected function as part of the demonstration. Section 6.2 discusses the construction design cycle of the ICT design domain (part of activity A) in order to improve the performance area identified in activity B. The construction design cycle will inform the future design construct for the ECDC. Section 6.3 discusses the ECDA demonstration and its limitations, while section 6.4 summarises the ECDA demonstration.

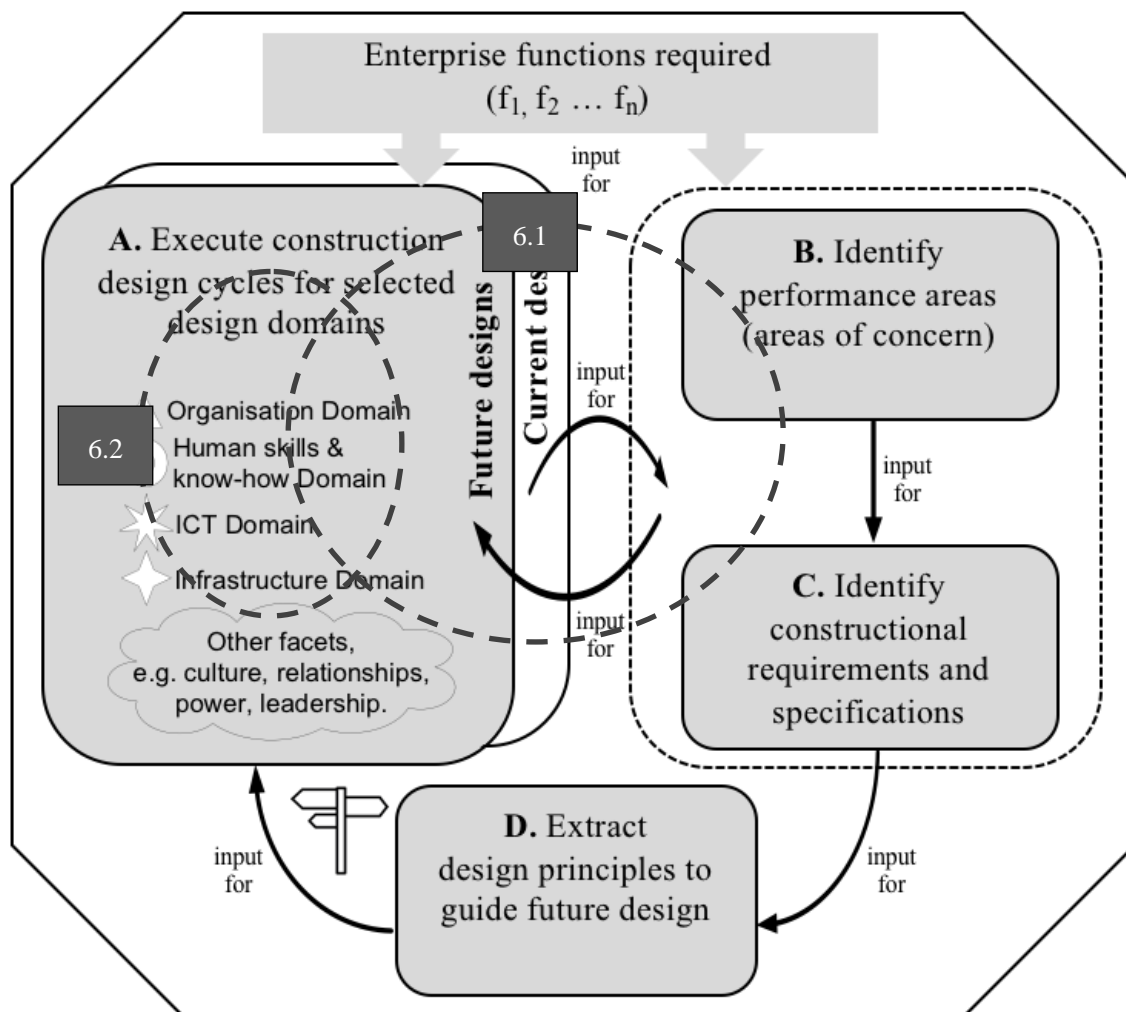


Figure 34: Graphical illustration of the ECDA heuristic as discussed in Chapter 5

Ideally, holistic design requires the identification of multiple functions and multiple performance areas that need to be identified for the entire enterprise and all its design domains and facets (Hoogervorst, 2018b). In addition, design principles need to guide the design of the entire enterprise (Hoogervorst, 2018b). The ECDA’s heuristic supports a holistic approach; but, for the purpose of this study, we only focus on a single function, *child caregiving*, to demonstrate a single iteration of ECDA’s heuristic. Further to this, only the *organisation* and *ICT design domains* are focused on as part of the ECDA heuristic. The infrastructure and human skills and know-how domains are excluded.

6.1 First ECDA heuristic iteration

The ECDA heuristic may start with either activity A or activity B, as this is not meant to indicate a sequence of activities. This demonstration therefore begins with activity B.

B: Identify performance areas (areas of concern)

One performance area aligned with the child caregiving function is selected – namely, *quality of caregiving*. This particular performance area is important, as it relates directly to the primary research question noted in section 1.3.1. Section 4.4 discussed various approaches and criteria to measure the quality of an ECDC, and, as summarised in Table 19, the Program Administration Scale (Arend, 2010) and components of the ECDC system (Bloom, 1991) are chosen to determine the quality improvement impact both ‘before’ and ‘after’. Various other frameworks are identified in the SLR that could be used to measure quality, and the two chosen frameworks do not explicitly exclude or discard these frameworks.

It is noted that only through the redesign of the ECDC design domains will an impact in a performance area be realised. ICT is poorly represented, and does not support the ECDC organisation well enough, as confirmed in the survey compiled and discussed in section 3.2. Further, in an ideal setting, the holistic design of all of the ECDC functions, as well as multiple performance areas, should be taken through the ECDA heuristic; but they are excluded for the purposes of this demonstration owing to practical and time limitations.

Performance areas from the above-mentioned approaches were adapted to focus purely on those elements where a ICT redesign would have a direct impact, and are summarised in Table 26.

Table 26: ECDC performance areas impacted by ICT redesign

Element	Sub-element (performance area impacted by ICT)
Centre operations	Improve facilities management
	Reduce risk-related incidents

Element	Sub-element (performance area impacted by ICT)
	Improve internal communications
Child assessments	Enhance screening and identification of special needs
	Improve assessment in support of learning
Programme planning and evaluation	Improve programme evaluation
Family partnerships	Improve family communications
	Enhance family support and involvement
Marketing and public relations	Improve external communications
	Increase community outreach
Technology	Adoption of technology resources
	Increase usage of technology
Organisation	Improve internal efficiency
	Enhance reputation of ECDC
	Increase professional orientation
Children	Improve social competence
	Improve cognitive competence
	Improve overall health
Parents	Increase satisfaction with ECDC
	Improve perception of support given

A: Execute construction design cycles for selected design domains

The organisation domain is the starting point for this stage of the ECDA and, aligned with the aspect model, the CM will be included as part of this demonstration. It is also envisaged that the ICT domain will be included as part of the demonstration, as operations are currently not well-supported by ICT. For the purposes of this demonstration, the infrastructure and human skills and know-how domains are excluded, and are not dealt with in further detail.

Organisation domain

A typical ECDC organisation domain in the context of being a provisioning system (refer to section 5.2) will be required to support various functions as required from the external environment. These functions could include, but are not limited to, the administration and enrolment of new parents and children, financial administration, fundraising, and social connects or community outreach, to name a few. As noted earlier, a single function, *child caregiving*, was selected for the purposes of this demonstration, and it is unpacked in further detail in subsequent sections.

The CM of the organisation is a model of its construction – that is, of the transactor roles (the elements) and the coordination structures (the influencing relationships) between them, as discussed in section 5.2 and referred to in Figure 30. The cooperation model demonstrates the essence of the ECDC operation, in that it represents the receiving of a child (the start of the process), followed by caregiving and nurturing up to the moment when the child is collected by a parent. Various transaction kinds take place during the normal course of the day, including the administration of medication.

The child caregiving *function* is complex, and it is important to understand and define the essence of the organisation as the provisioning system. The CM is constructed on the basis of the chronological flow of the ECDC process represented in a typical day-to-day scenario. The descriptions of each of the transaction kinds are presented in Table 27.

Table 27: ECDC organisation transaction description

TK01: Child reception
Upon arrival at the ECDC, parents are met by the ECDC administrative personnel and complete an initial screening questionnaire, as required by the DOH. The questionnaire is completed <i>manually</i> and placed on file for each child by class as well as date. The appropriate caregiver is notified to receive the child and to escort the child to class.
TK02: Childcaring
Childcaring consists of various sub-transactions to be performed throughout the day, aligned with an overall programme schema and outline. The childcaring function has a mixture of administrative and educational transaction kinds, outlined in TK03 to TK11. The above-mentioned sub-transaction kinds are all recorded manually on a <i>daily progress report</i> (refer to section 11.13), and a photo is taken and sent to parents via WhatsApp on a daily basis. This is an extremely time-consuming task, and does lead to instances when the photo is not clear, or is not delivered, or a child is left out owing to human error.
TK03: Feeding
Feeding facts need to be meticulously noted for each and every child, ranging from solids to bottles (for babies), including the volume and the time when it was consumed, depending on the age of the child. This is recorded manually on the daily progress report by the caregiver, which is attached to the front of the classroom.
TK04: Providing fluids
Fluid intake and volumes are recorded on the daily progress report for older children, thereby ensuring that accurate records are kept and that hydration levels are maintained and monitored.
TK05: Nappy changing
The number of diapers or nappies provides an indication of the child's health and well-being, and this is recorded in terms of the type of nappy as well as time of occurrence.
TK06: Bathroom assisting
Older children who are able to use bathroom facilities are recorded and monitored in a similar way as with nappies, and is similarly recorded manually on the daily progress report.
TK07: Nap attending
Nap routines are monitored closely based on the age of the child, and generally happen after the educational programme for toddlers, while babies will follow either a two-hourly or a four-hourly pattern, depending on their age. The nap time and duration will be recorded on the daily reports, and again provide a holistic picture to parents of how the day progressed and indicate the overall well-being of their child.
TK08: Temperature measurement
Each child's temperature is taken throughout the day and the reading recorded on the daily progress report. The transfer from the thermometer to the daily progress report is manual, and at times leads to errors or incorrect readings being written down.
TK09: Structured skill-development
Apart from following a weekly educational programme, continuous child assessments are done in order to compile an end-of-term report. The assessment data is kept manually, and report compilation is done electronically using MS Word / Excel templates (refer to section 11.14).
TK10: Medication administering
Medication administering follows a very controlled and governed process: parents email or send a WhatsApp message to inform the ECDC of the medication requirements. The request is captured in a medicine book, which is signed by both the parent and the ECDC director. No medicine is administered without written consent from the parents. Aligned with the ECDC policy and rules, certain medicine will not be administered, even with parents' consent or instructions.
TK11: Go-home preparation
Before a child is collected, he or she is cleaned, their clothes are changed if required, and a final round of bathroom duties is taken care of. A photo of the daily report is taken and sent to both parents using the school's WhatsApp account. It is noted that only one mobile device is used, and this device is then

circulated among all the classes for sending daily reports to parents.

TK12: Child collection

The ECDC needs to ensure that the approved and recognised child collector collects the child. This will happen in the event that neither of the parents is in a position to collect their child. The necessary details of the child collector are received and stored on file, such as their name and surname and a copy of the identity document. In emergencies, special arrangements need to be made with the ECDC administrator to ensure that protocols are followed. This is a manual and very time-consuming process, and given the importance of this, governance might require stronger controls and or even make use of technology for a streamlined process.

In accordance with the guidance provided in section 5.2 on how the organisation domain may be represented, and adopting the legend for a CSD (Figure 31), the ECDC coordination structure diagram is constructed as shown in Figure 35.

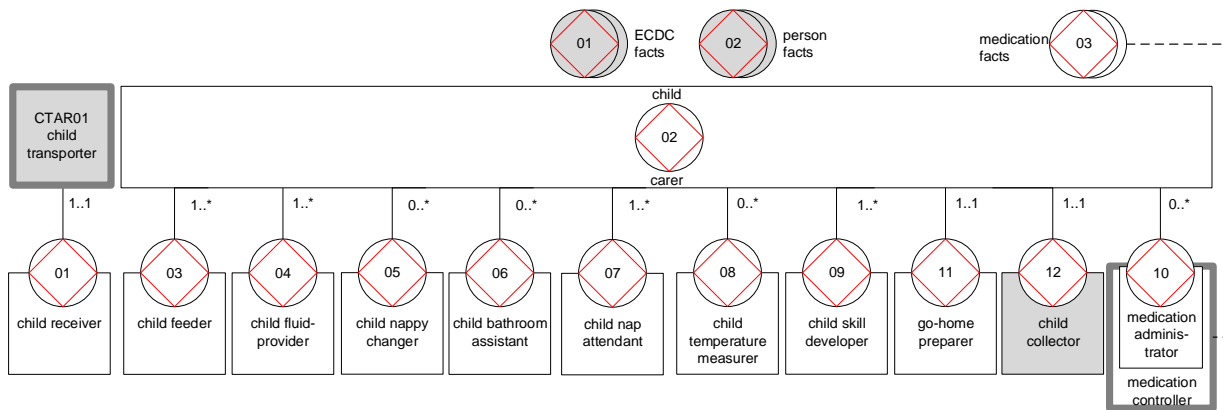


Figure 35: The ECDC’s cooperation model, represented by the coordination structure diagram

As shown in Table 28, the TPT and instances of transaction kinds are included to provide clarity about the variables that are associated with each transaction kind. As an example, for TK01 (child reception) it could be assumed that *multiple children* with uniquely assigned values could be received on *multiple dates*.

Table 28: Instances of the ECDC product kind

transaction ID	transaction kind	product ID	product kind	some instances of the product kind	executor ID	executor role
TK01	child reception	PK01	[child] on [date] is received	[child with value = Pieter] on [date with value = 1 May 2021] is received (time is a default attribute for event types)	AR01	child receiver
TK02	child caring	PK02	child caring for [date] is done	child caring for [date with value = 1 May 2021] is done	AR02	child carer
TK03	feeding	PK03	the feeding for [child] on [time] is done	the feeding with value = breakfast for [child with value = Pieter] on [time with value = 1 May 2021 8:00] is done; the feeding with value = lunch for [child with value = Pieter] on [time with value = 1 May 2021 13:00] is done	AR03	child feeder
TK04	providing fluids	PK04	the fluid for [child] on [time] is provided	the fluid with value = milk for [child with value = Pieter] on [time with value = 1 May 2021 9:00] is provided	AR04	child fluid-provider
TK05	nappy changing	PK05	[child] on [time] is nappy-changed	[child with value = Pieter] on [time with value = 1 May 2021 9:30] is nappy-changed	AR05	child nappy-changer
TK06	bathroom assisting	PK06	[child] on [time] is bathroom-assisted	[child with value = Tsholo] on [time with value = 1 May 2021 9:30] is bathroom-assisted	AR06	child bathroom assistant
TK07	nap attending	PK07	[child] on [date] is nap-attended	[child with value = Pieter] on [date with value = 1 May 2021] is nap-attended; [child with value = Pieter] on [date with value = 2 May 2021] is nap-attended	AR07	child nap attendant
TK08	temperature measuring	PK08	the temperature for [child] on [time] is measured	the temperature with value = 37 for [child with value = Pieter] on [time with value = 1 May 2021 9:30] is measured	AR08	child temperature measurer
TK09	structured skill-development	PK09	the skill of [child] on [date] is developed	the skill of [child with value = Alida] on [date with value = 1 May 2021] is developed (time is a default attribute for event types)	AR09	child skill developer
TK10	medication administering	PK10	the medication for [child] on [time] is administered	the medication with value = Panado for [child with value = Pieter] on [time with value = 1 May 2021 10:30] is administered	AR10	medication administrator
TK11	go-home preparation	PK11	[child] on [date] is prepared to go	[child with value = Pieter] on [date with value = 1 May 2021] is prepared to go	AR11	go-home preparer
TK12	child collection	PK12	[child] on [date] is collected	[child with value = Pieter] on [date with value = 1 May 2021] is collected	AR12	child collector

The ECDC's organisation of *child caregiving* is well-designed, conforming to all regulatory and legislative guidelines, and is well-understood by the ECD director. The organisation is deemed adequate for delivering quality caregiving services, but is not well supported by the ICT organisation. It is therefore decided that the organisation domain will not be re-designed as part of this ECDA iteration.

ICT domain

Technology is an important aspect for carrying out the material production activities of transaction kinds, as discussed in section 4.6.2. The ICT domain therefore is concerned with the design of the overall enterprise IT system that provides *information* services to the enterprise organisation. IT is used to support the operational transactions of the enterprise. Typically, information, communication, and technology (ICT) is constructed from *hardware* and *software* elements, while in the ECD literature the technology environment is best described as, but not limited to, payroll, accounting, and fiscal management systems. The ICT domain is currently under-represented in the ECDC, and it does not support the organisation domain; this has a negative effect on the quality of caregiving, as described earlier. The *caregiving function* is not adequately supported from either an information or a technology perspective, and it is evident that the current design leans towards a manual

process in various instances. Manual processes are prone to human error or mistakes that have a detrimental effect on the quality of the services delivered, and impact the professionalism and reputation of the ECDC.

Given the essential design of the child caregiving function, it is therefore concluded that the following *functions* and *features* are needed from ICT:

- *Fact maintenance* – i.e., creating, reading, updating, and deleting facts associated with child reception, feeding, providing fluids, nappy changing, bathroom assisting, nap attending, temperature measuring, structured skill-development, and go-home preparation.
- *Role-based access to functions and data* – i.e., not all users should have full access to creating/reading/updating/deleting all facts.
- *Workflow approvals* and *record-keeping* for medication administration protocols and approvals. There is two-way origination – e.g., originated by the school and or by parents in the case of medication or child collector changes. Communication and workflow triggers should take place via an app or other system, and notifications via email-generated prompts. The workflow process needs to conduct root-cause analyses and problem-solving. Workflow-initiated protocols need to ensure adequate responses and the closure of any event or incident within strict turn-around time standards.
- *On-time reporting* to the director, highlighting problems – e.g., push notifications where needed. Push notifications are needed to devices and via the channel of choice when a deviation from the standard is noted or observed (e.g., a temperature above 38 degrees Celsius). A response needs to happen via a device about decisions and/or instructions, and to trigger appropriate corrective action and measures of control.
- Daily electronic *reporting* and *communication (proactive)* to parents. A single platform needs to be used for reports and communication to parents. It must be the primary communication mechanism between the ECDC and parents. Reporting or communication preferences need to be selected by users (especially parents).
- *Incident* management and resolution.
- *Record-keeping*. Meta-data needs to be constructed to ensure the lowest level of resolution for data storage purposes. Data needs to be kept in alignment with the POPI Act and the legislation applicable to the ECDC sector.

C: Identify constructional requirements and specifications

Constructional requirements are typically defined for a narrow design scope – i.e., designing one particular construct, such as a software application. If a constructional requirement is generic in nature and is applicable to a larger design scope, such as the entire ICT domain, the constructional requirement is transformed into a design principle, as indicated in activity D.

Organisation domain

Since the current organisational design for *child caregiving* is sufficient, there is no need to identify constructional requirements for the future design of the organisation.

ICT domain

In developing the requirements and specifications for the ICT domain, a questionnaire was used to solicit inputs and suggestions from the ECD director and the administrator (see section 11.15). Similarly to how agile software requirements are solicited, respondents were asked to identify five high-priority non-functional requirements (NFR); the responses are given in Table 29.

Table 29: Agile software requirements (Leffingwell, 2011)

Accessibility	x	Extensibility		Quality	
Audit and control		Failure management		Recovery	
Availability		Legal and licensing issues		Reliability	x
Backup		Interoperability		Resilience	
Capacity: current and forecast		Maintainability		Resource constraints	
		Modifiability	x	Response time	
Certification		Open source		Robustness	
Compatibility compliance	x	Operability		Scalability	
Configuration management		Patent-infringement-avoidability		Security	x
Dependence on other parties		Performance / response time		Software, tools, standards	
Documentation		Platform compatibility		Stability	x
Disaster recovery		Price		Safety	
Efficiency	xx	Privacy		Supportability	
Effectiveness		Portability		Testability	x
Escrow				Usability	x

The identified non-functional requirements acted as the input and provided clarity about the wants and needs when redesigning the ICT domain, as summarised in Table 30.

Table 30: ICT non-functional and constructional requirements

Non-functional requirements
<ul style="list-style-type: none"> • Must be accessible via single sign-on using fingerprint identification. • Must be compatible with the current environment and ecosystem. • Should be efficient, as caregivers' and administrators' time is limited. • Must be modifiable to adjust or adapt to the ECDC environment. • Must be available 100% of the time, accessible on- or off-line. • Must be updated frequently. In the event of being off-line, data must be uploaded as soon as connectivity is restored. • Must be easily accessible by the primary caregiver, such as with a hand-held device. Must be accessible to multiple users in real time – e.g., parents, the director, caregivers. • Must be cloud-based, and enable the security and privacy of data and information. • Must be easy to use (usability) and intuitive to navigate, leading to a good user experience. • Must be able to create a test environment before being rolled out to parents.

It is noted that the human skills and know-how and infrastructure domains are not included for this instance of the demonstration of the ECDA.

D: Extract design principles to guide future design

As discussed in section 5.2, guidelines are given for the governing principles for (1) the statement of the principle, (2) the rationale for the principle, (3) the implications of the principle, and (4) key actions/possible initiatives giving effect to the principle. For the purposes of this study, the *prescriptors* as defined by De Vries (2020) are listed in Table 31.

Table 31: ICT design prescriptors

<p>Prescriptor 1: Cloud</p> <ul style="list-style-type: none"> • <i>Prescriptor statement:</i> ICT solutions <i>must be</i> cloud-based. • <i>Prescriptor rationale:</i> The reason for being cloud-based is to have the most recent software updates available for all users.
<p>Prescriptor 2: Software as a service</p> <ul style="list-style-type: none"> • <i>Prescriptor statement:</i> ICT software additions <i>should be</i> aligned to software as a service (SaaS). • <i>Prescriptor rationale:</i> SaaS is opted for, since this allows for fast deployment and implementation across all operational areas.
<p>Prescriptor 3: Intuitive navigation</p> <ul style="list-style-type: none"> • <i>Prescriptor statement:</i> ICT software <i>must be</i> intuitive regarding navigation and ease of use for all users. • <i>Prescriptor rationale:</i> Intuitive navigation will lead to faster adoption, since ease of use drives adoption rates among staff.
<p>Prescriptor 4: One communication platform</p> <ul style="list-style-type: none"> • <i>Prescriptor statement:</i> A single platform <i>should be</i> initiated between the ECDC and the parents. • <i>Prescriptor rationale:</i> Since various manual and electronic communication channels and mechanisms exist, a single platform/channel must lead to on-time and near real-time updates to parents.
<p>Prescriptor 5: Notification-enabled triggers for set parameters</p> <ul style="list-style-type: none"> • <i>Prescriptor statement:</i> ICT software <i>should</i> enable notifications based on predefined user parameters. • <i>Prescriptor rationale:</i> Escalations via push notifications will be the reason for faster decision-making and better incident management.

The ECDA's first iteration will typically end with activity A after completing activities B, C, and D. Activity A, in this instance, will end with a future design of the ECDC ICT domain. Given that the ECDC organisation domain is well-constructed, no further re-design of the organisation domain is required; instead, that focus will be placed on the supporting ICT design domain that is under-represented and is deemed inadequate.

In instances when it is deemed that the organisation domain is inadequate or requires further redesign, the logical starting point for this second iteration would be to identify performance areas that are problematic with the *current* organisation design (B), to identify constructional requirements for an improved organisation domain (C), and to extract design principles to guide the future design of the organisation domain (D) and the improved *future design* of the organisation domain. Since the ICT domain has to support the organisation domain, a second iteration of the heuristic would be needed to design the future ICT domain (or the part that needs to support the enhanced organisation domain), as briefly outlined in the next section.

6.2 Construction of ICT domain

The ECDA is not prescriptive about representations/models to depict the current or future designs of the ICT domain. Additional expertise would be required, when a systems analyst needs to select appropriate software to support an existing organisation domain. Although the selection-strategy part falls outside the ECDA's scope, the researcher acted as systems analyst to demonstrate such a selection process. Alternative constructs would be compared against the required functions and constructional requirements (refer to Table 32). It is possible that there are existing software solutions that could be bought off-the-shelf.

Software selection

Software selection is an important decision for companies, as a wrong choice can lead to financial losses or learning costs (Dorado, Gómez-Moreno, Torres-Jiménez & López-Alba, 2014). Jadhav and Sonar, cited by Dorado et al. (2014), have reviewed methods that suggest criteria and methodologies for software selection, software evaluation techniques and systems, and tools to assist in software decision-making. Although there are different strategies to select software, in general the following steps are commonly followed to deal the selection problem, as described by Dorado et al. (2014):

Step 1: Define a problem for which a software application is required

Step 2: Prepare a list of software candidates

Step 3: Evaluate candidates, which often leads to a multi-criteria decision problem

Step 4: Test the software—for example, using a trial version

According to Dorado et al. (2014), selection methods mainly differ when *evaluating candidates* either in the form of an opinion survey or by using a multi-criteria decision-making (MCDM) method. An MCDM consists of various algorithms, such as the analytic hierarchy process (AHP), Fuzzy-AHP, and weighted scoring based on decision theory (Dorado et al., 2014).

Taking into account the *opinions* of students and teachers at the Machine Engineering Division of the Universidad Politécnica de Madrid, a multidisciplinary approach based on the use of three different CAD–CAE software packages was used (Daz Lantada, Lafont Morgado, Munoz-Guijosa, Echvarri Otero & Muoz Sanz, 2013). It is further noted that studies similar to the one conducted by Daz Lantada et al. (2013) would aid in *assessing* and *choosing* the appropriate software.

Considering the aim and objectives of Chapter 6, which is to focus on the *demonstration* of the ECDA in the ECDC environment, further and deeper exploration into a more technical concept such as MCDM will not be considered. However, within the constraints of this study it is feasible to make use of opinions and inputs from the ECDA director and from caregivers in selecting the most appropriate software to support the ECDC organisation domain. Aligned with the guidance set out by Dorado et al. (2014), a structured approach was followed to review and select the most appropriate software.

Step 1: Define a problem where a software application is required

The first step requires the definition of a problem, which was adequately discussed and demonstrated as an outcome of the first ECDA heuristic (section 6.1). The ICT design domain was found to be under-represented in supporting the organisation design domain, and so warrants a redesign in order to improve the quality of caregiving.

Step 2: Prepare a list of software candidates

The second step entails a search for and review of available software applications that closely match the constructional requirements and prescriptors set out in Table 30 and Table 31 respectively. A more detailed description of the shortlisted software applications (section 11.15) expands on the deployment, features, and support of each software application (Table 32). The features of both software applications will be closely matched and tested for alignment with the constructional requirements. As part of this demonstration, the software applications will be denoted as Software A & B and descriptions and features of each were extracted from product brochures as well as its websites.

Table 32: Shortlisted software applications

Software name	Brief description of features, and reason for selection
A	<p><i>Software A</i> provides a comprehensive system with grades, communication tools, conference signups, report cards, forums, attendance, and electronic assignments. This cloud-based school information system is an all-inclusive solution for managing independent schools. The range of products and consulting services helps to make school internal processes more efficient, increases the quantity and quality of applicants and donors, improves the school's online presence, and strengthens valuable relationships between staff and constituents. It is noted that Software A does not provide a free version, but only a trial period after which costs will be incurred.</p>
B	<p>Software B is a fun and easy-to-use application for child care and early learning programmes that are tired of the same old paperwork. It provides a quick and simple way to document and share children's activities – everything from funny moments to developmental achievements – to involve parents, and to improve learning outcomes for children.</p> <p>The software was designed based on extensive consultations with early childhood educators, supervisors, and directors of child care and early learning programmes. As a result, the app, which is used on tablets by educators in the classrooms, is both intuitive to use and comprehensive in the features that it offers. The software further supports with documentation, recording meals, naps, behaviour, and activities with the ability to add photos and videos. For parent engagement, the software allows for real-time parent communications, digital daily reports, and instant messaging. It further provides attendance reports, child portfolios, and development assessments for children's developmental progress.</p>

Step 3: Evaluate candidates

The shortlisted software applications (Table 33) were evaluated by making use of opinions, as described by Daz Lantada et al. (2013). The structure and format of the evaluation aligns with Dorado et al. (2014), in which the goal and the functional requirements are assigned a rating of satisfaction based on inputs received from the ECDC director. Each of the requirements was assigned a score ranging from (0) (disappointing) to (10) (extremely satisfied), as shown in Table 33. It is important to note that the software selection process only considered the functional requirements for rating the software and that were deemed appropriate for the purposes of this study. The constructional requirements, although important, would require more technical resources to assist in defining and clarifying key concepts when comparing both software platforms; and this was neither practical nor feasible for this study.

Table 33: Software comparison scale, aligned to Daz Lantada et al. (2013)

Goal	Functional requirements	Software application rating	
		A	B
Select software in support of the ICT design domain redesign, to support the ECDC organisation domain better.	Must be able to create, read, update, and delete facts	2	4
	Should enable workflow approvals	1	2
	Must have record-keeping functionality	5	8
	Should enable on-time reporting and escalation to ECDC director	4	8
	Daily reporting to and communication with parents should be enabled	7	9
	Must do incident management and reporting	4	5
Total		23	36

Step 4: Test the software – for example, by using a trial version

Based on the ratings as part of step 3, Software B was selected and used to conduct a trial in the ECDC environment. The trial was structured such that a predetermined class and caregiver, and the parents of all the children in the selected class, were invited to participate in it. The trial is discussed in more detail in the next section.

Trial overview

Software B was secured for this trial and used for a period of two weeks. One class was selected for this trial, consisting of 15 children and parents, of whom four opted not to participate. The goal was to support the ICT design domain redesign by using appropriate software to support the ECDC organisation better. The selected class and all the participating children were transferred on to the software, which, for the duration of the trial, was used as the main engagement channel between the ECDC and the parents. In practice this meant that, for the duration of the trial, all relevant observations, daily reporting, and/or monitoring were done using this software in order to assess how it impacted and or improved support to the organisation domain.

The screen shots below provide an indication of the user interface and a view of the functionalities that the software has to offer. As noted in Figure 36, the director and the administrator had access to an ECDC dashboard that provided key statistics and insights, with easy navigation to drill deeper into any report or functionality as required.

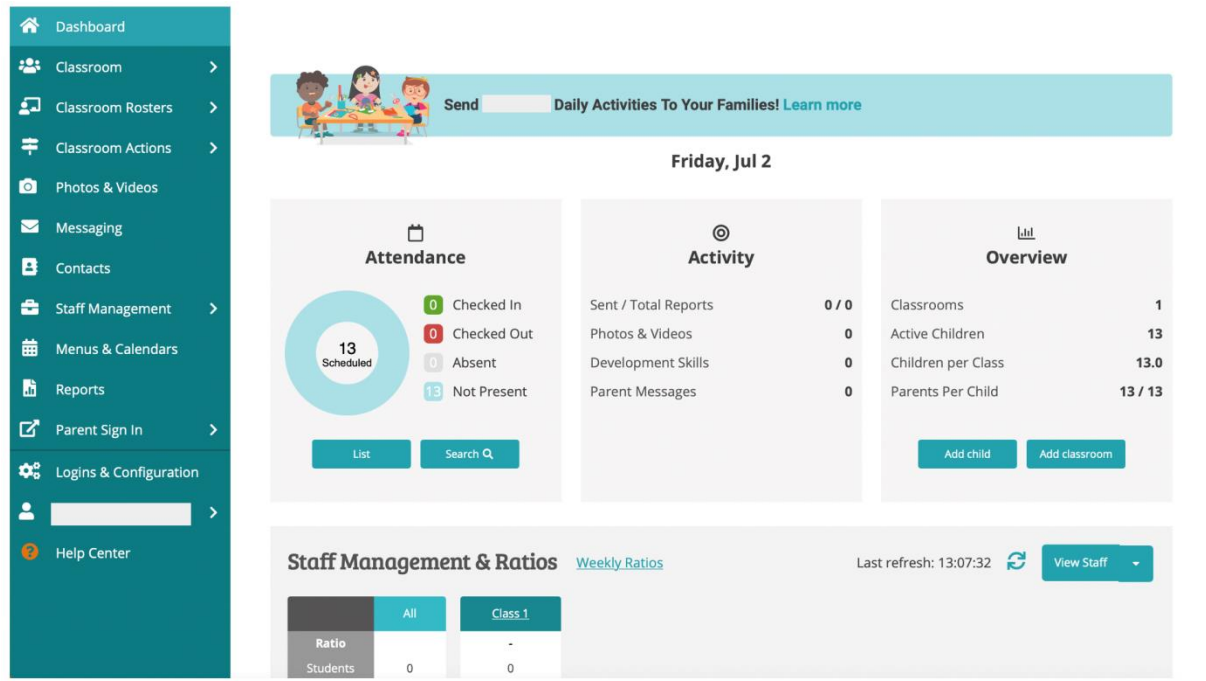


Figure 36: Software B dashboard

The software enables the uploading and registration of a child file in the cloud, and becomes a central repository for all child activities, data (including parents' contact details), and assessment information, to name a few (see Figure 37).

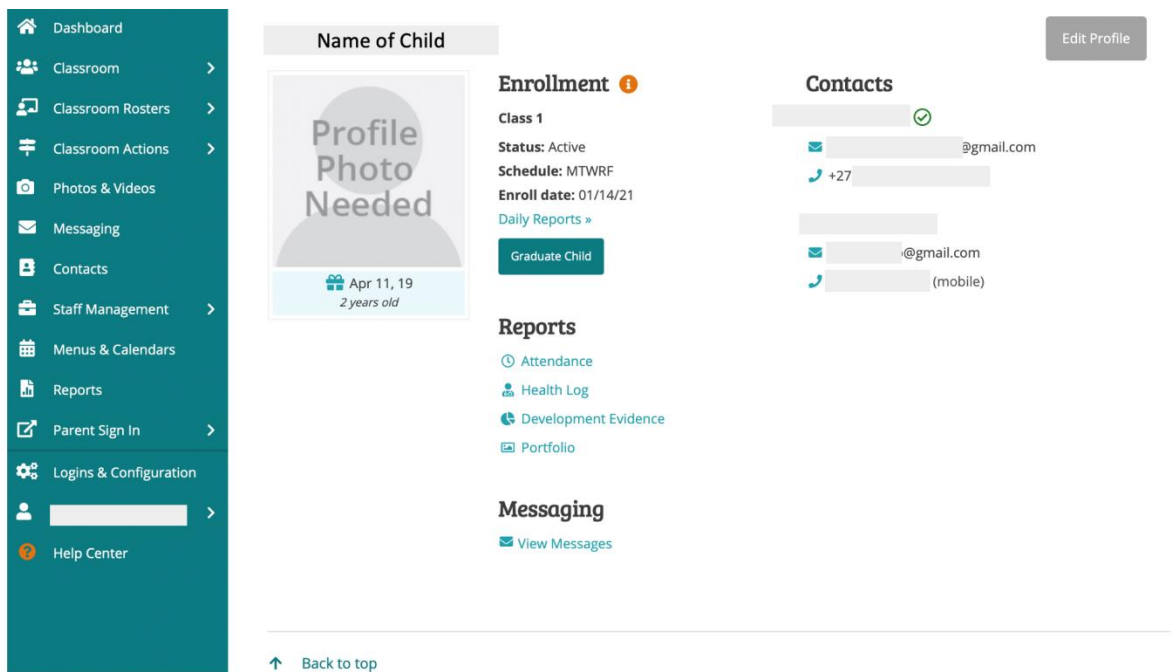


Figure 37: Child details

Attendance capturing and child collection for both the child and the caregiver is made simple and easy, and in real time allows child reception (TK01) and child collection (TK12) to be recorded and stored electronically. Automatic alerts or updates are sent to parents, which seemed very useful – especially when someone else brought or collected the child.

Figure 38: Attendance capturing

With the click of a button an automated report for the entire class is generated that can be stored and archived accordingly, noted in Figure 39.

Name	Total ⌚	Mon (May 24)			Tue (May 25)			Wed (May 26)		
		In	Out	⌚	In	Out	⌚	In	Out	⌚
	7h56	+			absent (h)			07:49	15:45	07h56m
	21h35	08:00	15:17	07h17m	08:00	15:08 ¹	07h08m	07:58	15:08	07h10m
	23h49	08:00	16:08	08h08m	08:00	16:05	08h05m	07:52	15:28	07h36m
	26h26	08:01	16:30	08h29m	07:15	16:29	09h14m	07:46	16:29	08h43m
	25h48	07:41	15:48	08h07m	07:40	16:29	08h49m	07:29	16:21	08h52m
	19h27	10:36	14:26	03h50m	07:44	15:28	07h44m	07:14	15:07	07h53m
	24h20	07:42	15:20	07h47m	07:00	15:20	08h20m	07:06	15:00	07h54m

Figure 39: Attendance report

Detailed capturing of the childcaring transaction (TK02) is enabled using Software B, extracts from which are displayed in Figure 40 and Figure 41. Throughout the child's day, activities and events are recorded directly on Software B, which includes (but is not limited to) feeding (TK03), fluids (TK04), nappy changing (TK05) or bathroom assisting (TK06), and

temperature measuring (TK08). Although the software allows for and enables nap attending (TK07), structured skill-development (TK09), and medication administering (TK10), these were excluded from this trial.

Food report

Class 1

Week of Jun. 7, 2021

Name	Mon Jun 7						Tue Jun 8						Wed Jun 9						Thu Jun 10						Fri Jun 11																		
	B	MS	L	AS	D	ES	F	B	MS	L	AS	D	ES	F	B	MS	L	AS	D	ES	F	B	MS	L	AS	D	ES	F	B	MS	L	AS	D	ES	F								
	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	1	1		
	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1
	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	2	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1	1	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1	
	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Legend

-  B: Breakfast
-  MS: Morning Snack
-  L: Lunch
-  AS: Afternoon Snack
-  D: Dinner
-  ES: Evening Snack
-  F: Fluids

Figure 40: Food report

Toilet report

Class 1

Week of Jun. 7, 2021

Name	Mon, Jun 7	Tue, Jun 8	Wed, Jun 9	Thu, Jun 10	Fri, Jun 11
	-	15:16 D - W ¹	15:02 D - W ²	14:46 D - W ³	15:20 D - W ⁴
	-	-	-	-	15:20 D - W ⁵
	-	15:16 D - WB ⁶	15:02 D - WB ⁷	14:46 D - W ⁸	15:20 D - W ⁹
	-	15:16 D - W ¹⁰	15:02 D - W ¹¹	14:46 D - W ¹²	15:20 D - W ¹³
	-	-	-	-	-
	-	-	-	-	-
	-	-	15:02 D - W ¹⁴	-	-
	-	-	-	-	-
	-	15:16 D - W ¹⁵	15:02 D - W ¹⁶	14:46 D - W ¹⁷	15:20 D - W ¹⁸
	-	15:16 D - WB ¹⁹	15:02 D - WB ²⁰	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	15:16 D - WB ²¹	15:02 D - WB ²²	14:46 D - WB ²³	15:20 D - WB ²⁴
	-	15:16 D - WB ²⁵	15:02 D - WB ²⁶	14:46 D - W ²⁷	15:20 D - W ²⁸
	-	15:16 D - WB ²⁹	15:02 D - W ³⁰	13:55 D - W ³¹	-
	-	-	-	13:57 D - W ³²	15:20 D - W ³³

Legend

Toilet Type	Status
D: Diaper	R: Dry
P: Potty	W: Wet
S: Sat on potty	B: Bowel movement
U: Underwear	G: Paed
D: Couches	C: Applied cream
P: Toilettes	A: Had an accident
S: S'assied sur les toilettes	R: Seco
U: Sous-vêtements	W: Mouillé
D: Pañal	B: Sales
P: Orinal	G: Urine
S: Sentado/a en el orinal	C: Aplicado de la crema
U: Ropa interior	A: A eu un accidente
	R: Seco
	W: Mojado
	B: Ensucado el pañal
	G: Orinar
	C: Se aplicó crema
	A: Tuvo un accidente

Figure 41: Toilet report

Software B proved during this trial that it has the capability adequately to support the organisation domain to deliver on the *caregiving function* requirements. The software enables the transition from a predominantly manual process to one that is technology-enabled and automated. It is further validated that Software B could assist in eliminating human errors or mistakes that have a direct impact on the quality of the services delivered, improving the ECDC's professionalism and reputation.

6.3 Discussion of demonstration, and limitations

One ECDA heuristic iteration was demonstrated in order to demonstrate how the ECDA could be used to develop enterprise capacity. As indicated in Figure 28, ECDA's heuristic requires the main user to select a function as the main input to perform the four main activities as part of the heuristic. The function *child caregiving* was selected to demonstrate the heuristic, since its management and administration is currently inadequate because of inefficient ICT support in providing timeous feedback to management when new production

facts come into existence. Inadequate management has a detrimental effect on one of the performance areas – i.e., the quality of the caregiving. Table 34 shows a summary of the ECDA’s heuristic on the left-hand side, and its application at a real-world ECDC on the right-hand side (grey shaded parts).

Table 34: Scope of demonstrating ECDA’s heuristic

ECDA’s heuristic – holistic scope	ECDA’s application at ECDC
Functions ($f_1, f_2 \dots f_n$) as input.	Single function (f_1): <i>child caregiving</i> .
B. Identify performance areas (areas of concern).	Single performance area of concern: <i>quality of caregiving</i> .
A. Execute construction design cycles for selected design domains – current design .	See below.
Organisation domain: What is the <i>current design</i> of the organisation domain? Is it effective in terms of <i>performance areas</i> ?	The <i>current design</i> for the function <i>child caregiving</i> , using the cooperation model (CM) to represent the <i>current design</i> (see Figure 35). We believe that the <i>essence</i> of the current operations is effective in terms of the <i>quality of caregiving</i> . The problem is that operations are not well-supported by ICT.
ICT domain: What is the <i>current design</i> of the ICT domain? Is it effective in terms of <i>performance areas</i> ? Is it effective in supporting the organisation domain? If not, what <i>functions</i> are needed from the ICT domain?	The ICT domain is currently under-represented in the ECDC. It does not support the organisation domain, and has a detrimental effect on the <i>quality of caregiving</i> . Given the essential design of the child caregiving function, depicted in Figure 35, the following functions are needed from ICT: <ul style="list-style-type: none"> • <i>Fact maintenance</i> – i.e., creating, reading, updating, and deleting facts associated with child reception, feeding, providing fluids, nappy changing, bathroom assisting, nap attending, temperature measuring, structured skill-development, and go-home preparation. • <i>Workflow approvals and record keeping</i> for medication-administrating protocols and approvals. • <i>On-time reporting</i> to the director, highlighting problems – e.g., push notifications where needed. • Daily electronic <i>reporting and communication (proactive)</i> to parents. • <i>Incident management and resolution</i>.
Infrastructure domain: What is the <i>current design</i> of the infrastructure domain? Is it effective in terms of <i>performance areas</i> ? Is it effective in supporting the organisation domain? If not, what <i>functions</i> are needed for the infrastructure domain? Excluded from demonstration.	
Human skills and know-how domain: What are the <i>current</i> human skills and know-how? Is it effective in terms of <i>performance areas</i> ? Is it effective in supporting the organisation domain? If not, what changes are needed? Excluded from demonstration.	
Other facets: What are the <i>current</i> facets? Are they effective in terms of <i>performance areas</i> ? If not, what changes are needed? Excluded from demonstration.	
C. Identify constructional requirements and specifications.	See below.
Organisation domain: What <i>constructional requirements</i> should be addressed by the <i>future design</i> of the organisation domain?	Since the current organisational design for <i>child caregiving</i> is sufficient, there is no need to identify constructional requirements for the future design of the organisation.
ICT domain: What <i>constructional requirements</i> should be	Constructional requirements for an ICT solution specify that the solution (see Table 30): <ul style="list-style-type: none"> • Must be able to create, read, update, and delete facts

ECDA's heuristic – holistic scope	ECDA's application at ECDC
addressed by the <i>future design</i> of the ICT domain?	<ul style="list-style-type: none"> • Should enable workflow approvals • Must have record-keeping functionality • Should enable on-time reporting and escalation to the ECDC director • Daily reporting to and communication with parents should be enabled • Must do incident management and reporting
Infrastructure domain: What <i>constructional requirements</i> should be addressed by the <i>future design</i> of the infrastructure domain? Excluded from demonstration.	
Human skills and know-how domain: The concept of <i>constructional requirements</i> is NOT applicable to human skills and know-how. Excluded from demonstration.	
Other facets: The concept of <i>constructional requirements</i> is NOT applicable to other facets. Excluded from demonstration.	
D. Extract design principles to guide future design.	From the constructional requirements that were identified for the ICT solution (Activity C), the following are generic for the ICT domain (refer to the design prescriptors in Table 31): <ul style="list-style-type: none"> • Must be cloud-based and not on the premises • Must align with SaaS as an ICT offering • Must support intuitive navigation • Must be the only communication platform in the ECDC • Should enable push notifications for escalations and incidents
A. Execute construction design cycles for selected design domains – future design.	See below.
Organisation domain: What <i>future design</i> of the organisation domain will address the identified <i>constructional requirements</i> ?	Future design will be the same as the current design – i.e., the essential operations depicted in Figure 35 also represent the future design.
ICT domain: What <i>future design</i> of the ICT domain will address organisation-supporting <i>functions</i> and the identified <i>constructional requirements</i> ?	Software B was selected for a trial in the ECDC in support of the organisation domain, aligned with the constructional requirements (activity C) and design principles (activity D). Software B was used in a controlled environment for a period of two weeks to ascertain whether it had a positive impact on the quality of caregiving (activity B).
Infrastructure domain: What <i>future design</i> of the infrastructure domain will address organisation-supporting <i>functions</i> and the identified <i>constructional requirements</i> ? Excluded from demonstration.	
Human skills and know-how domain: What <i>future</i> human skills and know-how will support the organisation domain? Excluded from demonstration.	
Other facets: What should be the arrangement of future facets? Excluded from demonstration.	

Considering that this demonstration resulted in the redesign of the ICT domain in support of the organisation domain, Software B was selected and trialled for a period of two weeks, based on its alignment with the constructional requirements (activity C) and design principles (activity D).

Software B proved to have a *significant* impact on redesigning the ICT domain (technology) and, based on parents' feedback, had a significant impact on the quality of caregiving. The quality of the ECDC improved significantly, from 72% before the trial to 96% after the trial by doing only one ECDA iteration.

Limitations

The ECDA, being technical and complex in nature, requires *technical expertise* or *advisors* in the form of enterprise engineers or designers to support the ECDC directors or administrators. As shown in the practical application of the ECDA, each activity – A, B, C, or D – does require facilitation and/or explanations in order to extract the correct level of detail and the correct information. Although the ECD director suggested a user or training manual, it still seems more feasible to ensure that the ECDA is facilitated by a more experienced main user, ensuring that the essence is not lost in translation or interpretation.

This demonstration focused on the redesign of the ICT design domain in support of the organisation domain; however, expert skills or resources might need to be included in future iterations to ensure that the business and system analysis is conducted in a thorough manner. This might well be the case as a further redesign of the infrastructure and the human skills and know-how domains is concerned, because the ECDC does not have the technical competence required to redesign and enable new design domain constructs.

Although off-the-shelf software was selected for the purposes of this demonstration, based on feedback from the main user and the administrator, the software still seemed to lack key functionalities truly to operationalise in the ECDC environment. As noted in section 11.15, “the software is not specifically designed for our ECD centre, and therefore lacks compatibility. It is real-time focused, which is not practical or efficient. Our need is more for a daily/monthly/quarterly update”. This may require a custom-developed program to fit and meet the ECDC’s exact requirements, which is not in the scope of this demonstration. This, however, contrasts with the perceived impact and benefit experienced from a parent perspective; and it will be recommended that a balance be found between driving internal efficiency and adapting an off-the-shelf product that seems acceptable to the parents of children at the ECDC.

The ECDA should be further evolved so that it better considers and incorporates other IC approaches by taking all the design domains outlined in activity D through at least one iteration, thereby ensuring that the constructional requirements and/or design principles are informed by the existing IC literature and approaches. This would ensure that the design domains are redesigned in line with the existing literature, and lean towards a more comprehensive solution.

6.4 Chapter summary

Chapter 6 addressed the final approach design principle presented by De Vries (2016) – namely, expository instantiation. Thus this chapter described the step-wise demonstration as it was performed chronologically to develop institutional capacity in the ECDC. The first step was the identification and selection of the *caregiving function* to demonstrate the ECDA’s heuristic. For purposes of this study, only the *organisation* and *ICT design domains* were included in the demonstration. Although the ECDA does not dictate the chronological steps, the first activity (B) was to select the *quality of caregiving* as a performance area, followed by activity A, which started with the construction design cycle for the organisation design domain. The ECDC organisation domain was found to be adequate in its construction and its ability to meet the using system’s requirements, and no further redesign effort was needed. The construction of the ECDC’s ICT design domain indicated that ICT was under-represented in support of the organisation domain, and so a redesign was required.

The redesign of the ICT design domain was informed by design requirements and principles. The software selection was concluded with the guidance of Daz Lantada et al. (2013). By following a structured four-step process, the most suitable software application (Software B) was selected and trialled in the ECDC environment for a period of two weeks. Using a structured data sampling plan, *before* and *after quality measurements* were taken, followed by hypothesis testing to prove statistically whether the redesign resulted in an actual quality improvement.

In response to RQ6, and as part of the intervene ADR stage, this chapter has shown how an ECDA should be implemented by means of a demonstration (one iteration of the ECDA heuristic), as illustrated in the dark grey row in Table 35.

Table 35: Chapter 6 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles				x					
			4.8) Method Engineering applied to enterprise approach development				x					
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
	Intervene	Chapter 6	Demonstration of ECDA					x				
	Evaluate	Chapter 7	Evaluation results						x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning						x			
Stage 4	Formalisation of learning	Entire dissertation			x							

Chapter 7: Evaluation results

Chapter 7 contains the results that were gathered in an attempt to provide answers to the following three research questions, stated in section 1.3: (1) RQ7: When implemented, how effective is the ECDA in improving the quality of service? (2) RQ8: When implemented, how useful is the ECDA to an ECDC administrator? and (3) RQ9: How well does the ECDA comply with approach design principles? Section 7.1 evaluates the results obtained from the ECDA demonstration, while section 7.2 presents the usefulness of the ECDA to ECD administrators. Section 7.3 evaluates how well the ECDA conforms to approach design principles, while the financial implications and cost benefits are discussed in section 7.4 followed by the summary in section 7.5.

7.1 Evaluation of results of demonstration

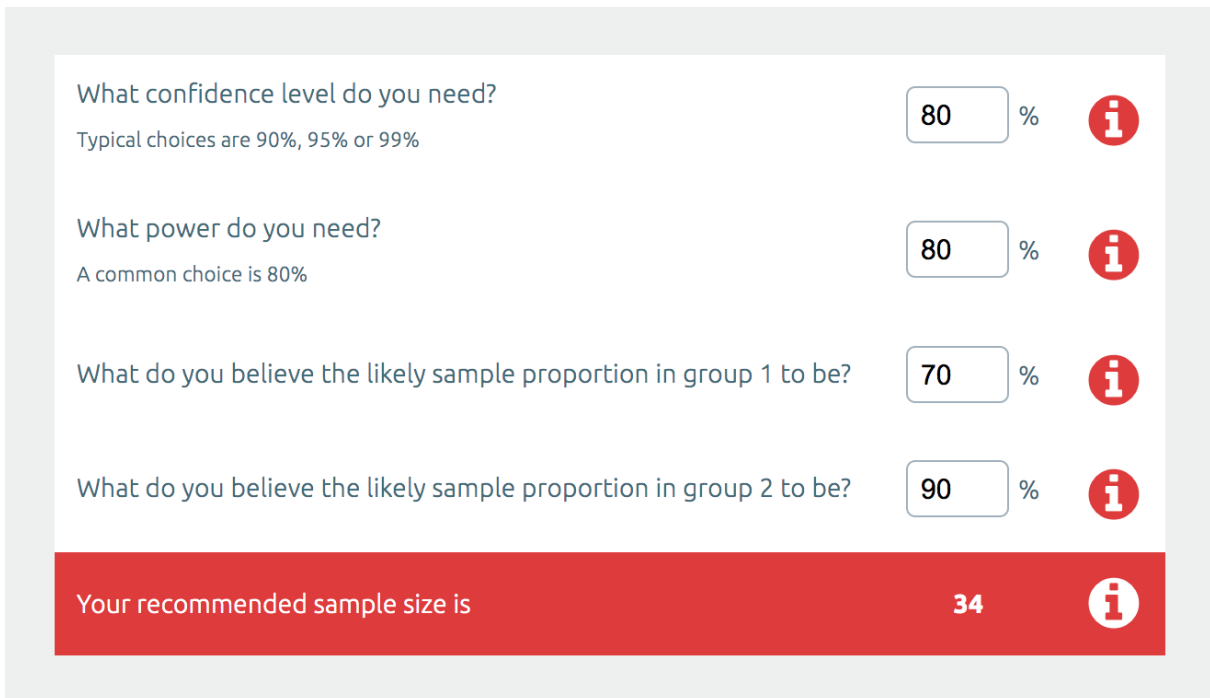
The ECDA demonstration was conducted in a real-world setting – in this instance, the ECDC being studied. To increase the validity of the evaluation results, quality measures were taken before and after demonstrating/implementing the ECDA. Parents of children at the ECDC who were included in the trial were asked to provide a quality rating, which was used as input to test whether the ICT redesign had a positive impact on the quality of the services delivered. It was also important to ensure that the results were statistically verified.

The process of drawing conclusions about an entire population on the basis of the information contained in a random sample drawn from that population is known as ‘statistical inference’ (Gauvreau, 2006). Gauvreau (2006) says:

With hypothesis testing, we begin by claiming that the population parameter of interest is equal to some postulated value (or, in the situation in which we are comparing 2 populations, that the 2 parameters are equal to each other). This statement about the value of the population parameter is called the null hypothesis (H_0). The alternative hypothesis (H_A) is a second statement that contradicts the null.

Further to this, and applicable to this demonstration, it was found to be more common to compare the proportions (p) in two different populations, neither of which is known (Gauvreau, 2006), thus informing the hypothesis test that will be conducted for this demonstration.

Based on binary responses, the proportions of the responses between treatment groups (in this instance, before and after) are then compared to determine whether a statistical/clinical difference exists. The appropriate *sample size* is usually calculated based on a statistical test that is used to ensure that there is the desired power to detect a difference when the difference truly exists. The statistical test procedures employed to test the treatment effect with binary responses are various chi-square or Z-type statistics, which might require a relatively large sample size for the validity of the asymptotic approximations (Wang & Chow, 2007). Based on the formulae of Wang and Chow (2007) for sample size calculations, Select Statistical Services (2021) developed an online calculator to determine the ideal sample size, based on variable settings such as the confidence level and the required power of the test. Considering the low level of criticality or severity of this demonstration, an 80% confidence level is deemed acceptable, with an 80% ability to detect a real difference, which requires a sample size of 34 for each group (Figure 42).








What confidence level do you need? Typical choices are 90%, 95% or 99%	80 %	
What power do you need? A common choice is 80%	80 %	
What do you believe the likely sample proportion in group 1 to be?	70 %	
What do you believe the likely sample proportion in group 2 to be?	90 %	
Your recommended sample size is		34 

Figure 42: Sample size for a two-samples test for proportions (Select Statistical Services, 2021)

Although the purpose of this demonstration was not to delve deeper into the theoretical grounding of hypothesis testing, it was necessary to create a common understanding when deciding whether the software application that was selected and trialled as a result of applying the ECDA had a significant impact on the quality of the services delivered. In order to demonstrate or prove statistically that a real difference between the two populations (before and after) was detected, a *two-samples test for proportions* was conducted, given that

this was discrete data and that the aim was to detect a difference between two groups or levels.

Therefore, the null hypothesis and alternative hypothesis are stated as follows:

$$H_0: p_1 = p_2, \text{ or } p(\text{before}) = p(\text{after})$$

$$H_A: p_1 < p_2, \text{ or } p(\text{before}) < p(\text{after})$$

Trial overview and results

The trial conducted at the ECDC entailed the use of the chosen software for a period of four weeks from 11 May 2021 to 11 June 2021. The ECDC was closed for one week during the trial owing to COVID-19 restrictions being imposed. A quality measurement was taken *before* and *after* the use of the software to deduce whether the redesign of the ICT domain, a result of using the ECDA, had a positive impact on the *quality of caregiving*, as described briefly in the next section.

Before software implementation

One class was selected, consisting of 10 children, and 17 parents. Six quality criteria aligned with PAS and Bloom were used. A total of 176 Likert-scale responses across all six criteria were recorded (section 11.15.4); and the results are summarised in Table 36. A proportion was calculated by *counting the number of acceptable occurrences* aligned with the DOBE quality ratings scale.

During software implementation

For the period of the trial, all the parents of the children in the chosen class were invited to participate and to be included in the new software platform, which acted as the only communication mechanism for this period, thus allowing the participating parents and the ECDC director and the administrator to test the solution. During the trial, no parents were excluded or left out, although their participation was voluntary, and was aligned with the research objectives set out in the consent forms.

After software implementation

At the end of the trial period, the parents were invited to respond and provide feedback and inputs, again aligned with the same set of criteria as for the *before* the software implementation. The parents had the opportunity to rate the quality of the ECDC services in the light of using the software. A total of 84 responses were recorded, and the results are noted in Table 36.

Table 36: Trial results

Element (Based on PAS and Bloom)		Survey result (Acceptable %)	
		Before (N = 176)	After (N = 84)
1.Organisation	Reputation of the ECDC	80%	100%
	Professional orientation	87%	100%
2.Child assessments	Ability to do screening and identification of special needs	67%	100%
	Facilitate assessments in support of learning	73%	100%
3.Family partnerships	Family communications	67%	100%
	Family support and involvement	73%	86%
4.Marketing and public relations	External communications	80%	100%
	Community outreach	60%	71%
5.Technology	Availability of technology resources	54%	100%
	Use of technology	46%	100%
6.Parents	Satisfaction with centre	80%	100%
	Perception of support given	87%	100%

As is evident in the ‘before’ results, technology scored the lowest level of acceptance by the parents, with both the availability and the use of technology scoring 54% and 46% respectively. This supports the initial finding that technology is under-represented in the ECDC, as documented and discussed in section 3.3. The overall before-trial quality score was 72% (126 out of 176), as shown in Figure 43, with a more detailed breakdown of each element in Figure 44.

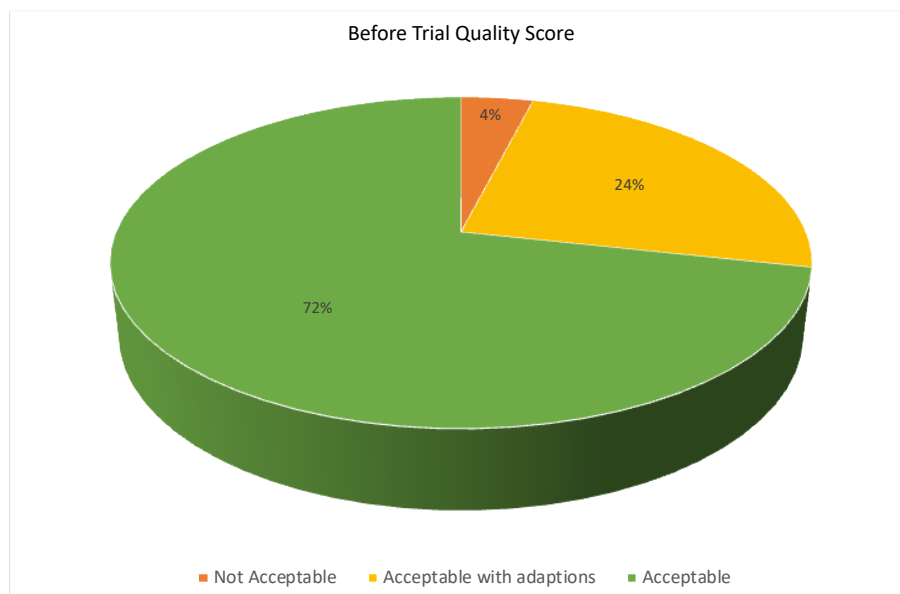


Figure 43: Before-trial quality score

Figure 44 depicts a ranking from the lowest to the highest ‘acceptable’ results, followed by ‘acceptable with adaptations’ and ‘not acceptable’. It provides further insights into the *technology* shortcomings compared with elements such as the reputation of the organisation and parents’ overall satisfaction with the ECDC.



Figure 44: Before-trial quality score by element

The same survey was used with the parents at the end of the two-week trial of Software B, to test and determine whether the ICT redesign had a positive impact on the quality of the ECDC’s services. Based on the results received, it is evident that the overall quality score improved from 72% to 96% (81 out of 84), with a dramatic improvement in technology. The parents felt that Software B was ‘acceptable’, considering both the use and the availability of technology. One parent stated: “Awesome app, I would highly recommend it to all ECD centres”. It is noteworthy that, as the trial focused purely on the ICT redesign in support of the ECDC, all of the assessed elements recorded improvements.

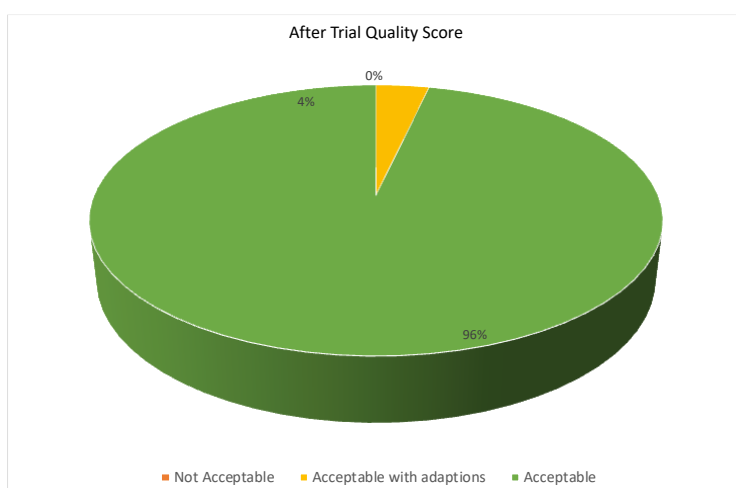


Figure 45: After-trial quality score

Considering the sample size for the after-trial results, further analysis warranted a deeper look in order to validate or confirm the observation that the technology aspect dramatically improved. Based on investigating individual parents' responses, and comparing the before and after samples of the same parents' responses with each other (parents sampled), it was evident that a total of eight elements had improved over the 'before' rating (see Table 37). This is an indication that Software B did in fact have a positive impact on how technology is perceived, and also on the perception of other quality indices.

Table 37: Parents' before and after comparison

Element (Based on PAS and Bloom)		Survey result (Acceptable %)	
		Parents sampled (Before)	Parents sampled (After)
Organisation	Reputation of the ECDC	86%	100%
	Professional orientation	100%	100%
Child assessments	Ability to do screening and identification of special needs	57%	100%
	Facilitate assessments in support of learning	71%	100%
Family partnerships	Family communications	71%	100%
	Family support and involvement	71%	86%
Marketing and public relations	External communications	100%	100%
	Community outreach	57%	71%
Technology	Availability of technology resources	43%	100%
	Use of technology	29%	100%
Parents	Satisfaction with centre	100%	100%
	Perception of support given	100%	100%

As noted in Figure 46, the before-the-trial results for assessments (70%), organisation (83%), and parents (83%) shifted to 100% for all three aspects. This was not scientific proof that Software B made an impact; but it provided the researcher with a level of confidence that the trial had a positive impact on the quality of services in the ECDC.

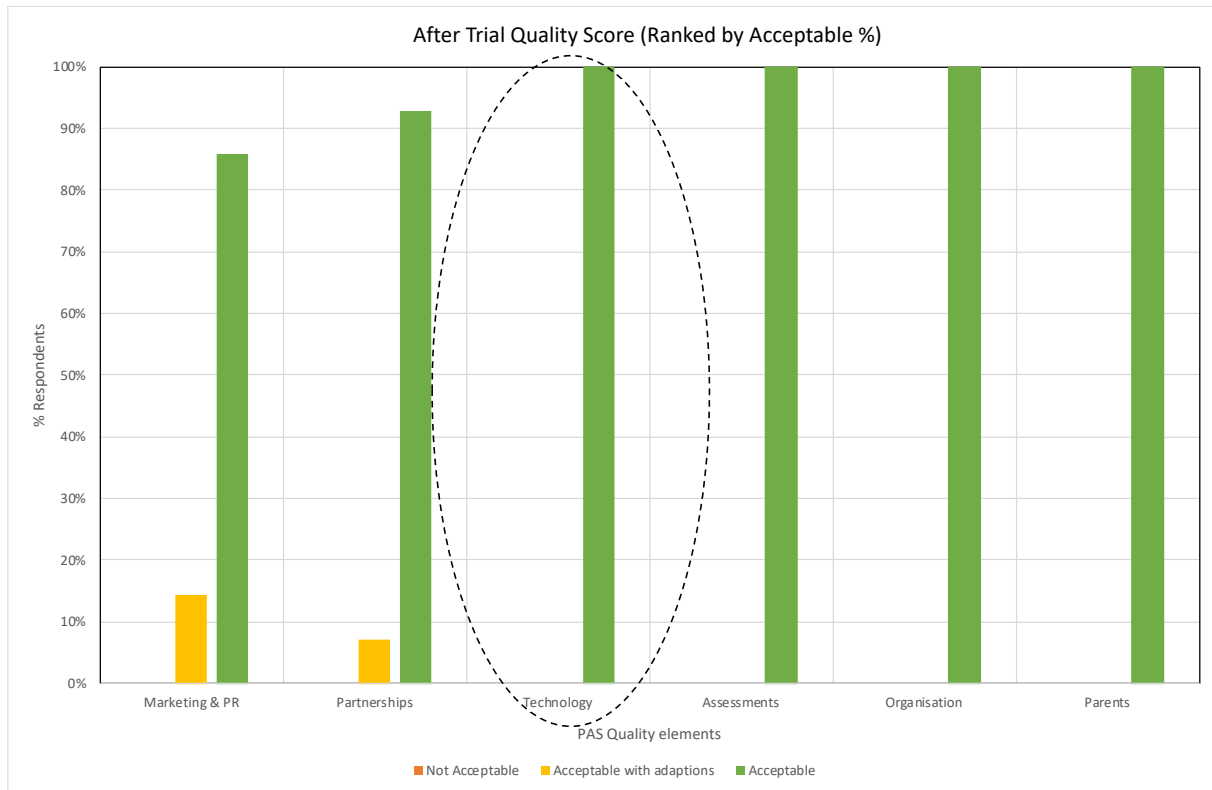


Figure 46: After-trial quality score, by element

Hypothesis testing results

In order to demonstrate or prove statistically that a real difference between the two populations (before and after the trial) was detected, a *two-samples test for proportions* was done. It was important to prove whether a significant difference in acceptance percentage was detected – i.e., that there was not enough evidence to reject H_A , where:

$$H_0: p_1 = p_2, \text{ or } p(\text{before}) = p(\text{after})$$

$$H_A: p_1 < p_2, \text{ or } p(\text{before}) < p(\text{after})$$

The statistical analysis was done using Minitab statistical software, in which the Z-value was calculated using a significance level (alpha) of 5%. The statistical result indicated that $p = .000$, meaning that the null hypothesis seemed to be untrue; thus it was safe to believe or accept the alternative hypothesis statement. There was, therefore, a *statistically significant difference* between the two scenarios – i.e., Software B had a significant impact on improving the overall quality in the ECDC.

Method

p_1 : proportion where Sample 1 = Event
 p_2 : proportion where Sample 2 = Event
 Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1	176	126	0.715909
Sample 2	84	81	0.964286

Estimation for Difference

Difference	95% Upper Bound for Difference
-0.248377	-0.183294

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$
 Alternative hypothesis $H_1: p_1 - p_2 < 0$

Method	Z-Value	P-Value
Normal approximation	-4.65	0.000
Fisher's exact		0.000

The test based on the normal approximation uses the pooled estimate of the proportion (0.796154).

The normal approximation may be inaccurate for small samples.

Figure 47: Hypothesis test results

The results obtained from the ECDA demonstration, although only scoped to one iteration of the ECDA, and only focusing on the organisation and ICT design domains, proved to have a positive outcome. The ECDA enabled a systematic way to guide the MU in developing enterprise capacity; and, in response to RQ7, when the ECDA is implemented it is effective in improving the quality of the services.

Software B user feedback

The demonstration was overseen by the ECDC director and the administrator, and both provided feedback on Software B in a structured questionnaire (see section 11.15.2), labelled response 1 and response 2 respectively. It was important to obtain an internal perspective on how Software B was experienced; and, as outlined in Table 38, different views were recorded. They were unanimous that Software B in its current form is administration-intensive, especially in how it is configured and how and when data needs to be inserted. The

demonstration required a lot of extra time and support over and above the normal day-to-day operation, and in its current form it was not deemed suitable to support operations.

Table 38: User evaluation results

Question 1: Does the ICT design domain’s redesign meet its intended outcomes?
Response 1: No, The software is not specifically designed for our ECDC and therefore lacks compatibility. It is real-time focused which is not practical and efficient. Our need is more for a daily/monthly/quarterly update.
Response 2: Currently, no. However, it does have the potential to significantly improve institutional capacity if it was implemented across the board with the appropriate number of devices and time available. Currently it is too time-consuming and does not add enough value to the ECDC’s operations, as it is not yet able to replace other processes and procedures.
Question 2: Will the proposed ICT design construct have a positive impact on the quality of services delivered?
Response 1: Yes but only if the redesigned processes could be less admin intensive while meeting our specific ECDC needs.
Response 2: Currently, no. However, if the devices and time were available to update information on the software in real-time, then definitely, as it has a lot to offer and the potential to replace several platforms and processes.
Question 3: Is the ICT design construct feasible within the context of the ECDC?
Response 1: No as it is currently too admin intensive and inefficient. It takes too many resources to maintain.
Response 2: No. Not enough time or devices are readily available, and not all staff members possess an equal capacity for operating ICT platforms efficiently.
Question 4: What can or should be changed to improve the proposed design domain construct?
Response 1: It should be simplified to provide feedback and assessment daily instead of in real-time to reduce the admin intensity.
Response 2: Adding a new ICT element to your regular daily routine should add value, reduce paperwork, and alleviate workload, by replacing other, manual procedures (E.g. Daily reports) and ICT platforms (E.g. WhatsApp and Facebook). The software is well thought-out and comprehensive, maybe too much so. It could be simplified to reduce time-consumption and work-generation.

It was noted that Software B had the ability to play a significant role in the ECDC, but would require (1) customisation to align more closely with internal processes, (2) investment in more technology devices such as tablets in all classes, (3) upskilling all users, including caregivers and assistants.

7.2 ECDA’s usefulness to the ECDC administrator

During the construction of the ECDA, the MU said: “ECDA will impact children, parents and the community... the ECDC will establish a quality services reputation having a positive effect on the community and broader society knowing there is a quality centre where children are cared for and looked after.” The approach adopted in validating or confirming the

usefulness was by means of a discussion and a questionnaire with the MU. As summarised in Table 39, the post-demonstration feedback was recorded and summarised in support of addressing RQ8, in order to determine the ECDA’s usefulness to an ECDC administrator when implemented.

Table 39: ECDA main user response

<p>Do you feel that the ECDA design addresses all of the needs that were formulated at the outset?</p> <ul style="list-style-type: none"> • The needs were partially met; considering the technical nature and language of the ECDA there remains a strong need for a training manual or even training when using the ECDA. The demonstration was very brief, and would prefer to have more functions included in the ECDA process. Secondly, from an ECDC administrator perspective will require more clarity on the human skills and know-how area.
<p>Do you feel that the needs that were incorporated will be performed effectively in the final ECDA design?</p> <ul style="list-style-type: none"> • Yes, the ECDA seems to be very thorough and it really helps with breaking down the problem or objective in a simple structured manner. It is very easy to now have a logical way of looking to improve quality services by addressing this through design activities.
<p>Given the intension of the ECDA design process (i.e., to improve the 'quality of service'), what aspects, constructs, or parts of the ECDA process would you like to criticise and or further improve upon?</p> <ul style="list-style-type: none"> • It is extremely difficult to find time during the normal day to focus on design or even improvements and find this to be an obstacle with applying the ECDA. It was a good decision to select one class for the demonstration and, considering the time and effort to implement, makes this an important aspect to consider going forward. It will be important to involve all staff in the ECDA process, and alternative means need to be considered when this is rolled out. • The design process is extremely technical and will in its current form not be easy to continue without assistance or facilitation. Maybe an opportunity could be to simplify the language or make the framework easier to interpret and understand. • The demonstration must be expanded and done for a longer period to ensure all aspects of the approach are well-explained and understood by all staff in the ECDC.
<p>What would you have done differently to achieve an ECDA design that better achieves the initially stated needs?</p> <ul style="list-style-type: none"> • Incorporate more training and learning opportunities to help all ECDC staff to better understand and interpret the intent of the ECDA. For someone that uses this language everyday might seem simple, but being in an ECDC environment makes this more difficult to understand. • The demonstration could and should be expanded to include more than one class and also look at other functions in more detail. For example, providing education as a function would be very interesting, and how the ECDA may assist in improving holistic child development and education. Things such as staff, as well as our facilities, might receive more focus, which may be worth exploring. It is believed that including more functions, the ECDA may be either proven or further evolved.
<p>After being given an understanding of the ECDA process, if you had been given the same task (to improve the quality of service), would you adopt the ECDA?</p> <ul style="list-style-type: none"> • This answer may be yes and no, because it is internally believed that the ECDC is already delivering a good quality of service, and perhaps the ECDA is better suited for an ECDC that is less mature or advanced in its processes and procedures. • The ECDA did provide a means of approaching the task (improve quality of service) in a logical manner, and the ability to iteratively improve the ECDC over time makes this very effective. It will be needed to either build or develop this capability in the ECDC, or external support may be required.
<p>Do you feel that the use of the ECDA had a positive, negative, or neutral effect on the quality of services delivered?</p> <ul style="list-style-type: none"> • The ECDA most definitely had a positive impact on the quality of services, especially how parents perceived the use of the ICT solution (Software B). No actual processes were changed in the ECDC, but technology was used to better support the education environment. It does mean that the processes or perhaps the main operation of the ECDC is capable of delivering quality services, but technology has the ability to improve or change perceptions that the ECDC is better or deliver higher quality processes and child outcomes.

7.3 Evaluating the ECDA against approach design principles

The ECDA as a theory-engrained artefact was developed, aligned with the ADPs (see section 4.7) and validated and refined throughout the development process. As an overview of the rigorous process followed, the ECDA was first evaluated and refined, using the MU's and the IAD's inputs against each of the ADPs discussed in section 5.4, while the final construction of the ECDA was validated in section 5.5. The contents and construction of the ECDA, aligned with the ADPs, were published as Springer Lecture Notes (De Boer & De Vries, 2021). Table 40 provides a retrospective view of the ECDA's compliance with the ADPs after the demonstration described in Chapter 6.

Table 40: Evaluate the ECDA against the ADPs

<p>Principle A: Explicit concept of the enterprise</p> <p>Statement: A design approach should indicate how an enterprise is perceived or conceptualised.</p> <p>Compliance evaluation: The ECDA was developed in the context of the ECDC sector mostly fulfilling a societal role with multiple stakeholders across the spectrum. It is for this reason that the ECDC as an enterprise plays a significant role in meeting and responding to the needs of (a) children, (b) parents, (c) stakeholders, (d) regulators, and (e) caregivers. Considering the external environment, the ECDC is best perceived as a social system, and operates as a living organism as defined in a morphogenic paradigm. The ECDA therefore adequately conceptualise the ECDC.</p>
<p>Principle B: Explicit phenomenon</p> <p>Statement: A design approach should provide evidence of a phenomenon or class-of-problems – that is, similar kinds of problems.</p> <p>Compliance evaluation: The explicit phenomenon relates to the ability to <i>develop enterprise capacity</i> in a structured and systematic manner. The SLR conducted in both education and non-education spheres (section 4.2) confirmed that a class-of-problems exists, and therefore provides substantive evidence for a phenomenon or class-of-problems.</p>
<p>Principle C: Explicit paradigm of value creation</p> <p>Statement: A design approach should state a <i>paradigm of value creation</i> as a testable proposition for addressing an existing <i>phenomenon</i> or <i>class-of-problems</i>.</p> <p>Compliance evaluation: The ECDA is theory-engrained and developed on the basis of Hoogervorst's and IC approaches as ways systematically to develop <i>enterprise capacity</i> in order to improve <i>quality of services</i>. The ECDA, through one iteration of the heuristic, enabled the ECD director to transition effectively from functional requirements to constructional design for the ICT design domain (in support of the organisation domain). The ICT redesign was trialled, and the quality of the services improved from 72% to 96%, which was deemed sufficient as a testable proposition.</p>
<p>Principle D: Explicit means (ways) of demarcating and representing design scope</p> <p>Statement: A design approach should clearly define and motivate the way to demarcate design scope (enterprise scope, design domains, and concerns/requirements) relevant to the approach.</p> <p>Compliance evaluation: The ECDA did not demarcate new design domains, but adopted those described in section 5.2 as ways to represent the ECDC's constructional design (activity A of ECDA's heuristic). For the purposes of the demonstration, the constructional designs for only the organisation and ICT design domains were conducted, while infrastructure and human skills and know-how were excluded.</p>
<p>Principle E: Well-demarcated and well-defended design scope, and using scope</p> <p>Statement: A design approach should define and defend the intended design scope to achieve the intended value creation.</p> <p>Compliance evaluation: The child caregiving <i>function</i> is complex, and so it is important to understand and define the essence of the organisation as the provisioning system (activity A). Aligned with this, the scope</p>

focus was placed on a single function – i.e., *child caregiving*, together with one performance area (activity B) aligned with the child caregiving function – namely, *quality of caregiving*. The reason for this scope decision was that it supported the answering of the primary research question (refer to section 1.3), while the response to RQ8 provided substantial evidence that the ECDA’s using scope was adequate from an ECDC administrator’s perspective.

Principle F: Representations of design scope

Statement: A design approach should clearly define and motivate notation standards that are used to adequately describe/represent the design scope.

Compliance evaluation: For the organisation domain, DEMO was used to depict the essence of the ECDC organisation (refer to Figure 30). Given that the ECDA is not prescriptive about representations/models to depict current or future designs of the ICT domain, a software selection process (section 6.2) was used to select the most appropriate software for redesigning the ICT domain. Infrastructure and the human skills and know-how domain were excluded from this demonstration, and thus were not described or represented.

Principle G: Approach form and function

Statement: A design approach should clearly define the constructs and features of the approach.

Compliance evaluation: The ECDA’s function is described in section 5.1 and its form (i.e., a heuristic), is presented in section 5.2.

Principle H: Justificatory knowledge

Statement: A design approach must provide explanatory knowledge that links the *paradigm of value creation* with its constructional components.

Compliance evaluation: The ECDA as a theory-ingrained artefact is described in Chapter 5, informed by Hoogervorst’s approach (presented in section 4.6.2) and existing IC development approaches (introduced in section 4.3), and was found to provide ample explanatory knowledge in linking the paradigm of value creation with the constructional components.

Principle I: Approach mutability

Statement: A design approach should clearly state possibilities for tailoring the approach within the pre-defined design scope.

Compliance evaluation: Possibilities for tailoring the ECDA have been considered, as discussed in section 5.3, together with possibilities for extending the ECDA. The three levers that require ECDA tailoring are summarised in Table 22, and will result in either another iteration of the heuristic or the inclusion or incorporation of design domains that were excluded as part of this demonstration.

Principle J: Principles of implementation

Statement: A design approach may incorporate guidance for implementing the approach.

Compliance evaluation: The demonstration of the ECDA’s heuristic in Chapter 6 provides guidance by conducting one iteration of the ECDA heuristic in a real-world setting (the ECDC). The demonstration acts as a training manual to guide future iterations of the ECDA heuristic.

Considering the evidence provided, it is concluded that, in response to RQ9, the ECDA complies with the approach design principles and has provided the necessary guidance throughout the ECDA’s design.

7.4 Cost–benefit analysis

“Today, cost-benefit analysis is mainly used to provide financial justification for a decision by supplying detailed information that demonstrates [that] the financial *benefits* of a project outweigh the *costs*.” (Cervone, 2010, p. 77). As noted by Cervone (2010), the cost–benefit formula consists of subtracting the costs associated with a project from the sum total of the benefits that are expected from the project. Cervone (2010) adds that cost–benefit analyses usually include a *payback time* or *breakeven point* that provides a measure for when the

project is fully paid or the initial investment is returned. Considering the aforementioned description of a cost–benefit analysis (CBA), three key variables need to be considered: (1) project costs, (2) benefit calculation, and (3) payback time or breakeven point. Guided by Cervone (2010), the simplest model for computing the CBA is to use only simplified costs and benefits; and this was applied for the purposes of this study, as summarised in Table 41.

Considering the nature of the ECDA’s *heuristic* and the fact that enterprise design is an *iterative* approach in which an *incremental* realignment of design domains takes place, the CBA was conducted based on one instance or iteration of the ECDA’s heuristic outlined in Chapter 6.

ECDA costs

The ECDA will mostly impact costs in two ways, considering the incremental manner in which the alignment of design domains take place: the costs associated (1) with the redesign of design domains, and (2) with using and embedding the ECDA as an enterprise competence.

Redesign of design domains. The scope of this demonstration focused purely on the ICT design domain and on the application of Software B in support of this redesign iteration. Software B is a subscription- or licence-based platform, and so the costs were estimated according to the size of the ECDC and the number of features selected – i.e., caregiving and financial administration (refer to row (a) of Table 41). Coupled with the implementation of Software B, it is noted that the time that the ECDC resources need to spend exploring and using the software needs to be accounted for, together with the ECDC director’s and the administrator’s oversight of drawing up specific or ad-hoc reports, and monitoring the overall application of Software B (noted in rows (b) and (c) of Table 41).

Embedding ECDA as an enterprise design competence. In line with the ECDC administrator’s feedback from section 7.2, and the fact that the ECDA could be perceived as too technical for this environment, consideration is given to using external facilitation support. That ECDA facilitation would be in the person of an enterprise designer or engineer who would facilitate and implement the ECDA alongside the ECDC director while ensuring that the design’s intent was realised. As noted in row (d) of Table 41, an annualised provision was made to ensure that this level of support was part of the CBA.

ECDA benefit calculation

The ECDA was shown to deliver the following briefly outlined key benefits to the ECDC:

Quality of services delivered. In a study that investigated the impact of quality on satisfaction, revenue, and cost, Shah (2009) cites Rust, Zahorik and Keiningham (1994) as saying that improvements in quality result in satisfied customers who, in turn, spread the word through word-of-mouth, which then leads firms to advertise the high quality of their offerings. Shah also notes that customers are willing to pay more if they are satisfied with the quality (Homburg, Koschate & Hoyer, 2005). An emphasis on internal processes to improve quality improves customer satisfaction, while an external emphasis on customer perceptions and attitudes leads to higher sales (Nilsson, Johnson & Gustafsson, 2001), as cited by Shah (2009).

It is therefore believed that, as shown in the ECDA demonstration, improvements in the quality of services delivered will naturally lead to more children enrolling in the ECDC, and not only increase revenue but also impact the bottom line. The latter would be estimated by using the ECDC's profit margin .

- As a result of the ECDA and the redesign of the ICT domain, there would be a 15% improvement in efficiency. It is assumed that eight employees spend at least one hour per day on administrative tasks that would now be automated and/or digitised by using Software B (refer to row (f) of Table 41).
- It is anticipated that the revenue for this ECDC would increase by 10%, equating to around six new children as a result of this project. The profit margin per child is then used to determine the annualised benefit (row (g) of Table 41).

ECDA payback or breakeven point

As calculated in rows (e) and (h) of Table 41, the calculated payback for this demonstration of the ECDA would be 0,4 years, or about five months (row (i) of Table 41).

Table 41: Simplified cost–benefit analysis

CBA element	UOM	Units	Unit cost	Total amount (annualised)
Costs				
(a) Software B licence	Month	12	R640	R7,680
(b) ECDC resource time (using software)	Hrs/annum	100	R160	R16,000
(c) ECDC Software B (overview/reports)	Hrs/annum	260	R160	R41,600
(d) ECDA facilitation (consultant)	Hrs/annum	60	R750	R45,000
<i>(e) Total annualised cost</i>				<i>R110,280</i>

CBA element	UOM	Units	Unit cost	Total amount (annualised)
Benefits				
(f) Rework reduction (15% efficiency)	Hrs/annum	264	R803	R211,992
(g) Revenue increase (10% improvement)	Profit/month	6	R870	R62,640
(h) Total annualised benefits				R274,632
Payback / breakeven				
(i) Payback period	Years		Cost / benefit	0,4 (+5 months)

7.5 Chapter summary

Chapter 7 evaluated the results that were gathered during the demonstration in an attempt to provide answers to three research questions (RQ7, RQ8, and RQ9), as stated in section 1.3 and depicted with dark grey rows in Table 42.

Table 42: Chapter 7 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles				x					
	4.8) Method Engineering applied to enterprise approach development				x							
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
		Chapter 6	Demonstration of ECDA					x				
		Chapter 7	Evaluation results						x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning					x				
Stage 4	Formalisation of learning	Entire dissertation					x					

In response to RQ7, to ascertain the effectiveness of the ECDA in improving the quality of services, the results obtained from the ECDA demonstration were discussed. Although only

scoped to one iteration of the ECDA, and only focusing on the organisation and ICT design domains, it proved to have a positive outcome. Software B was proven to have a *significant impact on the quality of caregiving*, as the overall quality score improved from 72% to 96%; while technology (which was the scope of this demonstration) improved from 50% to 100%. It was noted, however, that Software B did not fully align with or meet the internal operational requirements of the ECDC, and that, to be effective, it would require (1) customisation to align more closely with internal processes, (2) investment in more technology devices such as tablets in all classes, and (3) upskilling all users, including caregivers and assistants.

Responding to RQ8, the ECDA's MU validated and confirmed that the ECDA would be useful and effective, but did note certain limitations or aspects that might need to be addressed when implementing it. The ECDA is technical, and will need either a training intervention or a user manual, or rely on facilitation to ensure that the approach is executed correctly. The ECDA MU suggested the expansion and inclusion of more functions and design domains, such as human skills and know-how, to truly test the effectiveness of the entire approach. The ECDA delivered an improvement in quality, especially in how it was perceived from a parent's perspective, and therefore, in response to RQ8, it was *deemed useful to an ECDC administrator*, apart from any adjustments or improvements in practical delivery.

In response to RQ9, the ECDA as a theory-engrained artefact was developed in alignment with ADPs, and complied with them as a result of a *rigorous development process* that was part of this study. First, a nIAD and an MU were asked to provide inputs on the ECDA in line with structured ADP questions, followed by a validation of the ECDA's comprehensiveness during the construction phase (discussed in section 5.5), together with a published article. The contents and construction of the ECDA that aligned with ADPs was published as Springer Lecture Notes (De Boer & De Vries, 2021).

Chapter 8: Reflections and learnings

Chapter 8 provides a reflection on the study, and constitutes the third stage of the ADR methodology presented by Sein et al. (2011). As stated in section 2.1.3, Sein et al. (2011) indicate that reflections and learnings can be described as a move away from developing a single solution towards developing knowledge for a whole class of systems. The aim of this stage is to ensure that a contribution is made to the knowledge base by purposefully reflecting on how the problem was framed, the chosen theories, and the ensemble of artefacts that emerged.

Sein et al. (2011) name the principle guiding this stage the ‘guided emergence’ principle. By this they mean that the study delivers not only the intentional design developed by the researcher at the start of the study, but also an artefact that was developed through an almost biological method, moulded by practitioners.

Chapter 8 is divided into three parts. Section 8.1 provides a reflection on the ECDA, section 8.2 reflects on the research method, section 8.3 discusses the shortcomings of the ECDA and associated theories, and section 8.4 provides a summary.

8.1 Reflections on the ECDA

A class-of-problems exists in which the lack of institutional capacity impacts the quality of services that an enterprise offers. After following an action design research method, the ECDA was developed as an artefact, as depicted in Figure 28, and was then demonstrated in a real-world setting (an ECDC; refer to Chapter 6). Chapter 7 evaluated the demonstration results, concluding that the ECDA had a significant impact on the quality of services delivered in the ECDC, even though only certain elements of the ECDA were demonstrated. This section now reflects on the ECDA as a generalised model, and concludes with additional reflections from the researcher.

The ECDA as generalised model

The ECDA was formulated in response to a class-of-problems – namely, developing IC to impact the quality of services delivered in the ECDC sector. A great deal of the literature emanating from both developed and developing countries was uniform in verifying perspectives on the definition of IC and on different approaches used to address or resolve this problem in the *education domain*. IC approaches and frameworks from *non-educational* domains focus on the public sector, and provide insights into how to address this phenomenon, as is evident in the body of knowledge. There are a great many approaches to

institutional capacity in the current *body of knowledge*, but they are not integrated nor formulated to provide a systematic way to develop IC, let alone enable those who are responsible to develop IC.

Although design domains are described in the ECDC literature, there is no clear evidence of a design cycle to (1) determine the requirements for the object system, (2) state the functions of the object system, or (3) devise specifications for the object system.

As noted in section 4.6, knowledge areas with no application in the ECDC were researched, specifically drawing knowledge from the enterprise engineering domain in addressing the class-of-problems. Enterprise engineering as a relatively new discipline addresses enterprise design and change in a scientific manner, and is positioned to guide the development of the ECDA in response to the need to develop IC. Hoogervorst's approach (section 4.6.2), EECM (section 4.6.3), and the GSDP (section 4.6.4) formed the underlying theoretical framework in order to inform or guide the development of IC in the ECDC. Aligning itself with the enterprise engineering body of knowledge, this study indicated that a need existed to address IC from a holistic view of enterprise needs, resulting in the ECDA. Since the ECDA is based on enterprise design literature that is industry-agnostic, the ECDA is offered as a generalised construct that is not only applicable to the design of an ECDC, but is also useful in other contexts.

The ECDA was extracted from existing enterprise design knowledge. On reflection, the ECDA should also be useful in structuring design knowledge that may exist in other design approaches. In instances where a body of knowledge exists in the form of multiple approaches to address a class-of-problems (or solutions), the ECDA's heuristic could enable and facilitate a systematic approach to aligning these approaches with the enterprise engineering body of knowledge. The body of knowledge may be used as input to guide or inform the constructional aspects (requirements, wants or needs) of the provisioning system, as illustrated in Table 24. As an example, and using Table 24 as the reference, the approaches of Bloom (1991), Bergin-Seers and Breen (2002), Grindle and Hilderbrand (1995), and Scheepers (2015) may be used to inform the organisation sub-system (operations) construct.

The ECDA improving the quality of service

Chapter 7 presented the evaluation results, indicating that the trialled software application that was selected as a result of the ECDA's application had a significant impact on the quality of services delivered. It is possible to reason that the selection and implementation of the application software could have originated in a different way – e.g., when a director with

qualifications in business and/or process management identifies opportunities for process digitisation that would also result in implementing software that improves the quality of service.

Addressing the hypothesis that, by *only* providing the ECDC director with training and/or qualifications in business and process management (without addressing any other aspects of the EE domains) the quality of services could be improved, this warrants a deeper look into how the design domains are constructed. Considering Figure 29, the main EE domains are supported by sub-systems, as indicated by arrows highlighted in black. As an example, the human skills and know-how sub-system (as a provisioning system) supports the organisation sub-system (as a using system), which in essence suggests that the ECDC director's skills and know-how need to be constructed in order to support the ECDC organisation. Focusing on only one sub-system – human skills and know-how in this instance – would not be deemed adequate or comprehensive without the holistic redesign of all the design domains. However, it is noted that, by improving or focusing on the redesign of the human skills and know-how sub-system, support to the organisation domain could be improved that could positively impact the quality of services delivered. Using a similar logic, one could reason that focusing only on business improvement initiatives such as process optimisation, digitisation, automation, or ICT solutions might not deliver the intended outcomes *without* taking a holistic iterative redesign of all EE design domains into account.

Thus the ECDA as such does not necessarily ensure improved service quality. However, it provides a systematic heuristic for intentional enterprise re-design, focusing on specific areas of concern. In addition, the heuristic creates a repository of design principles that should be re-used by the ECDC director during future iterations of the ECDA.

Researcher's reflections

The ECDA was developed to address a specific class-of-problems in the ECDC sector. The researcher fulfilled two roles during this study: first, as the financial administrator of the ECDC, and second, the researcher who developed IC. The reflections cover three themes: (1) the ECDA as an enterprise capacity development approach, (2) Hoogervorst's approach, and (3) approach design principles.

The ECDA as an approach to developing an enterprise's capacity. The ECDA, as adopted in the ECDC sector, provided much-needed direction and clarity to the ECDC director, as it offered a clear starting point to develop IC, which is lacking in the current body of knowledge. The abundant literature that aims to address IC is scattered, which makes implementation hard. The ECDA's comprehensiveness ensures that, as more functions are

added to the heuristic, a holistic realignment or redesign of the ECDC will be achieved. The ECDA provides clarity on *how* the provisioning system should be designed, which at the beginning of this study was vague and not well-defined. The ECDA takes a step forward in providing a more pragmatic and realistic approach as to how the underlying theories could be adopted in real-world settings.

Hoogervorst's approach. This approach formed the basis of the ECDA's development, and was the main contribution that enabled the ECDC to develop IC and in turn improve the quality of services. Hoogervorst defines and describes design domains, and distinguishes between functional and constructional domains; the business domain is classified as the black box (function), while the organisation domain is the white box (construction). Considering the GSDP, and the fact that design aspects are discovered through an inquisitive process, the ECDA's heuristic was developed in a similar manner. The ECDA focuses on the design aspects, and ensures their formalisation as functional requirements (input to the ECDA's heuristic), constructional requirements (activity C), and areas of concern (activity B). Aligned with Hoogervorst's approach, the ECDA focuses on the provisioning system as the object of design, knowing that it has a functional relationship with the using system – i.e., the ECDC environment. Last, Hoogervorst's view on the morphogenic enterprise conceptual model helped to understand the circular relationships between the ECDC members and the ECDC context, providing a firm understanding of the ECDC change process.

Approach design principles. The ADPs provided much needed clarity and direction in defining and confirming the ECDA ideologies in the specific ECDC context, as well as the demarcated design scope. The ADPs were useful when structuring questionnaires to solicit MU and IAD inputs in order to refine and update the ECDA throughout the process. The ADPs assisted in describing and explaining the ECDA while ensuring its comprehensiveness. The ability to test the ECDA's conformance to ADPs ensured the quality of the design approach that was developed and, more importantly, ensured that the paradigm of value creation would be realised.

Researcher role as financial administrator. In the capacity as financial administrator the researcher enjoyed in-depth knowledge and insights on what is working and not working well within the ECDC. This perspective resulted in clarity and conviction on the problem statement and that an approach is needed to address the class-of-problems. Collecting and interpreting data was made a lot easier, especially when structuring interview questions and or compiling or interpreting results obtained from various data gathering mechanisms. The researcher is very rarely involved in the operations of the ECDC as majority of the financial

obligations are conducted remotely and this allowed for an un-biased standpoint throughout this study.

8.2 Reflections on the research method

An action design research (ADR) methodology was used for this study, as described in Chapter 2. The ADR provided guidance in *stage one* in formulating the problem, followed by *stage two*, which entailed the building and the iterative shaping of the ECDA through various interventions, guiding the evaluation methods adopted in this study. The ability to allow conference participants, an independent approach developer, and the main user to contribute to and critique the ECDA allowed for a robust artefact to be developed. The demonstration, together with the evaluation of the results, provided further opportunity to clarify or refine the ECDA or to identify opportunities for future research, which was useful.

8.3 Limitations of the ECDA

The section below discusses the ECDA's shortcomings; and some of them are elaborated on in section 9.3 as recommendations for future research.

Organisational context

The ECDA was found to be technical in nature, and so the organisational context of the ECDC required extensive time for facilitation and explanation that could impact its effectiveness. The language and concepts used might not be common in most enterprises, unless a journey of enterprise design has begun. There is a need either to simplify or reduce the level of complexity or, alternatively, to consider investing in enterprise design competence at the enterprise.

The ECDC director does not have adequate time during the day for design or improvement initiatives, and the method for implementing the ECDA needs to be considered to ensure that all appropriate staff are included as part of the ECDC enterprise design process. The modelling tools that were used to support the method might be too manual and time-consuming and a need for the digitisation of certain aspects might need to be explored or investigated.

The demonstration was done on selected aspects of the ECDC – namely, one function and two design domains. It is necessary to expand the scope and include more functions throughout the entire ECDA heuristic truly to test its effectiveness and comprehensiveness from a practical perspective.

Practical guidance

There is little in the literature about practical case studies in enterprise engineering or relevant examples to guide the implementation process and journey that would allow the ECDA to grow into an established approach. Aspects such as how to determine return on investment and costs to achieve real benefits will be required in future.

Guidance will be required about how budgets and costs need to be planned for when an enterprise embarks on an enterprise redesign intervention. There will be a cost to achieving future design constructs and, given the iterative nature of the intervention, budgeting might be difficult to fit into a standard paradigm of governance. A fresh look is needed at how best to prepare the finance community in future for iterative enterprise design.

The ECDA demonstrated only one iteration of the heuristic, and focused only on the organisation and ICT design domains for one function. The ECDA needs to be expanded to include all enterprise functions and design domains such as *infrastructure* and *human skills and know-how*. This would allow for a more robust research process, as well as an opportunity to extend the current body of knowledge.

DEMO

Dietz and Mulder's latest version of the DEMO modelling language (DEMOSL 4) is not widely supported by appropriate tooling, and is not easy to adopt in the enterprise, given the lack of real case studies and examples from industry. A lot of focus is placed on the theoretical grounding and justification of DEMO, but additional guidance from a user's or modeller's perspective is needed, especially drawing references from real-world examples, its pitfalls, and possible work-arounds.

Only one of the four aspect models to represent the essence of the ECDC operation was modelled as part of this study. In order to represent the essence of the ECDC in a coherent, comprehensive, consistent, and concise way, the ECDA may need to be expanded in future to include all four aspect models.

8.4 Chapter summary

This chapter provided a reflection on the study, looking specifically at the ECDA, the research method used, and any shortcomings.

Even though the ECDA was developed in an ECDC context, it has the potential to address a larger class-of-problems, irrespective of the industry setting. The reflections indicated that a contribution was made, building on an existing knowledge base and also contributing theoretical and practical knowledge to the knowledge base.

In response to RQ7 in Table 43 (refer to the dark grey rows), the ECDA was formulated in response to a class-of-problems to develop IC in order to improve the quality of services delivered. The ECDA *proved to have fulfilled this objective*, and in a generalised context could be adopted or adapted in various sectors or industries. However, owing to its technical nature, the ECDA required extensive facilitation and intervention; and it is believed that ECDC administrators will require facilitation or implementation support up to the point where a design competence or capability has been established.

The ADR methodology contributed to the *robustness and quality of the artefact* that was designed, and, by being practice-inspired, it allowed for learnings to be formalised in a manner that will contribute to the broader body of knowledge.

Shortcomings were discussed, outlining the organisational context as having an impact on the effectiveness of the solution and how it will be implemented, coupled with not very clear or strong enterprise engineering implementation guidance. Together with the practicality aspect, DEMO, based on DEMOSL 4, needs to incorporate or include more real case studies and examples from industry as a contribution to the body of knowledge and to act as guidance for enterprise designers.

Table 43: Chapter 8 content map

Stage	Action design research methodology (Chapter 2)	Chapter	Chapter description	RQ2: What is the definition and understanding of institutional capacity within the ECD sector?	RQ3: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?	RQ4: What approach, mechanisms and models are associated in literature to embed institutional capacity at ECDC's?	RQ5: What should be the constructional components of an ECDA to ensure that its implementation will improve quality of service?	RQ6: How should the ECDA be implemented?	RQ7: When implemented, how effective is the ECDA in improving quality of service?	RQ8: When implemented, how useful is the ECDA to an ECDC administrator?	RQ9: How well does ECDA comply with approach design principles?	
Stage 1	Problem formulation	Chapter 1	Problem context and research questions	x								
		Chapter 3	Problem analysis	x								
		Chapter 4	4.1 - 4.2) Problem validation and results	x								
			4.3) Solution areas that were already applied		x	x						
			4.6) Knowledge areas with no application within ECD		x							
			4.7) Approach design principles				x					
			4.8) Method Engineering applied to enterprise approach development				x					
Stage 2	Build	Chapter 5	Construction of ECDA				x	x			x	
	Intervene	Chapter 6	Demonstration of ECDA					x				
	Evaluate	Chapter 7	Evaluation results						x	x	x	
Stage 3	Reflection and learning	Chapter 8	Reflections and learning						x			
Stage 4	Formalisation of learning	Entire dissertation					x					

Chapter 9: Conclusion

Chapter 9 presents the conclusion to this study, and has four parts. Section 9.1 gives a summary of the study, section 9.2 describes the contributions made by the study, while section 9.3 explores recommendations for future research, and closing remarks are noted in section 9.4.

9.1 Summary

Institutional capacity is defined as, and understood to represent, the ability of an organisation to pursue its objectives, while IC in the ECD sector is a crucial administrative and management competence that is needed for the effective management of a quality ECDC. In response to *RQ2*, the definition and understanding of IC in this ECDC is defined by the ECDC director to be all the processes and procedures that have to be in place, together with adherence and conformance to processes and procedures – i.e., the functions that should be in place to deliver quality services. IC is not a new concept in the public sector performance arena, but is not well-defined or researched in the ECD sector.

In addressing *RQ3*, ECDCs across South Africa are sub-optimal, indicating that *less than half* of all registered centres have nothing more than staff attendance records or job descriptions. Various solutions, frameworks, and IC approaches exist, but none are integrated or constructed in a way that would guide administrators on how to develop IC, let alone inform the (re)design of constructs in order to improve the quality of services delivered. Significant progress has been made in the South African early childhood and Grade R spheres; however, South Africa has a long way to go to meet the needs of the majority of its children, especially with the development of institutional capacity to operate a quality ECDC. Little evidence was found of actual implementation, making the comparable effect on IC extremely difficult, which this study addressed.

The fourth research question (*RQ4*) aimed to establish what approaches, mechanisms, and models extracted from the literature could guide the development of IC at ECDCs. Findings from the research of Bloom (1991) indicated that a systems approach to describing early childhood centres leads to a better understanding of the impact of change, and assists ECDC administrators to understand better the significance of their day-to-day roles and responsibilities. The critical role of the administrator or leader in the ECDC cannot be over-estimated and, according to Scriptor (2010), developing and embedding IC in the education environment requires good leadership. The five-dimensional framework of Grindle and

Hilderbrand (1995) is identified as a very useful systematic method to analyse the determinants of IC, while the United Nations Development Program (UNDP) applies a three-level conceptual approach to analysing and assessing the capacity of public institutions in a systematic manner. These solutions provided key input during the ECDA construction as well as demonstration phases.

In response to *RQ5*, meta-models provided the means to define the rules at a higher level of abstraction; and this in essence acted as an introduction to the abstraction levels adopted in this study. The general conceptual modelling framework was used to explain how the ECDA was constructed as an instantiation of EECM, a meta-model for enterprise design approaches. The ECDA adopts a heuristic, as indicated in Figure 28, using multiple enterprise functions ($f_1, f_2 \dots f_n$) as the main input to performing four main activities in multiple cycles. The ECDA consists of five activities that align with the descriptive guidance provided by EECM, Hoogervorst's enterprise engineering fundamentals and practices, and IC determinants and solutions. The activities consist of (A) execute construction design cycles for selected design domains, (B) identify performance areas, (C) identify constructional requirements and specifications, and (D) extract design principles to guide further design.

The ECDA as a theory-ingrained artefact was guided by (1) approach design principles that were derived from EECM, (2) Hoogervorst's approach, and (3) IC development approaches. Through synthesis, it was shown and proven that the plethora of existing solutions and frameworks were effectively integrated into the ECDA's heuristic. This enabled the ECDA's main user to systematically (re-)design in scope the enterprise design domains in order to have an impact on problematic performance areas – in this instance, the quality of services.

The ECDA's heuristic was demonstrated in a real-world ECDC in order to address *RQ6*, starting with the organisation domain's current design and specifying the ICT domain's future design to address inefficiencies in the administration and management of the function of child caregiving. The ECDA is not prescriptive, and the heuristic can start with either activity A or activity B, followed by activities C and D to constitute one iteration of redesign. In its existing theoretical structure, the ECDA was further developed iteratively and participatively to ensure that it would be useful in a real-world ECDC context.

In response to *RQ7*, the ECDA proved effective, even though it was scoped to only one function and one iteration, and focused only on the organisation and ICT design domains. The ECDA proved to have a positive outcome for the quality of caregiving through the (re)design of the ICT design domain. The overall quality score improved from 72% to 96%.

The ECDA does not necessarily ensure service quality improvement. However, it provides a systematic heuristic for intentional enterprise re-design, focusing on specific areas of concern. In addition, the heuristic creates a repository of design principles that could be re-used by the ECDC director during future iterations of the ECDA.

In the light of *RQ8*, the ECDA was deemed to be useful to the ECDC director, but the director did note certain limitations or aspects that may need to be addressed when implementing it. The ECDA is technical, and needs a training intervention or a user manual or, alternatively, facilitation by a specialist enterprise designer or engineer to ensure that the approach is executed correctly. The ECDA's MU suggested the expansion and inclusion of more functions as well as design domains, such as human skills and know-how, to truly test the effectiveness of the entire approach.

Last, and in response to *RQ9*, the ECDA as a theory-engrained artefact was developed in alignment with ADPs, and was deemed to comply with them, thanks to a rigorous development process that constituted part of this study. First, an IAD and an MU were asked to provide inputs on the ECDA, aligned with structured ADP questions, followed by a validation of the ECDA's comprehensiveness during the construction phase by means of a published article. The contents and construction of the ADP-aligned ECDA were published as Springer Lecture Notes (De Boer & De Vries, 2021).

The ECDA as a theory-ingrained artefact has the ability to develop IC, and thus to improve the *quality of services* delivered. The ECDA is positioned not only to contribute to the education domain, but could also have a societal impact for the majority of South Africa's children.

9.2 Contributions

By following an action design research method in this study, an enterprise capacity development approach (the ECDA) was developed in an ECD enterprise. The evaluation of the ECDA concluded that, during the demonstration in an ECD enterprise, the ECDA proved to have had a *significant* impact on improving the quality of services in that enterprise.

The ECDA in its current form facilitates the iterative realignment (or redesign) of design domains based on constructional requirements and prescriptors. The ECDA provides a logical yet systematic design approach that integrates and aligns with various IC approaches. Thus it is useful for the main user or the ECDC administrator if they wish to develop IC.

Four main contributions that this study has provided are discussed in the rest of this section. They are the following:

- (1) The ECDA is positioned as a design approach that will develop institutional capacity. This contribution is discussed in section 9.2.1.
- (2) To develop the ECDA in an ECDC setting while also developing a generalised ECDA model to make it more generic, thus making the ECDA a viable way to address a broader class-of-problems and thereby contribute to the body of knowledge. This contribution is discussed in section 9.2.2.
- (3) To provide a practical demonstration of Hoogervorst's enterprise engineering approach. This contribution is discussed in section 9.2.3.
- (4) The final contribution of this study is to present the ECDA as an enterprise engineering methodology that would be useful to an enterprise design team. This fourth contribution is discussed in section 9.2.4.

9.2.1 The ECDA develops institutional capacity

As noted in Table 1, IC is defined as the administrative and managerial *functions* that cover elements ranging from leadership to human resources, infrastructure such as physical facilities, programme and process/procedure management, and forming inter-institutional linkages. According to the guidelines for Early Childhood Development Services (Department of Social Development, 2006), it is crucial that administrative and management systems are developed and put in place for the effective management of an ECDC.

In addressing *RQ1*, as stated in section 1.3, a plethora of IC *solutions* and *approaches* were identified, but none were specific in addressing enterprise capacity development, thus making it hard for ECDC administrators to address this class-of-problems.

The ECDA as a design approach provides constructional guidance for the evolution of South African ECDCs, improving the *administrative and management function* that is associated with *enterprise functions* to increase the quality of service delivery. The ECDA is comprehensive enough for the early childhood development context, since it synthesises the knowledge from existing IC approaches and from an existing EE approach, that of Hoogervorst.

9.2.2 The ECDA as a generic model

The ECDA provides a theoretical context and platform for the reuse and/or further refinement of the design approach in order to develop enterprise capacity in other settings or

environments. The generic model adopts the GSDP and, based on the definitions and boundaries set for the *using* and *provisioning* systems, makes the ECDA adaptable and suitable irrespective of the scope of interest in an enterprise. The ECDA also provides a mechanism to align with and integrate the existing body of knowledge (approaches) to guide the evolution and/or development of future design constructs.

9.2.3 Practical demonstration of the ECDA

According to EECM (De Vries et al., 2017), an enterprise design approach has to answer three questions: (1) Why should the ECDC use the ECDA to evolve? (2) What should the ECDC evolve? and (3) How should the ECDC evolve?

As part of the demonstration, the ECDA answered all three questions adequately, providing constructional guidance for the evolution of South African ECDCs by focusing on developing the *inside-the-boundary* complexities of an ECDC (as the provisioning system) for the environment (as the using system).

The practical demonstration provided guidance to the MU on how the ECDA should be implemented in order to evolve the ECDC. The demonstration applied a key mechanism – a heuristic – that could be seen as a training manual or user guide for future studies that apply the ECDA as implementation instances.

9.2.4 The ECDA for enterprise design teams

Even though the ECDA was shown to have a significant impact and was deemed valuable, it remains a rather abstract way of thinking and modelling. The language, concepts, and modelling standards that were used (i.e., DEMO) would not be useful if the researcher were not present to explain them. The researcher believes that the ECDA's mechanisms and practices are tools for the MU or design team, and that participants who do not have enterprise engineering experience should not be asked to analyse or develop the models on their own. The models are mostly useful when an ECDA-skilled designer is present to explain them.

9.3 Recommendations for future research

Recommendations for future research are identified and briefly discussed in the next section, which highlights three research themes.

Further testing of the ECDA

It is recommended that the ECDA be further tested, given that holistic design requires the identification of multiple functions, and that multiple performance areas need to be identified

for the entire enterprise and all its design domains and facets (Hoogervorst, 2018b). Bearing in mind the limitations of this study, the ECDA should be further tested to include more *heuristic cycles* and *all design domains* as more functions of the enterprise are included, in order to test its rigour and its comprehensiveness.

Expanding the ECDA

The ECDA in its current form is scoped to *inside-the-boundaries*, and is mainly focused on the redesign of the provisioning system. A future research opportunity exists to expand and include the using system construction, the functional design known as the black box, as part of the entire GSDP. Expanding the ECDA to include the using system, and thus covering the entire GSDP, would contribute to the practical explanation, definition, and body of knowledge of very technical and theoretical concepts.

This would help to develop real case studies and, as re-emphasised by Van der Meulen (2017) while reflecting on his study's practical demonstration, there is a need to *demonstrate existing theory* to address real-world problems.

Future evaluation of the ECDA

In order to provide structured and documented feedback about the *function* and *form* of the ECDA, together with its usefulness in developing enterprise capacity, further evaluation is recommended. The proposed evaluation should focus on providing feedback about the usefulness of the ECDA and the accompanying changes to the construction of the ECDA that would enable its usefulness and comprehensiveness to be improved. The evaluation should be performed in real situations in real enterprises. This would increase the usefulness of the ECDA, and encourage enterprise engineers to use the ECDA, which in turn would increase its rigour.

Future research and evaluation might position and confirm the ECDA as a practice-inspired approach that is hands-on and relevant in the real world owing to the interpretation and translation of underlying theories. The ECDA was constructed on the basis of the general conceptual modelling framework provided by Dietz and Mulder (2020), together with EECM as a meta-model for other enterprise design approaches. ECDA was further informed by Hoogervorst's approach, as well as other IC approaches to accurately design the functional relationship with the provisioning system (black-box), the construction (white-box model) of the using system must be known, depicted as the generic system development process (GSDP).

9.4 Close

In ending this study, the thesis statement is repeated:

Adapting and adopting an enterprise capacity development approach (ECDA) that focuses on developing institutional capacity (IC) will improve the quality of service, and will be useful to administrators of South African ECD enterprises.

After following an action design research approach to the development, demonstration, and evaluation of an enterprise capacity development approach (the ECDA), the results of this study provide evidence to confirm the thesis statement.

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Chapter 11: Appendix

11.1 Interview questionnaire

University of Pretoria

Department Industrial Engineering

South Africa

August 2019

To whom it may concern,

RE: Participation in research for Masters in Industrial Engineering

You have been selected to participate in research focused on the understanding of institutional capacity in early childhood development (ECD) centres. Institutional capacity has a direct impact on the quality of services being delivered, and is a key enabler of the Department of Social Development's 2030 vision of providing care to a growing South African market.

The problem statement states that *institutional capacity*, or the lack thereof is an impediment to operate a *quality* ECDC. *Institutional capacity* in ECD refers to the effective administrative as well as managerial aspects of an ECDC, and failure to build this capacity impacts the *quality* of services delivered.

The research questions for this study entail:

Question 1: Can institutional capacity in an ECD enterprise improve quality of service?

Question 2: What is the definition and understanding of institutional capacity within the ECD sector?

Question 3: What approach, mechanisms and models are associated in literature to develop institutional capacity at ECDCs?

Question 4: What evidence exist in literature where institutional capacity was successfully implemented, and how this was done?

Objective of this interview will predominantly cover aspects of the ECD operation, maturity of institutional capacity as well as the perspective on quality and services being delivered. Of particular interest will be the need for a solution to address the class-of-problem stated.

Interview questions

1. Please explain your role or position in this ECDC.
2. How good is your administrative and managerial processes are, and what is the level of maturity? Maturity measured from (1) Immature/weak, (5) Average to (10) Excellent
3. How do you measure or determine quality of service delivered?
4. What is the current level of quality at the ECDC? NPS: (1) – no, (5) – maybe, (10) – promotor.
5. If you were to address the phenomenon in question (2) above, do you think the quality of this ECDC can improve?
6. Is there a need for a solution to help address institutional capacity, and thereby improve quality of the ECD service?
7. How do you measure quality of the service delivered at the centre? And do you measure this?
8. How would you say do parents measure the quality?
9. If you were to put a measure on the quality, like a promotor score, (1) Would not promote the school, (5) Indifferent, or (10) You would promote it, where will the ECDC fall?
10. Do you think the quality of the centre can improve?
11. Do you think there is an opportunity to enhance and focus on the managerial side of business?
12. Institutional capacity is aiming to put a model or framework together to guide owners of ECDCs to get to that maturity point. You have spent a few years fine-tuning that, do you think there is a need for a solution to help address institutional capacity and thereby improve the quality of the ECD service?
13. If there were to be a solution in a box, tell you step by step what to do to get admin and management processes in place, and we give it to a new owner of an ECDC that would be helpful?

11.2 Interview transcript

Participants: Owner of ECDC

1. Please explain your role or position in the ECDC?

Owner: I'm the owner of the ECDC. I'm here to to check quality of the education, make sure that the right things are done with the babies the quality of the care of the children and make sure that the babies are happy the service are given to the parents to make sure that their children are happy here, and looked after the right way, so overall handling of all the educational stuff as well as staff. Researcher: Do you look after staff as well? Owner: I do look after staff as well, I do have a manager in place but after all I did employ them so I must have an overview of all the staff. The nitty-gritty stuff gets handled by the manager.

2. Can you please share your background?

I obtained my degree at the University of Pretoria in 2005, I have an early childhood education degree (cum laude). I have experience in a 4-5 year old class at a primary school, spent a year there, then taught oversee for various ages from 2-6 years. We went to Bangkok and taught English there, and remember at that age it is not only about teaching English but filling their emotional well-being, being there like a real caregiver and not only English. I taught at five schools, one was a private school and then when we came back to South Africa I taught Grade R's, then built my own family and took off to take care of my family. I have now been busy with the ECDC for almost four years.

3. Before running or owning ECDC, did you have any experience in management or running an ECDC, and do you think you were adequately prepared for it?

No not at all, you only get thrown into a position like this, remember when you are a teacher and do you degree in education; I think the degree changed a bit by now, but hopefully the curriculum have changed to help those that want to start their own businesses with things like that. When I did my degree, it was purely teaching and education and the background of children focused on the psychology and things like that. I think that we really need a degree or course to help people actually know what they are getting into, starting their own business. One has all the love for teaching and how you will run your classes but you never have the background of how a business is run, how to handle the parents and staff – this is actually the biggest thing you deal with everyday. For me, that is a teacher it is almost second nature to do planning, to identify a child that needs more attention, or if they have development issues in various fields.

4. *Would you say there is a big difference in being the owner, versus being a caregiver?*

Huge difference, because sometimes I think if you love teaching you must rather not open your own school, because it is very little you have to do with teaching but get to do a lot with all the other things but never teaching. Or, if you love children that much rather don't open your own place, because you don't have enough time with the children and that is where your passion lies, it is best not to open your own place.

5. *Where would you say do you spend most of your time and energy on at the moment?*

I must say we have evolved over time, but before that was a lot to do with organising staff like someone didn't pitch for work, you have to make plans and move things around. It is really managing staff, see that all the children are looked after, you actually do a lot of management and parents, managing parents and manage the ECDC rules. A lot of sick children, is a different subject but sure we can look into our degree more into sick children or children illnesses because that is what we deal with every day. If you own a ECDC you almost need to become a paediatrician to know that the children are not allowed into the centre, so they can't be here because of the danger to the other children – I do believe there is a lack of this in our degree.

6. *How good is your administration and managerial processes, if we were to measure on a level of maturity on a scale of (1) Immature or Weak, (5) Average and (10) Excellent?*

I would wish to think it is actually at a seven, but each day is different and not one day is the same. It is not like a factory where you work with a machine, and there is only two things that can go wrong. Here we work with people, emotions and children so each situation is different and you can't have a jigsaw for each of the situations. I would say each situation you need to handle differently, and I think that adapts to the administration you are going through. Researcher: The centre is almost a social system, it is dynamic and changes. Yes, it is dynamic and each situation change each day if your children or parents change, it is an emotional thing. Researcher: To recap, you are saying your administration and managerial processes are more or less at a seven? Yes, I wish to think that.

7. *How do you measure quality of the service delivered at the centre? And do you measure this?*

I think we can give more attention to measure it, to document it, but for me it goes or about the children being happy and children being looked after. So a child that's dirty, nose not wiped, crying the whole day the emotional welfare of the child is very important to me. I would think that you get measured on that, and for me it is also the place that you are in,

referring to the facility you are in. If it is not clean, untidy, if its not looked after parents will not want to leave their children there. It's about the emotional welfare of this child and then the area or physical facility and appearance that counts.

8. How would you say do parents measure the quality?

I think parents measure the quality also if there child is happy, they come home and doesn't look unhappy. When they drop the child, and the child is not or wants to be here and the child falls into the teacher arms, they feel that they think yes this is a perfect school. Some people do measure it on the activities we do, for example the artwork we do, or this or this... Some parents also have a unrealistic expectations of what is quality, but people that has a little background in education or read something in books or did something in childcare will know that a happy child can learn, but an unhappy child can't take anything in. So sometimes it is a struggle to get that to the parents, because they think there two year old needs to do this artwork, but it is really about their happiness and they will learn through play.

9. If you were to put a measure on the quality, like a promotor score, (1) Would not promote the school, (5) Indifferent, or (10) You would promote it, where will the ECDC fall?

Well I'm the owner of the school, of course I'll promote my own school but if I can hear from parents and people that came to see the school we have had lovely feedback. I would say we are a nine, there are always things to work on but most definitely a nine.

10. Do you think the quality of the centre can improve?

There is always room for improvement, with admin related topic I would say if we can keep it always the same, like consistently do the same. Like to handle and follow processes, like the day is so wild, you had to handle a difficult class or children there was a lot of outside influences you often forget to follow processes. I feel if we can place more focus on following the processes, each time the same process or how to administer something we will get to a point that we are running on a system here, and it works every time. But it is difficult with, how you deal with someone's emotions and with a new situation. Because, one day a new situation comes up or someone were not happy on one thing then the whole thing changes again and it is really difficult to follow the process every time, but I do think we can really work on it. Researcher: So from an administration perspective you saying the processes are there we just need to make sure we follow and execute using it.

11. Do you think there is an opportunity to enhance and focus on the managerial side of business?

Definitely, it is about communication because you have something in your head of how the process must be run, or how the manager must do it, but then she has her own style. It is always difficult to give over, especially if you have worked hard on your own like I had too. It is difficult to give it over to someone else especially someone like me who is OCD and then give it to someone else and believe they going to do it exactly like I do. Someone else have a different way of doing it, but if you have processes in place you have to trust the process, then all the other stuff is not important.

12. Institutional capacity is aiming to put a model or framework together to guide owners of ECDCs to get to that maturity point. You have spent a few years fine-tuning that, do you think there is a need for a solution to help address institutional capacity and thereby improve the quality of the ECD service?

Yes, of course, like I said earlier there is always place for improvement it doesn't matter if you are the best. There is always room to improve, but you have to stay true to the ECDC and conduct it within the framework of the ECDC. The management and the management area I would definitely say there needs to be more courses, workshops maybe built into the degree. If you want to start your own ECDC, how to manage staff, manage parents, manage assistants – not only for the owner but also for the caregivers. Caregivers who have assistants working with them in essence are managers of their classes, so I really think there are more we could do to help people working in the ECD to obtain the management skills to make the day better plus the management of the class and centre better, because in the end it is about the children.

13. If there were to be a solution in a box, tell you step by step what to do to get admin and management processes in place, and we give it to a new owner of an ECDC that would be helpful?

Yes, definitely, there is so many places you can buy a curriculum for a school, or so many people that works out curriculums for a babies, or curriculums for pre-primary schools that you can buy with all the words and stories pictures and everything. Why can't there be a program that you can buy for your school like this is the process to run this, process to manage sick children as an example. There is an all over view, there is in South Africa but is not in a box nor packaged thing, but you have to learn on the go.

11.3 Interview analysis

Interview coding: ECD Director

Date of interview: August 2019

○ Interview_Definition

4 Quotations:

☞ 78:3 overall handling of all the educational stuff as well as staff

Content:

overall handling of all the educational stuff as well as staff

☞ 78:10 It is really managing staff, see that all the children are looked after, you actually do a lot of ma...

Content:

It is really managing staff, see that all the children are looked after, you actually do a lot of management and parents, managing parents and manage the ECDC rules

☞ 78:14 Yes, it is dynamic and each situation change each day

Content:

Yes, it is dynamic and each situation change each day

☞ 78:26 we will get to a point that we are running on a system here, and it works every time.

Content:

we will get to a point that we are running on a system here, and it works every time.

○ Interview_Measure

4 Quotations:

☞ 78:11 I would wish to think it is actually at a seven, but each day is different and not one day is the sa...

Content:

I would wish to think it is actually at a seven, but each day is different and not one day is the same.

☞ 78:15 I think we can give more attention to measure it, to document it

Content:

I think we can give more attention to measure it, to document it

☞ 78:21 hear from parents and people that came to see the school we have had lovely feedback

Content:

hear from parents and people that came to see the school we have had lovely feedback

☞ 78:22 I would say we are a nine

Content:

I would say we are a nine

○ Interview_Problem

7 Quotations:

☞ 78:4 No not at all, you only get thrown into a position like this, remember when you are a teacher and do...

Content:

No not at all, you only get thrown into a position like this, remember when you are a teacher and do your degree in education

☞ 78:7 you never have the background of how a business is run

Content:

you never have the background of how a business is run

☞ 78:8 it is very little you have to do with teaching but get to do a lot with all the other things but nev...

Content:

it is very little you have to do with teaching but get to do a lot with all the other things but never teaching

☞ 78:9 because you don't have enough time with the children and that is where your passion lies

Content:

because you don't have enough time with the children and that is where your passion lies

☞ 78:12 work with people, emotions and children so each situation is different and you can't have a jigsaw f...

Content:

work with people, emotions and children so each situation is different and you can't have a jigsaw for each of the situations

☞ 78:28 It is difficult to give it over to someone else

Content:

It is difficult to give it over to someone else

☞ 78:33 there are more we could do to help people working in the ECD to obtain the management skills

Content:

there are more we could do to help people working in the ECD to obtain the management skills

○ Interview_Quality

7 Quotations:

☞ 78:1 I'm here to to check quality of the education

Content:

I'm here to to check quality of the education

☞ 78:2 babies are happy

Content:

babies are happy

☞ 78:16 me it goes or about the children being happy and children being looked after.

Content:

me it goes or about the children being happy and children being looked after.

☞ 78:17 emotional welfare of the child is very important

Content:

emotional welfare of the child is very important

☞ 78:18 or me it is also the place that you are in, referring to the facility you are in

Content:

or me it is also the place that you are in, referring to the facility you are in

☞ 78:19 parents measure the quality also if there child is happy,

Content:

parents measure the quality also if there child is happy,

☞ 78:20 Some people do measure it on the activities we do, for example the artwork we do, or this or this..

Content:

Some people do measure it on the activities we do, for example the artwork we do, or this or this..

○ Interview_Solution

13 Quotations:

☞ 78:5 curriculum have changed

Content:

curriculum have changed

☞ 78:6 I think that we really need a degree or course to help people actually know what they are getting in...

Content:

I think that we really need a degree or course to help people actually know what they are getting into, starting their own business

☞ 78:13 ach situation you need to handle differently, and I think that adapts to the administration

Content:

ach situation you need to handle differently, and I think that adapts to the administration

☞ 78:23 There is always room for improvement, with admin related topic I would say if we can keep it always...

Content:

There is always room for improvement, with admin related topic I would say if we can keep it always the same, like consistently do the same.

☞ 78:24 handle and follow processes

Content:

handle and follow processes

☞ 78:25 place more focus on following the processes

Content:

place more focus on following the processes

☞ 78:27 communication

Content:

communication

☞ 78:29 if you have processes in place you have to trust the process, then all the other stuff is not import...

Content:

if you have processes in place you have to trust the process, then all the other stuff is not important.

☞ 78:30 Yes, of course, like I said earlier there is always place for improvement it doesn't matter if you a...

Content:

Yes, of course, like I said earlier there is always place for improvement it doesn't matter if you are the best.

☞ 78:31 you have to stay true to the ECDC and conduct it within the framework of the ECDC

Content:

you have to stay true to the ECDC and conduct it within the framework of the ECDC

☞ 78:32 The management and the management area I would definitely say there needs to be more courses, worksh...

Content:

The management and the management area I would definitely say there needs to be more courses, workshops maybe built into the degree.

☞ 78:34 Why can't there be a programme that you can buy for your school like this is the process to run this,...

Content:

Why can't there be a programme that you can buy for your school like this is the process to run this, process to manage sick children as an example.

☞ 78:35 but is not in a box nor packaged thing,

Content:

but is not in a box nor packaged thing,

11.4 Questionnaire responses

A framework to embed institutional capacity at an early childhood development centre

Problem Context:

The purpose of this research is to provide a systematic review on existing approaches/frameworks for developing institutional capacity within an ECD environment. As a second contribution, we extract knowledge from existing approaches/frameworks that could be used as a baseline for the institutional capacity development approach (ICDA) for early childhood development for a South African context. The ICDA should be useful to South-African ECD CEO's, if they intend to improve institutional capacity, resulting in dramatic improvement in quality of services delivered. Thus, the problem statement states that institutional capacity, or the lack thereof is an impediment to operate a quality ECD centre. Institutional capacity in ECD refers to the effective administrative as well as managerial aspects of an ECD centre, and failure to build this capacity impacts the quality of services delivered.

Study Objectives:

- The objective of this study is to improve quality of services delivered through the development of the institutional capacity development approach (ICDA) for an ECD enterprise.
- Set a formal definition and understanding of institutional capacity within the ECD centre.
- Research various approaches, mechanisms and models in literature to embed institutional capacity at ECD centers.

1

Topic: Qualifying the measure of quality in an ECD context

What is your role in the ECD centre?

- Caregiver (Teacher)
- Administrator (Operations)
- Director/Owner

What is your highest level of education?

- Attended high school but did not finish
- Grade 12 certificate
- Attended college but did not finish
- Obtained a diploma or degree
- Still busy with my degree*

How many years work experience do you have?

- 0-2 Years
- 2-5 Years
- 5-7 Years
- +7 Years

1. What are important quality aspects within a Early Childhood Development (ECD) centre, from the following perspectives?

a. The Owner:

- Performance
- Reliability
- Respect
- fairness

b. The Child:

- Discipline
- Respect

c. The Caregiver/Teacher:

- Performance
- Reliability
- Patience
- fairness

d. The Parent:

- Reliability
- Respect
- fairness

e. Regulation / Government:

- Performance
- Reliability

2. What are important aspects from a quality perspective from an **educational** perspective?
make sure they learn what they need to, and to make sure that when a child has a problem to try and fix it or get help before it is too late, we are teaching ages that is the most important time of a child's life, make sure you do your job the right way.

3. What are important aspects from a quality perspective from an **organisation (management)** perspective?

To make sure that there are a set structure on how things need to "run" or work at the workplace, and to make sure everybody follows the structure on how to do stuff. Then everything will fall in place and work out.

Topic: Measure existing quality in an ECD context

1. Are you aware of any quality measure used at this ECD centre? (Yes / No), explain:

yes.
Planning,
Being monitored to see if your work is being done.
Meetings to be able to improve stuff that is wrong.

2. As a caregiver, do you currently measure quality in your class? (Yes/No), explain:

yes, I do what is asked to be done, planning, making sure that the child gets to learn what he/she is supposed to be learning. And to make sure they reach their milestones.

3. In your opinion, what is the overall level of quality of this ECD centre (DOSD scale, 2006)?

Not acceptable _____ Acceptable with a few adaptations X Acceptable _____

4. Rate the quality of each of the following items (Source: Program Administration Scale):

Element	Sub Element	Not Acceptable	Acceptable with adaptations	Acceptable
Human resource development	Staff orientation		✓	
	Supervision and Performance appraisal			✓
	Staff development			
Personnel cost and allocation	Salary		✓	
	Benefits		✓	
	Work patterns & schedules		✓	
Centre Operations	Facilities Management			✓
	Risk Management			✓
	Internal Communications		✓	
Child Assessments	Screening and identification of special needs			✓
	Assessment in support of learning			✓
Fiscal Management	Budget planning			✓
	Accounting practices			✓
Program Planning and evaluation	Program evaluation			✓
	Strategic planning			✓
Family partnerships	Family communications		✓	
	Family support and involvement			✓
Marketing and public relations	External communications		✓	
	Community outreach		✓	
Technology	Technology resources		✓	
	Use of Technology		✓	
Staff qualifications	Caregiver		✓	
	Administrator		✓	
	Assistant		✓	
	Director/Owner			✓

Thank you for your participation in this survey.

2

Topic: Qualifying the measure of quality in an ECD context

What is your role in the ECD centre?

- Caregiver (Teacher)
 Administrator (Operations)
 Director/Owner

What is your highest level of education?

- Attended high school but did not finish
 Grade 12 certificate
 Attended college but did not finish *Busy with Diploma*
 Obtained a diploma or degree

How many years work experience do you have?

- 0-2 Years 2-5 Years 5-7 Years +7 Years

1. What are important quality aspects within a Early Childhood Development (ECD) centre, from the following perspectives?

- a. The Owner:
- Make sure the school is up to standard
 - Get appropriate staff
 - Make sure there is enough resources.
- b. The Child:
- Needs a safe learning environment.
 - Have to be respected and loved
 - Needs to be happy at school.
- c. The Caregiver/Teacher:
- Needs regular training
 - Have to respect the children.
 - Needs a safe working environment.
- d. The Parent:
- Respect the rules and regulations
 - Have to respect the teachers and assistants
- e. Regulation / Government:
- Make sure that the schools are up to standard
 - Follow the rules and regulations

2. What are important aspects from a quality perspective from an **educational** perspective?

- It has to be according to their needs and interests.
- It has to be age appropriate.

3. What are important aspects from a quality perspective from an **organisation (management)** perspective?

- Make sure the school runs smooth
- Make sure the staff does their work and follow the rules and processes
- Work with the parents
- Do regular staff appraisals.

Topic: Measure existing quality in an ECD context

1. Are you aware of any quality measure used at this ECD centre? (Yes / No), explain:

- The manager goes to the classes everyday
- The planning gets checked on a weekly basis
- The toys get checked and the teachers has to sign the toys in and out.

2. As a caregiver, do you currently measure quality in your class? (Yes/No), explain:

I dont have a class

3. In your opinion, what is the overall level of quality of this ECD centre (DOSD scale, 2006)?

Not acceptable _____ Acceptable with a few adaptations _____ Acceptable X

4. Rate the quality of each of the following items (Source: Program Administration Scale):

Element	Sub Element	Not Acceptable	Acceptable with adapions	Acceptable
Human resource development	Staff orientation			X
	Supervision and Performance appraisal			X
	Staff development			X
Personnel cost and allocation	Salary			X
	Benefits		X	
	Work patterns & schedules			X
Centre Operations	Facilities Management			X
	Risk Management			X
	Internal Communications			X
Child Assessments	Screening and identification of special needs			X
	Assessment in support of learning			X
Fiscal Management	Budget planning			X
	Accounting practices			X
Program Planning and evaluation	Program evaluation			X
	Strategic planning			X
Family partnerships	Family communications			X
	Family support and involvement			X
Marketing and public relations	External communications			X
	Community outreach			X
Technology	Technology resources			X
	Use of Technology			X
Staff qualifications	Caregiver			X
	Administrator			X
	Assistant			X
	Director/Owner			X

Topic: Definition and understanding of institutional capacity in ECD

1. How much time of your day is spent on administrative related tasks?

0-15% 15-45% 45%-75% +75%

2. How much of your time is spent on management related tasks?

0-15% 15-45% 45%-75% +75%

3. How much time is spent on things that matter to you?

0-15% 15-45% 45%-75% +75%

4. How will you define institutional capacity in ECD?

It is the processes and procedures that has to be in place so that the ECD can run smoothly

5. Why is institutional capacity important?

So that everything runs smoothly in the ECD centre and that everyone knows what is expected from them.

6. On a scale, how will you rate your level of education and experience in administration / management?

Weak Average Strong

7. Did your qualification prepare you for managing the ECD?

No Yes

Topic: Understanding the Director and management

1. How long have you been a Directors?

I am a manager

2. How long have you been in this present position?

1 year

3. How long did you work in the ECD field before becoming Director?

I am a manager

4. How long do you intend to stay in this present positions?

As long as possible

5. How much early childhood training do you have?

13 years of experience and did lots of training,
1 year certificate and busy with Diploma

6. How much administrative training did you have?

Did some training before at Opti-Baby

7. How highly do you value the training that you have received?

I value it a lot, I use it all the time

8. How much awareness of the duties and responsibilities of this job did you have before

assuming the position?

I knew exactly what it was about and what
my responsibilities are.

9. What were they most prepared for?

I was prepared for the job and knew what
I have to do

10. What were they least prepared for?

Sometimes unexpected things happen.
You will never be prepared enough.

11. How were you orientated to this position?

We had a meeting about the position.

3

Topic: Qualifying the measure of quality in an ECD context

What is your role in the ECD centre?

- Caregiver (Teacher)
 Administrator (Operations)
 Director/Owner

What is your highest level of education?

- Attended high school but did not finish
 Grade 12 certificate
 Attended college but did not finish *busy finishing degree*
 Obtained a diploma or degree

How many years work experience do you have?

- 0-2 Years 2-5 Years 5-7 Years +7 Years

1. What are important quality aspects within a Early Childhood Development (ECD) centre, from the following perspectives?

a. The Owner:

- ensuring the school is safe, neat, clean and have sufficient caregivers
- ensuring parents & children are happy.
- ensuring that school has high hygiene

b. The Child:

- enjoys coming to school.
- learns at a suitable pace
- feels loved

c. The Caregiver/Teacher:

- To care & love children
- Ensure a safe & educating environment
- To teach them & help make time away from mom & dad fun.

d. The Parent:

- Positive attitude towards caregiver & school
- Respect for rules & teachers /assistants

e. Regulation / Government:

- Ensuring schools are safe for all children, everywhere
- ~~clean~~ *ensuring* That all children get a sufficient education.

2. What are important aspects from a quality perspective from an **educational** perspective?

- ⇒ If children are distracted or feeling unsafe they cannot learn.
- Calming surroundings which are safe & loving

3. What are important aspects from a quality perspective from an **organisation (management)** perspective?

- Ensuring school is up to date & cared for.
- Hygiene, cleanliness & safety. No broken toys, outside play.

Topic: Measure existing quality in an ECD context

1. Are you aware of any quality measure used at this ECD centre? (Yes/No), explain:

We give in our daily plan, this gets ~~schedule~~ checked & made sure it is being followed, our classrooms & outside area is constantly being upgraded.

2. As a caregiver, do you currently measure quality in your class? (Yes/No), explain:

I ensure that the children have a stimulating environment, with the best possible care. No broken elements in class with a good program

3. In your opinion, what is the overall level of quality of this ECD centre (DOSD scale, 2006)?

Excellent

Not acceptable _____ Acceptable with a few adaptations _____ Acceptable X

4. Rate the quality of each of the following items (Source: Program Administration Scale):

Element	Sub Element	Not Acceptable	Acceptable with adaptations	Acceptable
Human resource development	Staff orientation		✓	
	Supervision and Performance appraisal			✓
	Staff development			✓
Personnel cost and allocation	Salary			✓
	Benefits			✓
	Work patterns & schedules			✓
Centre Operations	Facilities Management			✓
	Risk Management			✓
	Internal Communications			✓
Child Assessments	Screening and identification of special needs			✓
	Assessment in support of learning			✓
Fiscal Management	Budget planning			✓
	Accounting practices			✓
Program Planning and evaluation	Program evaluation			✓
	Strategic planning			✓
Family partnerships	Family communications			✓
	Family support and involvement		✓	
Marketing and public relations	External communications			✓
	Community outreach			✓
Technology	Technology resources		✓	
	Use of Technology		✓	
Staff qualifications	Caregiver			✓
	Administrator			✓
	Assistant			✓
	Director/Owner			✓

Thank you for your participation in this survey.

4

Topic: Qualifying the measure of quality in an ECD context

What is your role in the ECD centre?

- Caregiver (Teacher)
 Administrator (Operations)
 Director/Owner

What is your highest level of education?

- Attended high school but did not finish
 Grade 12 certificate
 Attended college but did not finish
 Obtained a diploma or degree

How many years work experience do you have?

- 0-2 Years 2-5 Years 5-7 Years +7 Years

1. What are important quality aspects within a Early Childhood Development (ECD) centre, from the following perspectives?

- a. The Owner: There needs to be appropriately qualified staff, enough staff, appropriate resources, enough resources.
- b. The Child: A loving teacher and assistant, a safe place to learn, safe toys, healthy food, new things to learn.
- c. The Caregiver/Teacher: A safe working environment, regular quality checks, opportunities to further studies, appropriate compensation for work, clear job description.
- d. The Parent: A healthy and safe place for children to learn and play, affordable, in driving distance.
- e. Regulation / Government: Clearly laid rules and regulations for everybody involved at an ECD centre.

2. What are important aspects from a quality perspective from an **educational** perspective?

The content and topics that are being taught need to be fun, learner centred, relevant and age appropriate.

3. What are important aspects from a quality perspective from an **organisation (management)** perspective? All staff members should know processes, rules, regulations and protocols on all major issues in the school.

Topic: Measure existing quality in an ECD context

1. Are you aware of any quality measure used at this ECD centre? (Yes / No), explain:

Our planning is checked weekly and we get daily visits/inspections from the manager.

2. As a caregiver, do you currently measure quality in your class? (Yes/No), explain:

If I see certain activities do not work, I improve on them before the next time they are done.

3. In your opinion, what is the overall level of quality of this ECD centre (DOSD scale, 2006)?

Not acceptable _____ Acceptable with a few adaptations _____ Acceptable X

4. Rate the quality of each of the following items (Source: Program Administration Scale):

Element	Sub Element	Not Acceptable	Acceptable with adaptations	Acceptable
Human resource development	Staff orientation			✗
	Supervision and Performance appraisal			✗
	Staff development			✗
Personnel cost and allocation	Salary			✗
	Benefits		✗	
	Work patterns & schedules			✗
Centre Operations	Facilities Management			✗
	Risk Management		✗	
	Internal Communications			✗
Child Assessments	Screening and identification of special needs			✗
	Assessment in support of learning			✗
Fiscal Management	Budget planning			✗
	Accounting practices			✗
Program Planning and evaluation	Program evaluation			✗
	Strategic planning			✗
Family partnerships	Family communications			✗
	Family support and involvement			✗
Marketing and public relations	External communications			✗
	Community outreach			✗
Technology	Technology resources			✗
	Use of Technology			✗
Staff qualifications	Caregiver			✗
	Administrator			✗
	Assistant			✗
	Director/Owner			✗

Thank you for your participation in this survey.

5

Topic: Qualifying the measure of quality in an ECD context

What is your role in the ECD centre?

- Caregiver (Teacher)
 Administrator (Operations)
 Director/Owner

What is your highest level of education?

- Attended high school but did not finish
 Grade 12 certificate
 Attended college but did not finish (currently completing studies)
 Obtained a diploma or degree

How many years work experience do you have?

- 0-2 Years 2-5 Years 5-7 Years +7 Years

1. What are important quality aspects within a Early Childhood Development (ECD) centre, from the following perspectives?

a. The Owner:

All of the below

b. The Child:

Love, care and attention

c. The Caregiver/Teacher:

- * Facilities and equipment to be of ^{high} standard
- * Quality resources
- * Managerial and administrative support
- * Health and safety

d. The Parent:

- * Safety and security of the centre.
- * Trust and integrity in the organisation of caregivers
- * Transparency, accountability
- * Relevant educational programme

e. Regulation/Government:

- * Registration with Department of Social Development
- * Registration with Department of Education
- * Qualification of caregivers
- * Health and safety compliance

2. What are important aspects from a quality perspective from an **educational** perspective?
- * Clear and age appropriate learning framework
 - * access to resources to enable and support learning
 - * facilities and equipment to enhance learning opportunities.
3. What are important aspects from a quality perspective from an **organisation (management)** perspective?
- * that all the aspects mentioned in Question 1 are adhered to, implemented properly and developed appropriately (in line with changing times etc.)

Topic: Measure existing quality in an ECD context

1. Are you aware of any quality measure used at this ECD centre? (Yes/No), explain:
- * Continuous monitoring of facilities, equipment and resources and maintenance of the centre.
 - * Age appropriate assessment of learning and development of children / learners.
2. As a caregiver, do you currently measure quality in your class? (Yes/No), explain:
- * Assess and maintain standards of cleanliness, hygiene, organisation and layout of classroom.
 - * Plan and implement lesson structures.
 - * Assess condition of facilities, equipment and resources.
3. In your opinion, what is the overall level of quality of this ECD centre (DOSD scale, 2006)?

Not acceptable _____ Acceptable with a few adaptations Acceptable _____

4. Rate the quality of each of the following items (Source: Program Administration Scale):

Element	Sub Element	Not Acceptable	Acceptable with adaptations	Acceptable
Human resource development	Staff orientation			✓
	Supervision and Performance appraisal			✓
	Staff development		✓	
Personnel cost and allocation	Salary			✓
	Benefits			✓
	Work patterns & schedules		✓	
Centre Operations	Facilities Management			✓
	Risk Management			✓
	Internal Communications			✓
Child Assessments	Screening and identification of special needs			✓
	Assessment in support of learning		✓	.
Fiscal Management	Budget planning	N/A		
	Accounting practices	(no access to information)		
Program Planning and evaluation	Program evaluation			✓
	Strategic planning	N/A (not aware of school strategy)		
Family partnerships	Family communications			✓
	Family support and involvement			✓
Marketing and public relations	External communications			✓
	Community outreach	✓		
Technology	Technology resources		✓	
	Use of Technology		✓	
Staff qualifications	Caregiver		✓	
	Administrator			✓
	Assistant			✓
	Director/Owner			✓

Thank you for your participation in this survey.

6

Topic: Qualifying the measure of quality in an ECD context

What is your role in the ECD centre?

- Caregiver (Teacher)
 Administrator (Operations)
 Director/Owner

What is your highest level of education?

- Attended high school but did not finish
 Grade 12 certificate
 Attended college but did not finish
 Obtained a diploma or degree

How many years work experience do you have?

- 0-2 Years 2-5 Years 5-7 Years +7 Years

1. What are important quality aspects within a Early Childhood Development (ECD) centre, from the following perspectives?

a. The Owner:

- Involvement
- Visible
- Approachable
- Must know all children and parents

b. The Child:

- happy at school
- well cared after
- must develop - parents must see a difference

c. The Caregiver/Teacher:

- Passionate Teacher (must love her job)
- Energetic / friendly / unconditional love for kids
- Responsible / High moral values.

d. The Parent:

- Be involved in their child's schooling
- Follow school rules that was set for clear reasons so that they help the school to up

e. Regulation / Government:

- They need to support schools more often with visits to say if the school is on the right path and standards.

2. What are important aspects from a quality perspective from an **educational** perspective?
 - * Teachers' planning must be in on time and be according to school and Educational standards
 - * Teachers must be prepared for each day
 - * Toys and learning materials must be on the children's age (age-appropri
3. What are important aspects from a quality perspective from an **organisation (management)** perspective?
 - * Keep track of rules & regulations
 - * Make sure processes and procedures are followed and change where it doesn't work.

Topic: Measure existing quality in an ECD context

1. Are you aware of any quality measure used at this ECD centre? (Yes / No), explain:
 - x Observation books } child orientated.
 - x Daily Reports } meetings
 - Staff orientated < performance appraisals.
2. As a caregiver, do you currently measure quality in your class? (Yes/No), explain:
N/A

3. In your opinion, what is the overall level of quality of this ECD centre (DOSD scale, 2006)?

Not acceptable _____ Acceptable with a few adaptations X Acceptable _____

Always room for improvement.

4. Rate the quality of each of the following items (Source: Program Administration Scale):

Element	Sub Element	Not Acceptable	Acceptable with adaptations	Acceptable
Human resource development	Staff orientation		✓	
	Supervision and Performance appraisal		✓	
	Staff development		✓	
Personnel cost and allocation	Salary			✓
	Benefits			✓
	Work patterns & schedules			✓
Centre Operations	Facilities Management		✓	
	Risk Management		✓	
	Internal Communications		✓	
Child Assessments	Screening and identification of special needs			✓
	Assessment in support of learning		✓	
Fiscal Management	Budget planning			✓
	Accounting practices			✓
Program Planning and evaluation	Program evaluation		✓	
	Strategic planning		✓	
Family partnerships	Family communications		✓	
	Family support and involvement		✓	
Marketing and public relations	External communications		✓	
	Community outreach		✓	
Technology	Technology resources		✓	
	Use of Technology		✓	
Staff qualifications	Caregiver		✓	
	Administrator		✓	
	Assistant		✓	
	Director/Owner		✓	

Topic: Definition and understanding of institutional capacity in ECD

1. How much time of your day is spent on administrative related tasks?

0-15% 15%-45% 45%-75% +75%

2. How much of your time is spent on management related tasks?

0-15% 15%-45% 45%-75% +75%

3. How much time is spent on things that matter to you?

0-15% 15%-45% 45%-75% +75%

4. How will you define institutional capacity in ECD?

Following processes and procedures as well as the manager / principal / owner must be firm with keeping the school rules - no exceptions.

5. Why is institutional capacity important?

- To eliminate mistakes
- Improve flow and quality
- Set standards
- Make it easy for staff to be uncertain of what is

6. On a scale, how will you rate your level of education and experience in administration / expected management?

Weak Average Strong

7. Did your qualification prepare you for managing the ECD?

No Yes

Topic: Understanding the Director and management

1. How long have you been a Directors?
Four years. Since Jan 2016
2. How long have you been in this present position?
Almost four years.
3. How long did you work in the ECD field before becoming Director?
± 5 years
4. How long do you intend to stay in this present positions?
± 5 years
5. How much early childhood training do you have?
Obtained a degree in ECD in 2005
6. How much administrative training did you have?
Non.
7. How highly do you value the training that you have received?
- Highly but I wish we could do more bussiness related subjects.
8. How much awareness of the duties and responsibilities of this job did you have before assuming the position?
- I think I always knew what had to be done - the only difference is, life happens and when you see yourself again you are more involved in personnel staff issues than what you actually must focus on.
9. What were they most prepared for?
Parent issues.
10. What were they least prepared for?
staff issues
11. How were you orientated to this position?
Applied to start my own Baby House - gave my tender and got the contract.

11.5 Business report analysis

11.5.1 Full year 2018

BESIGHEIDS- VERSLAG

Direktur ECDC
30 Mei 2018

1. Besoekheidsinligting

Babes en peuters

MRBH is nou op sy 28 maande. Daar is tans 48 babes en peuters in die skool. Ons klasse is as volg:

Klas	Ons	Keel	Keel	Keel	Keel	Keel
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12

Ons bring om die vyfde klaskeer op te maak op 7 Augustus 2018 met 11 babes sal akkomodeer vanaf die ouderdom van 3 maande tot 12 maande. Die klas sal November 2018 tot wees as daar geen kanteelasse is nie.

Personeel

MRBH het tans 2 Onderwyssers en 8 Assistentes, 11 Oonderspanne, Kanteelasse en Turners, in totaal het ons 13 personeelslede op ons perseel.

Werkure

Ons Onderwyssers werk vanaf 7:00 tot 15:00 (met middagspans dae) en ons Assistentes werk vanaf 7:30 tot 17:30.

In sukkers werk ons op 'n rooster, afhange hoeveel kinders ons verkeerprogram bywoon.

Ontwikkele en ontwikkelings

- Hoofkond 11 Personeelslede het noodhulp kursusse gegee en is nog gedag.
- Bronbeweging - 2 Personeelslede het 'n bronbeweging sertifikaat.
- "In-House Training" - 2 keer per jaar.

2. Ouers

Verwagtinge en verwagtinge

MRBH is 'n spesiale verhouding met ons ouers. Ons het "hoopvolle betel" en werk nou saam met ons ouers om hulles kinders groot te kry. Ons is altyd op 'n opvallende manier om veranderinge aan te bring maar ons bring geen reëls en regulasies van wat ons glo en meesoon ons klasse nie. Ons ouers het ook 'n mooi geleentheid om te sien hoe ons kinders, in daer geen verhouding nie.

Partisipante en veranderinge

Ons perseel om ons skool 'n groot familie gevoel te gee en daarom doen ons baie moeite met ons spesiale gemeenskap soos Mammag, Pappag, en Ouma-en-Oppagag.

Entree en besoekende

Ons het 'n groot Oonderspan op Saterdag, 13 Oktober 2018. Hierdie dag is nie net 'n nuwe inskrywing van volgende jaar nie, maar ook op 'n die inkomers van die Eskale om te kom leer wat ons doen en 'n hulle kinders kan bed. Ons babes om Kintemak, Pappag en Ouma Club by ons te hê en die dag soos 'n speelgoed uitstalling van SA Toy Trade.

3. Skakelings met ander Babehulles

Die ons babehulles het verkeer 'n tyd, 23 Mei 2018 en die verkeer was 'n lang ruk bynaar gekom. Ons het besluit dat ons die inleiding wil maak om elke 6 weke bynaar te kom en sake te bespreek wat ons al die maande. Ons het die leer gegee om hulle te laat om te gebruik om ontwikkelingsdore by ons babes op te lei en die tipe verhouding wat ons aanleer om ons ouer.

4. Finansiële

MRBH het tans 'n besigheidsplan wat ons gegee in die vroeë maande van 2018 tot 44% gegee, gevolg deur 'n effektiwiteit na 30% in 2017 hoërskool as gevolg van die babes klasse wat oopgehou was en 'n groot aantal veranderinge. Die okeerbare permissies in 2018 staan tans op 47%, en net die huidige permissies kan moontlik teen einde 2018 teen 65% staan, met 58 babes in die skool.

Die 2017/2018 finansiële jaar het 'n **R1,200,000** omset gehad, met 'n net profyt van **R150,000**. Daar was aansienlike veranderinge in ouer appaats, verkeer, en ons was omring deur persoonel gegee. Daar was ook aansienlike klasse wat oopgehou was, wat ook bydra tot die groei van MRBH. Dit was die grootste hoogste geleentheid waarmee MRBH 'n jaarlike begin. MRBH klasse was teen Desember 2018 teen 65% staan, met 58 babes in die skool.

Die finansiële prestasie van MRBH is gesond, met 'n positiewe konstante groei en besigheid in 'n tyd met die jaarlike begroting. Alhoewel daar nog 'n paar hantele is vir groei, is MRBH nou na 2.5 jaar 'n goed gevulde naam vir onderwyssers Middelste Rige ouers, hoewel in die huidige tye.

5. Notas van vergadering

Aanwysing: Ruan Boma & Zohara De Beer
Datum: 31 Mei 2018
Plaas: Bonderskerk

Agenda items bynaar

- Doel van die Eskale en inperk op skool
- Skool se groei en vooruitgang van 2018
- Situering van die Eskale en verhouding by ouer
- Personeel en veranderinge in besigheid opdrag
- Ouers en klasies
- Skakeling met Kanteelasse en ander Babehulles
- Mensing van hulle kinders babes MRBH en Bonders

Items bespreek gedurende die vergadering is saamgevat in oë van die besigheids verslag.

11.5.2 Full year 2019

BESIGHEIDS- VERSLAG

Direktur ECDC
07 Januarie 2019

1. Besoekheidsinligting

Babes en peuters

MRBH is nou op sy derde besigheidsjaar, en 2019 is die vierde besigheids jaar. In Desember 2018, was daar 'n totaal van 52 babes, die hoogste toevae in 'n totaal van vyf klasse was aangewys. Vir Januarie 2019 is daar 52 babes en peuters in die skool. Dit is 'n baie goeie aanwysing van groeiende groei in MRBH, en watter die oonderste hoogste geleentheid waarmee MRBH 'n jaarlike begin. MRBH klasse was teen Desember 2018 was 65%.

Klas	Ons	Keel	Keel	Keel	Keel	Keel
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12
Keel	12	12	12	12	12	12

MRBH bring om in die middel van 2019 die aksie klaskeer op te maak, da sal die vyfde inkomers in plek wees (personeel soos ook klas appaats) ter verandering om vroeë kwaliteite in 2020 te hê.

Bestuur & Personeel

Ons het die nuwe aksie hoof verkeer vir die eerste drie jaar, en sênde MRBH groei word daar besig om die bestuur te verkeer. MRBH is gepersonaal om die nuwe 'n hoof te skep, en alhoewel Maandag Testasie is gepersonaal om 'n reël hand op te stel. Maandag is sedert Augustus 2017 in daer by MRBH, en het in totaal 13 jaar ECDC onderwyssers, waarvan die bestuur van 'n ECDC aksie maats. Sy is tans besig met haar ECDC diploma en sal teen 2020 dit voltooi. Onse aksie aksie aksie aksie aksie, en bring oor MRBH verkeer.

2. Ouers

Verwagtinge en verwagtinge

MRBH is 'n spesiale verhouding met hulle ouers. MRBH het "hoopvolle betel" en werk nou saam met ons ouers om hulles kinders groot te kry. Ons is altyd op 'n opvallende manier om veranderinge aan te bring maar ons bring geen reëls en regulasies. MRBH ouers het ook 'n mooi geleentheid om te sien hoe ons kinders, in daer geen verhouding nie.

Partisipante en veranderinge

Ons perseel om ons skool 'n groot familie gevoel te gee en daarom doen ons baie moeite met ons spesiale gemeenskap soos Mammag, Pappag, en Ouma-en-Oppagag.

Entree en besoekende

Ons het 'n groot Oonderspan op Saterdag, 13 Oktober 2018. Hierdie dag is nie net 'n nuwe inskrywing van volgende jaar nie, maar ook op 'n die inkomers van die Eskale om te kom leer wat ons doen en 'n hulle kinders kan bed. Ons babes om Kintemak, Pappag en Ouma Club by ons te hê en die dag soos 'n speelgoed uitstalling van SA Toy Trade.

3. Skakelings met ander Babehulles

MRBH het tans 'n besigheidsplan wat ons gegee in die vroeë maande van 2018 tot 44% gegee, gevolg deur 'n effektiwiteit na 30% in 2017 hoërskool as gevolg van die babes klasse wat oopgehou was en 'n groot aantal veranderinge. Die okeerbare permissies in 2018 staan tans op 47%, en net die huidige permissies kan moontlik teen einde 2018 teen 65% staan, met 58 babes in die skool.

Die 2017/2018 finansiële jaar het 'n **R1,200,000** omset gehad, met 'n net profyt van **R150,000**. Daar was aansienlike veranderinge in ouer appaats, verkeer, en ons was omring deur persoonel gegee. Daar was ook aansienlike klasse wat oopgehou was, wat ook bydra tot die groei van MRBH. Dit was die grootste hoogste geleentheid waarmee MRBH 'n jaarlike begin. MRBH klasse was teen Desember 2018 teen 65% staan, met 58 babes in die skool.

Die finansiële prestasie van MRBH is gesond, met 'n positiewe konstante groei en besigheid in 'n tyd met die jaarlike begroting. Alhoewel daar nog 'n paar hantele is vir groei, is MRBH nou na drie jaar 'n goed gevulde naam vir onderwyssers Middelste Rige ouers, hoewel in die huidige tye.

4. Notas van vergadering

Aanwysing: Ruan Boma & Zohara De Beer
Datum: 31 Mei 2018
Plaas: Bonderskerk

Agenda items bynaar

- Doel van die Eskale en inperk op skool
- Skool se groei en vooruitgang van 2018
- Situering van die Eskale en verhouding by ouer
- Personeel en veranderinge in besigheid opdrag
- Ouers en klasies
- Skakeling met Kanteelasse en ander Babehulles
- Mensing van hulle kinders babes MRBH en Bonders

Items bespreek gedurende die vergadering is saamgevat in oë van die besigheids verslag.

11.5.3 Mid-year 2019

BESIGHEIDS- VERSLAG

Direkteur ECDC
31 Julie 2019

2

Besigheidsinligting

Babes en peuters

MRBH is teen Julie 2019 baie om verslag te doen dat 70 kinders ingesê is, en in vergelyk met Julie 2018 was 56 kinders was aangetreke. MRBH is baie suksesvol in die Midstream omgewing. MRBH is baie suksesvol in die Midstream omgewing. MRBH is baie suksesvol in die Midstream omgewing.

Maand	Oktober	Nov	Des	Jan	Feb	Mar	Apr	Mei	Jun	Jul
Mediese	1	2	2	2	2	2	2	2	2	2
Operasionele	1	1	1	1	1	1	1	1	1	1
Totaal	2	3	3	3	3	3	3	3	3	3

Bestuur & Personeel

Bestuurs prosesse en sisteme is baie om te stabiliseer, en alle personeel is versigtig met besigheid wat verslag word. Daarom is baie fokus op die kwaliteit van onderliggende, spesifiek fokus op implementering van programme wat week na week verslag word. Jufhu. Moché was as Operasionele Bestuurder op, en speel 'n rol in die dag te dag bestuur by MRBH, en daarin verskeie dat die MRBH program streng gevolg word.

Operasionele personeel

MRBH het baie 18 personeelslede, waarvan dit as volg verdeel is:

- 1 x Operasionele Bestuurder
- 5 x Onderwyse
- 8 x Assistentie

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3

Onderwyse

- 1 x Ontvangsdiens
- 1 x Kombuisdiens
- 1 x Tuinier

Onderwyse

MRBH onderwyse werk vanaf 7:00 tot 15:00 (met middagpauze) en aanvaarde werk vanaf 7:00 tot 17:00. In vakansie werk ons op 'n rooster, afhanklik van die kinders se vakansieprogramme byeen.

Onderwyse en ontwikkeling

Daar was aanvaarde fondse aan opleiding betree vir verders studies, en hierdie is deur middel van beurse toegeken, en is as volg:

- 1 x Diploma in ECD
- 1 x Finale jaar in ECD graad
- 2 x Sertifikaat in ECD
- 1 x Groep kursus getruks op musiek stimulering
- 1 x Groep sessie aangebied deur die UNO (Wetenskap) rakende werksake en professionelliteit en die belangrikheid van die onderwyse beroep.

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4

Ouers

Familie en sosiale onderwyse

MRBH se Moeders en Vaders dag word nou gereël as klas besoeke en dit gee die ouers kans om te sien wat die kinders elke dag gedoen word. In 2018 was dit 'n reus sukses en daar was baie positiewe terugvoer van ouers ontvang. Hierdie geleentheid is fokus word deur 'n professionele fotograaf geneem, en MRBH is baie om elke maand om foto's met die eerste te deel deur middel van die Midstream Tydskrif.

MRBH se volgende groot geleentheid is Ouers en Oupa dag, en daar word ongeveer 100 gratis vervoer wat oor twee dae sal trek, en weer eens optiesies dat dit 'n reus sukses sal wees, soos MRBH se reus sukses in die eerste.

Finansieel

MRBH toon beseerde getalle groei, soos gesien in die onderstaande figuur. Die akkurate persentasie het van 39% in 2017 na 'n rekord beter akkurate van 59% in 2018 gegroei, met 'n totaal van 62 kinders teen Desember 2018. Getalle in 2019 tot en met Julie 2019 is 70, en tot op datum die beste periode vir MRBH. Die groei sal tot en met Desember 2019 tussen 70 - 74 kinders wees, en dit word verwag dat Januarie 2020 met 60 kinders sal afloop. Na aanleiding van Januarie 2020 se begin, word daar verwag dat 2020 se getalle volhoubaar sal wees en naby aan volle kapasiteit wees.

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5

MRBH se groei is baie om te stabiliseer, en alle personeel is versigtig met besigheid wat verslag word. Daarom is baie fokus op die kwaliteit van onderliggende, spesifiek fokus op implementering van programme wat week na week verslag word. Jufhu. Moché was as Operasionele Bestuurder op, en speel 'n rol in die dag te dag bestuur by MRBH, en daarin verskeie dat die MRBH program streng gevolg word.

Operasionele personeel

MRBH het baie 18 personeelslede, waarvan dit as volg verdeel is:

- 1 x Operasionele Bestuurder
- 5 x Onderwyse
- 8 x Assistentie

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6

Infrastruktuur

Stevige MRBH se infrastruktuur opgestel is om 6 klasse te bestuur, sal voldoende finansiële begroting vir die eerste 5 maande van 2020 gedoen moet word, soos die bevestiging van meer in te kom. Daar is optiesies dat in die einde van 2019 'n beter prentjie van getalle in 2020 sal vorm, en sal weer gegoe word in die volgende verslag.

Ten slotte

Dit is 'n besondere vooring om MRBH as diens aan die Midstream omgewing te bied, en meer belangrik om kinders en peuters toe-ginger gereël te maak wat 'n invloedse fondse vir hulle skool loopbaan is. MRBH is vasberade om elke dag versterking aan te bring, 'n rol in die gemeenskap te speel, en aan te hou om MRBH se reus suksesvolle reus te versterk.

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Prospectus

Welcome to MRBH



At MRBH we have established a safe environment which is a second home for our babies and toddlers. The caring, loving education entrusted to us is paramount. We focus on the holistic development of our babies and provide them with positive role models.

Our quality education ensures that babies and toddlers learn through play using a rich and stimulating program. The focus is on development areas, such as milestones, cognitive, emotional, social and perceptual development.



Language is the foundation of learning. Our daily program is full of language development activities. It is vital to us that our babies and toddlers learn and understand the language they are taught in.

Our program is filled with opportunities like creative activities, story time, theme discussions, fantasy play, routine and music activities so that our babies and toddlers develop to their full potential.



Our classrooms provides the babies and toddlers with numerous development areas, construction and manipulative play, messy activities, sensory exploring, book corner and imitative play is just to name a few. The layout of our classes is designed for the safety of our babies and toddlers.

MRBH is equipped with age-appropriate gross motor apparatus that includes jungle gyms, swings and wheel toys. A wide variety sensopathic material is always available throughout the playground.





Here at MRBH we know the importance of nutrition for healthy growing babies. We offer a nutritional menu that is suitable for every age. The menu is available at our office for further enquiries.

MRBH's teachers have experience working with babies and toddlers. We build a relationship with every baby and toddler through providing them with loving, caring education so that they feel safe and at home with us.



We like to get our parents involved in the babies' and toddlers' development and progress. We believe in building close relationships with our parents and have an open door policy. MRBH has many fun events such as Lovie Day, Mommy Day, Daddy Day and Grandparents Day planned throughout the year.

If you as a parent are interested in our Baby House, contact us and we will send you an application form. Detailed information will be stipulated such as deposits, provisional funds, school fees and school rules. Parents are always welcome to make an appointment with us. We will be more than happy to give you a tour of our Baby House.



A non-refundable registration fee of R400 is payable on submission of your child's application form. A deposit is required as soon as your child is accepted. Caring fees are payable for all 12 months of the year.

is open from 7:00 - 18:00 during week days. We are open during school holidays. Please do not hesitate to contact us. We would love to hear from you.



11.7 ECDC rules and regulation

Attached an example and extract of the ECDC rules and regulation document. This is a comprehensive document, and for ease of reference only includes the front page. This document consists of eight full pages.



MRBH is determined to be a home away from home for babies and toddlers. We offer quality education where babies/toddlers can develop to their full potential through a rich and stimulating program by playing, growing and learning. A specially designed terrain and classes offer a wide variety of learning possibilities. We consider the safety, health and nutritional needs as well as the loving, caring education of the children in our care to be utmost of importance.

School Hours (07:00 – 18:00)

- MRBH opens strictly at 07:00. We will not be able to accommodate your child before 7:00
- Formal program runs from 08:15 to 11:30. If you need to collect your baby/toddler during our formal program, please make arrangements beforehand with management.
- Breakfast is served at 08:00. Should you arrive after 08:10, please make sure that your baby/toddler had breakfast at home. We will not be able to cater for your child if you are late.
- Lunch is between 11:30 and 11:45
- Sleepy time is from 11:45 to 14:15 (Sleepy time is very important for our little ones and we do not want to disturb the other children in the class.)
- Snacks and refreshments are served during the day
- The Baby House closes strictly at 18:00. _____ minutes will be levied if you are late. This must be paid in cash on arrival to the Teacher on duty. Please inform us immediately if you might be late.

Gate times

- Drop off time – 7:00 to 8:00
- Gate closes – 8:10 to 11:30
- Collection time – 11:30 to 11:45
- Gate closes – 11:45 to 14:15
- Collection time – 14:15 to 18:00

Please respect the gate times.

11.8 Document analysis

11.8.1 Document analysis code book

Structural code	Structural code definition
Process	<p>Brief definition: Classify content that talks to a way or manner of doing something, with a start and end point.</p> <p>Full definition: Code all parts of the minutes that refers to how something is or should be done. The logical test is whether it has a start and end point, or alternatively an input and output.</p> <p>When to use: Use this code to highlight instances in the minutes when a process is referenced, mentioned, changed or newly introduced.</p> <p>When not to use: Do not use this code when reference is made to a single task or instance.</p>
Planning	<p>Brief definition: Refers to educational programme planning, day or activity planning as well as discussions.</p> <p>Full definition: Code all instances from the minutes where reference is made to the educational programme, activity or day planning. This entail the preparation, process as well as content of the educational curriculum, including the plan to deliver the service.</p> <p>When to use: Use this code whenever reference is made to the preparation and development of the educational curriculum.</p> <p>When not to use: Do not use this to reference activities outside of the education programme delivery, such as events or birthdays.</p>
Quality	<p>Brief definition: This code is associated with anything related to quality of services delivered.</p> <p>Full definition: All content were coded that had a reference to quality, or a possible impact on quality of services delivered in the ECDC.</p> <p>When to use: Use this code to highlight minutes where quality of services are discussed.</p> <p>When not to use: Where any quality aspects outside of educational care or service is referenced, such as the quality of paper or stationary.</p>
People	<p>Brief definition: Identifies content associated with staff as well as HR related matters.</p> <p>Full definition: Code content that refers to any policy, procedure or reference to staff, management as well as HR related matters at the ECDC.</p> <p>When to use: When reference is made to internal staff / HR matters in the ECDC, ranging from process, ways of work, procedures and frameworks.</p> <p>When not to use: When reference is made to people external to the ECDC, such as visitors, inspectors or even parents.</p>

Structural code	Structural code definition
Communication	<p>Brief definition: Identifies content from the minutes relating to all communication related activities.</p> <p>Full definition: This code is used to illustrate and highlight all instances where communication whether internal between staff, to parents or towards children are made.</p> <p>When to use: Use this code to highlight communication in all instances, whether internal or external to the ECDC.</p> <p>When not to use: When communication is used outside of the context of the ECD environment, such as my friend told me that...</p>
Supervision	<p>Brief definition: Identifies minutes content specific to supervision and oversight in the ECDC environment.</p> <p>Full definition: This code should be used when reference is made to a teacher or assistant supervising children, in or outside the class, or the teacher supervising assistants. It has to do with the management activity of monitor and control.</p> <p>When to use: Any reference made to management or supervision of staff to each other, or children inside or outside the classroom.</p> <p>When not to use: Non ECDC related matters.</p>
Culture	<p>Brief definition: Refers to any part of the minutes that discuss a way or work or culture in the ECDC.</p> <p>Full definition: The culture refers to any instance where a systemic notion is made on this is how its done here, or gesture towards this is how we should work in the ECDC.</p> <p>When to use: Use this code to highlight minutes where reference to improvement, correction or acknowledgement to culture is made. Refer to ways of work, how staff treat each other as well as tasks that makes the ECDC a great place for parents, children as well as staff.</p> <p>When not to use: Any reference outside of the ECDC context.</p>

11.8.2 Minutes of meetings code book

Meeting minutes analysis 01 January 2019 – 16 March 2020

Document Analysis ECD Masters

Codes (selection)

Report created on 18 May 2020

- Process

Quotations:

- ☞ 1:53 Please take note that as of 12 March 2020, the process for afternoon supervision will be as follows:
- ☞ 1:178 • It is also very important that you and your Assistant know the Policies and Procedures
- ☞ 1:179 • If you don't know the Policies and Procedures or you are unsure of something – rather
- ☞ 1:184 Class processes – Teachers are responsible for the following: (assistants not to do it!
- ☞ 1:185 Class processes – Teachers are in charge of the class!
- ☞ 1:186 Creative activities – Its not about the product its about the process...
- ☞ 1:191 Snacks – Assistants changed the process.
- ☞ 1:193 Snacks – Assistants changed the process.
- ☞ 1:206 Class processes; Daily reports / Observation books / Medicine books / Attendance registry / Toys / C...
- ☞ 1:212 Write everything in your observation book – what is wrong with the child, why they were ill, and the...
- ☞ 1:220 Class processes- Medicine books- Please check medicine before parent leaves – Tell them if we can't...
- ☞ 1:229 Toys have to be taken out between 07:00 – 07:10 and has to be in the class by 07:10.
- ☞ 1:230 All the assistants must help each other to pick up the toys.
- ☞ 1:232 Class processes – Teachers are responsible for the following: (assistants not to do it!) Daily rep...
- ☞ 1:237 Class processes – Teachers are in charge of the class! if something goes wrong then the teacher is t...
- ☞ 1:241 If a parent arranges with you to fetch a child early please tell them it needs to be arranged at rec...
- ☞ 1:242 If a parent writes in the medicine book the teacher needs to look at what they are writing and if yo...
- ☞ 1:251 Tidy up time EVERYTHING! Stones, sticks, papers, tissues, everything must be picked up for the safet...
- ☞ 1:252 Dustbins outside • Please close the black bags outside, it attracts the rats and cats! If the bags a...
- ☞ 1:262 1. Caring Safety measurements for all our special requests babies
- ☞ 1:274 1. Stations You all have to be at your station. If you leave to go and change a child's nappy or to...
- ☞ 1:276 Cleaning In the afternoon if one assistants' child is all gone, she has to help out in the other cla...
- ☞ 1:280 1. Caring Snacks – Assistants changed the process. Children are not allowed to eat any Yoghurt, bisc...
- ☞ 1:282 Teacher on duty has to make sure that all the toys and everything is picked up outside. There cannot...
- ☞ 1:283 leaning In the afternoon if one assistants' child is all gone, she has to help out in the other clas...
- ☞ 1:287 Cleaning Your classroom doors are not allowed to be closed. Only when your children are sleeping, or...
- ☞ 1:288 Toys in and out Please make sure that you count and check the toys that you take beforehand and if s...

- ☞ 1:290 When u spray the classes please don't spray too much
- ☞ 1:291 Caring You are NEVER allowed to leave the children alone. There has to be someone with them at all t...
- ☞ 1:292 Cleaning Your classroom doors are not allowed to be closed. Only when your children are sleeping, or...
- ☞ 1:293 Toys in and out Please make sure that you count and check the toys that you take beforehand and if s...
- ☞ 1:294 Please make sure that you sit where the camera can see you at all times
- ☞ 1:298 The assistants are complaining that the teachers outside are not cleaning the kids after an activity...
- ☞ 1:299 When your children are sleeping in the afternoon, you are allowed to take 20min and eat or make tea...
- ☞ 1:301 Jolene asked that the assistants please use the hour lunch available to do everything, and not to co...
- ☞ 1:305 When you go on lunch please remember that you only have an hour. In that hour you have to eat, wash...
- ☞ 1:306 If parents are late, there is a list on the wall by the phone with times and amounts that the parent...
- ☞ 1:307 If you work late, your book has to be in front before 15:00 not only when you leave. Mardré signs t...
- ☞ 1:310 Your classes must be tidy and clean every day before you leave. Your assistants should know exactly...
- ☞ 1:312 Please push the toilet handle down when you flushed the toilet, don't just flush and go. The toilet...
- ☞ 1:314 If your planning and letter in not in on time on the above mentioned due dates you will get a warnin...
- ☞ 1:316 Nobody is allowed to take Sirion's key and open the gate. Whoever opened it on Friday left it open,...
- ☞ 1:317 If you flush the toilet at the bottom, please make sure that you push the handle down afterwards.
- ☞ 1:320 Cleaning Your classrooms have to be neat, clean and tidy at all times. ECD Director checks your classrooms...
- ☞ 1:321 If you are unsure if a child is allowed to be at school please ask Mardré.
- ☞ 1:326 eacher on duty in the afternoon has to make sure that all the classes have enough toys on the carpet...
- ☞ 1:327 All teachers have to be in their classes by 06:55 nobody is allowed to walk around after that time....
- ☞ 1:333 Staple all your paperwork that you used this year together. So, all Adrienne's daily reports has to...
- ☞ 1:334 Hand out calendar for 2020 Give routine form to parents to fill in, bring lots of pens. Be very hone...
- ☞ 1:335 On time (NO LATER THAN 6:45) – Not allowed to leave early, not allowed to come in late. Work hours a...

- ☞ 1:337 KNOW THE SCHOOL RULES AT ALL TIMES • Ask if you do not know • Be FIRM but POLITE • Parents are no...
- ☞ 1:338 Be in class at 7:00 SHARP. No running around or drinking coffee in kitchen. • No walking around allo...
- ☞ 1:342 Please keep by the washing, cloth, toy, and other cleaning routine of. • Neatness is of utmost...
- ☞ 1:343 Do not exchange class furniture and material – there are inventories for each class.
- ☞ 1:346 Portfolios • Outside storeroom – Chanté & Danelle • Inside toys and materials – Chantell & Jacqy •...
- ☞ 1:350 Stations – children are not to be taken off the jungle gym. Please allow them to climb out, just sup...
- ☞ 1:354 It is also very important that you and your Assistant know the Policies and Procedures • If you don'...
- ☞ 1:357 t is also very important that preparation is done before class time starts (7am). A person cannot sa...
- ☞ 1:358 Prepare her for the activities of the day before 7am and ensure that she has everything she needs in...
- ☞ 1:361 Parents – greet nicely and speak to parents nicely. Remind your assistants as well.
- ☞ 1:363 Assessments; First assessment must be submitted on 12 March Second assessment must be submitted on 2...
- ☞ 1:367 Late leavers – any children left after 5pm must be taken to Brenda at 4:55pm as per the latest time...
- ☞ 1:368 Mornings – must be in class by 7:10 in the morning after taking out toys. 2. Toys – make sure the to...
- ☞ 1:372 Biting – Not necessary to first bring child to inform management. Treat first (hot & cold method) an...
- ☞ 1:373 Late leavers – any children left after 5pm must be taken to Brenda at 4:55pm as per the latest time...
- ☞ 1:374 Daily Reports – make sure they are filled in and completed accurately. Do not lie or leave things ou...
- ☞ 1:375 Observations – must be done first thing in the morning and reported to Bronwen before 08:30. If repo...
- ☞ 1:379 Please do not encourage certain children to come to you during aftercare. It is very disruptive for...
- ☞ 1:381 Outside Store –
- ☞ 1:383 must be done first thing in the morning and reported to Bronwen before 08:30.
- ☞ 1:384 Please ensure that you send a nappy alert when there are 10 nappies left and no
- ☞ 1:391 Parent complaints
- ☞ 1:401 Please take note that as of 12 March 2020, the process for afternoon supervision will be as follows:...

- Planning

Quotations:

- 🗨️ 1:66 5 March – hand in your Autumn planning
- 🗨️ 1:67 12 March – hand in your Police planning
- 🗨️ 1:68 2 April – hand in your Easter planning
- 🗨️ 1:70 Planning – Planning is being swapped around teachers – please make notes. – Hand it in to ECD Director on...
- 🗨️ 1:71 Planning – All Files must be filed correctly – weekly theme file(Teacher planning check list/Daily s...
- 🗨️ 1:72 planning\weekly planning\Milestones) , rhyme file, daily report file (every term each child must get...
- 🗨️ 1:73 Planning – Double check when must be handed in and on which date.
- 🗨️ 1:74 Planning – Theme and weekly planning to be kept in the file at school.
- 🗨️ 1:75 Planning – much better – work on musical, gross motor as well as messy art activities.
- 🗨️ 1:76 Planning – Theme discussion needs a lot more detail (think outside the box) – Its very important for...
- 🗨️ 1:79 Planning- Pets theme has to be handed in next week Tuesday and has to be 100%!
- 🗨️ 1:80 • Planning needs to be in on time.
- 🗨️ 1:82 If you are booked off and have a sick note your planning can be handed in when you
- 🗨️ 1:83 you are not at school for something else you still have to hand in your planning.
- 🗨️ 1:88 You are not allowed to do the same planning/rhymes/songs.
- 🗨️ 1:89 JōECD Director is not just being silly or difficult by asking you to do your planning a certain way or aski...
- 🗨️ 1:91 Remember that your planning needs to be in on time.
- 🗨️ 1:93 Remember that your planning needs to be in on time.
- 🗨️ 1:95 Planning for 2020, there will be a roster.
- 🗨️ 1:96 One of the 3 small classes teachers will each get a chance to check the rest of the classes planning...
- 🗨️ 1:98 Your planning needs to be in on a Tuesday morning before 07:00, and everything HAS to be laminated a...
- 🗨️ 1:99 ✓ If your planning and letter in not in on time on the above mentioned due dates you will get a warn...
- 🗨️ 1:101 Your planning for the following week has to be on your theme board every Friday afternoon before you...
- 🗨️ 1:102 Teachers marking planning for 2020 – Adele and Chantell does My school
- 🗨️ 1:103 ✓ Danelle will print a list with all the words for the planning
- 🗨️ 1:105 You can throw the Prestik away and put everything that you took down in your black planning crate.
- 🗨️ 1:106 One nappy alert sheet Planning roster
- 🗨️ 1:108 • Give planning in each Tuesday Morning BEFORE 7:00
- 🗨️ 1:109 • Teacher responsible for checking weekly planning must report what is missing or
- 🗨️ 1:110 incomplete in other's staff planning
- 🗨️ 1:111 • Most of the theme table and other material must be handed in with the planning
- 🗨️ 1:112 • During the adaption period (first month), it is more important for children to be happy and well

c...

☞ 1:113 Planning – the activities must integrate with one another. (e.g. if you use toilet roll holders for...

☞ 1:115 checking the planning must make sure

☞ 1:117 The person checking the planning must make sure that they get all corrections

☞ 1:119 Planning – later

☞ 1:120 This is not really something to worry about unless you plan on resigning in beginning of February fo...

☞ 1:121 This is not really something to worry about unless you plan on resigning in beginning of February fo...

☞ 1:122 everything so that we can change our programme.

☞ 1:123 Holiday programme – Outside from 08:30-11:00 – Snack at 10:00

☞ 1:124 Time schedule – Winter programme

☞ 1:125 Teacher and Assistant Relationship and class Rules – Every Monday you must have a connect meeting wi...

☞ 1:126 Involvement / care – Holiday programme – 25th June there will be training on music for teachers from...

☞ 1:127 Programme for the day:

☞ 1:128 ✓ Books and symbols have to be done in the holiday programme

☞ 1:129 • Leave will not be granted on school terms as well as holiday programmes.

☞ 1:130 • Programme follows at 8:15

☞ 1:131 Important Dates – Holiday Programme.

☞ 1:132 Important Dates – Holiday Programme.

☞ 1:133 Rineey has a certain time that JōECD Director gave her to prepare and take out the snacks.

☞ 1:134 Renni has a certain time that JōECD Director gave her to prepare and take out the snacks.

☞ 1:135 • Prepare her for the activities of the day before 7am and ensure that she has everything she needs...

☞ 1:136 Always be prepared to stick up for your colleagues.

☞ 1:137 • It is also very important that preparation is done before class time starts (7am).

☞ 1:247 Planning needs to be in on time. Everything must be completed.

☞ 1:382 he person checking the planning must make sure that they get all corrections

○ Quality

Quotations:

☞ 1:204 Quality of Education; 1. Caring – Give the children lots of love and hugs! Pick them up when they cr...

☞ 1:210 Quality of Education; 1. Caring Staff and teachers has to speak to the children in their language Th...

☞ 1:216 Caring -When you put a child in a rocking chair, swing, bumbo etc. make sure they are strapped in! Y...

☞ 1:218 Involvement / care – When children go home make sure their nappies, faces and noses are clean! Teach...

- ☞ 1:219 Caring – runny noses etc – send home clean. 2. discipline – use the thinking corner 3. Development –...
- ☞ 1:224 Nappies must be ticked straight away after changing a child on the nappy list or the daily report. I...
- ☞ 1:227 No one is allowed to be on their cell phones during class time or on the playground, if we catch you...
- ☞ 1:231 Involvement / care – teachers need to make sure nappy changing is being written down/ one wet wipe to...
- ☞ 1:235 1. Caring – Keep faces/hands clean – runny noses, dirty mouths and hands. Never send babies home dirty...
- ☞ 1:236 Involvement / care – make sure assistants apply Vaseline on faces when they come in at 16:00.
- ☞ 1:239 1. Caring – Don't be rough with the children, no pulling, smacking or pushing a child. If you see an...
- ☞ 1:244 Classes has to be neat and tidy at all times.
- ☞ 1:256 Caring Safety measurements for all our special requests babies
- ☞ 1:264 2. Involvement / care Make sure that they use the equipment for the correct purposes. Bikes are to u...
- ☞ 1:266 You are not allowed to speak any other languages at school other than English and Afrikaans. This is...
- ☞ 1:268 3. Involvement / care Outside play is not resting time. It is still an activity and therefore you ne...
- ☞ 1:271 2. Involvement / care You have to be involved in the activities outside. Outside play is not to rest...
- ☞ 1:272 1. General Admin Please make sure that you put the correct belongings in the correct bags, especially...
- ☞ 1:273 1. Caring Snacks – Assistants changed the process. Children are not allowed to eat any Yoghurt, bisc...
- ☞ 1:275 Tidying up Make sure that all the toys and everything is picked up outside. There cannot be any toys,...
- ☞ 1:277 1. School Rules This is a verbal warning! You are gossiping about each other in your own languages a...
- ☞ 1:280 1. Caring Snacks – Assistants changed the process. Children are not allowed to eat any Yoghurt, bisc...
- ☞ 1:287 Cleaning Your classroom doors are not allowed to be closed. Only when your children are sleeping, or...
- ☞ 1:291 Caring You are NEVER allowed to leave the children alone. There has to be someone with them at all t...
- ☞ 1:297 You are NEVER allowed to leave the children alone. There has to be someone with them at all times.
- ☞ 1:298 The assistants are complaining that the teachers outside are not cleaning the kids after an activity...
- ☞ 1:302 You are NEVER allowed to leave the children alone. There has to be someone with them at all times.

- ☞ 1:311 There are a lot of assistants still speaking their own languages in front of the children and parent...
- ☞ 1:327 All teachers have to be in their classes by 06:55 nobody is allowed to walk around after that time....
- ☞ 1:331 You need to cover your communication books with dicifix. You need to print, cut, paste and laminate...
- ☞ 1:332 Do your mattress symbols, give ECD Director the mattress covers that's wearied out so she can get them rea...
- ☞ 1:333 Staple all your paperwork that you used this year together. So, all Adrienne's daily reports has to...
- ☞ 1:348 Caring – remember that it is the beginning of the year and children are still adjusting to routines...
- ☞ 1:352 School Rules – remember to KNOW the school rules in case parents ask you something. If you are reall...
- ☞ 1:355 The Assistants are employed for CARING and SUPERVISION, first and foremost. Therefore, their main pr...
- ☞ 1:356 CARING includes all aspects of a child's well-being including comforting when a child is crying, cle...
- ☞ 1:360 Tone of voice – be careful not to sound angry or to shout. It may not be intended that way, but it c...
- ☞ 1:362 3. Check that noses and faces are clean and that clothes are clean (especially if it's messed with f...
- ☞ 1:364 Personal Hygiene – it is crucial to ensure that children's faces are cleaned / wiped from top to bott...
- ☞ 1:365 Washing hands – to be done after every nappy change. 3. Hand Sanitiser – must be used after EVERY no...
- ☞ 1:371 Personal Hygiene – it is crucial to ensure that children's faces are cleaned / wiped from top to bot...
- ☞ 1:375 Observations – must be done first thing in the morning and reported to Bronwen before 08:30. If repo...
- ☞ 1:376 Classes – to be neat and clean at all times and to smell nice.
- ☞ 1:380 Hygiene – assistants. 11. Biting – a good article Friday. Bronwen will type out a poem / message for...
- ☞ 1:387 Language –
- ☞ 1:389 Tone of voice -
- ☞ 1:390 Music -
- ☞ 1:397 Please keep voices at a reasonable level. Still sometimes too loud.
- ☞ 1:398 Please ensure that children's faces, noses, hands and clothes are clean befor
- ☞ 1:399 Class Hygiene

○ People

Quotations:

- ☞ 1:226 Assistants are not allowed to babysit for parents after hours.
- ☞ 1:228 Sick leave – if you are off on a Monday or a Friday you have to give us a sick letter from a doctor....
- ☞ 1:243 Teachers must change their attitudes. • They must start worrying about their classes and children an...
- ☞ 1:245 If you are absent then you must please send everyone an sms of all the important things that need to...
- ☞ 1:246 You are not allowed to leave early or come late.
- ☞ 1:250 oil use • When brushing your hair, don't leave it a mess, clean up after yourself! • When using to...
- ☞ 1:259 SICK LEAVE – If you are sick you HAVE to inform JōECD Director, and ask her, not just tell her. If the scho...
- ☞ 1:265 SICK LEAVE – If you are sick you HAVE to inform JōECD Director, and ask her, not just tell her. If the scho...
- ☞ 1:277 1. School Rules This is a verbal warning! You are gossiping about each other in your own languages a...
- ☞ 1:278 2. Disputes You are all being ugly towards each other, so how can we have a party together. So, unti...
- ☞ 1:285 Teacher and Assistant Relationship and class Rules Respect each other. Don't just take things that d...
- ☞ 1:300 If you will be absent from school, you have to let Mardré know, and not ECD Director anymore.
- ☞ 1:304 If you are unable to come to work you have to let Mardré know and not ECD Director anymore.
- ☞ 1:305 When you go on lunch please remember that you only have an hour. In that hour you have to eat, wash...
- ☞ 1:314 If your planning and letter in not in on time on the above mentioned due dates you will get a warnin...
- ☞ 1:315 Please note that if you are absent you have to bring a sick letter. This letter has to be from a Dr,...
- ☞ 1:322 You are not allowed to take time off from school to do your licence, go to the bank, go to the Dr or...
- ☞ 1:335 On time (NO LATER THAN 6:45) – Not allowed to leave early, not allowed to come in late. Work hours a...
- ☞ 1:336 School t-shirts and BLUE jeans (not black, grey, white etc.) • Tekkies or sandals (no heels, flipflo...
- ☞ 1:337 KNOW THE SCHOOL RULES AT ALL TIMES • Ask if you do not know • Be FIRM but POLITE • Parents are no...
- ☞ 1:344 If you borrowed something – please put it back • Ask before using something that does not belong to...
- ☞ 1:353 The way you say things is very important. • WHAT you say and HOW you say something, carries a lot of...
- ☞ 1:378 NO RACIST comments will be tolerated. – Please remember to only speak in English or Afrikaans while...

☞ 1:385 Team Building on 8 February – remember to wear comfortable clothes and tekkies, bring extra water bo...

☞ 1:392 Staff behaviour

☞ 1:393 Performance – Yandisa and

☞ 1:395 Juané requested a copy of the Performance Appraisal criteria – Bronwen to print for he

☞ 1:397 Please keep voices at a reasonable level. Still sometimes too loud.

○ Communication

Quotations:

☞ 1:201 Friday Letter -Your letter has to be in by Wednesday morning and if there is something wrong, I will...

☞ 1:209 Friday Letter Put the same dates as last week Fun facts: Messy play

☞ 1:215 Friday Letter Fun facts – Speech Development and put all the same dates from last week. Your letters...

☞ 1:225 Assistants are not allowed to talk to parents or the nannies about anything. The teachers will talk...

☞ 1:234 Friday Letter – same dates as last week. Parallel play (fun facts) , tell the parents the following...

☞ 1:286 Wednesday morning's before 7am your letters need to be in Fun fact – word development Dates – flamin...

☞ 1:289 Wednesday morning's before 7am your letters need to be in Fun fact – word development Dates – flamin...

☞ 1:296 Fun fact – respect for our environment

☞ 1:309 Your Friday letter needs to be in before 07:00 on a Wednesday morning and NO LATER than this! Please...

☞ 1:319 Fun Fact: Summer – How to keep your child busy in the car

☞ 1:323 Fun fact: Healthy snacks in the car and Moving over to big school. The teacher responsible for the f...

☞ 1:329 Welcome Fun fact: Separation anxiety

☞ 1:333 Staple all your paperwork that you used this year together. So, all Adrienne's daily reports has to...

☞ 1:334 Hand out calendar for 2020 Give routine form to parents to fill in, bring lots of pens. Be very hone...

☞ 1:347 Class Letter – (My Body) Fun Fact – Body Awareness (Jacqy has already submitted) Letters must be ema...

☞ 1:353 The way you say things is very important. • WHAT you say and HOW you say something, carries a lot of...

☞ 1:357 t is also very important that preparation is done before class time starts (7am). A person cannot sa...

☞ 1:360 Tone of voice – be careful not to sound angry or to shout. It may not be intended that way, but it c...

☞ 1:386 Fun Fact – Appropriate Chores and Tummy Time (Chantell) Important Dates – include last day

of term

☞ 1:388 un Fact – Night Terrors (Juané) Important Dates – same as previou

☞ 1:394 Bronwen to send out an email to Canary Class parents, to remind them that deworming is only applicab...

☞ 1:396 Fun Fact – Sensory Play (Chanté)

☞ 1:400 Fun Fact – Sensory Play (Chanté)

○ Supervision

Quotations:

☞ 1:205 Supervision – Everyone has to be involved with the children and tell your assistants they must play...

☞ 1:211 Outside Play / Aftercare 1. Supervision The teachers and assistants are responsible for the children...

☞ 1:217 Stations In the afternoon you will be allocated to a station. YOU HAVE TO TAKE RESPONSIBILITY!!! – I...

☞ 1:257 1. Supervision Better supervision, things break and JōECD Director cannot keep on replacing everything. Chi...

☞ 1:258 2. Involvement / care Make sure that they use the equipment for the correct purposes. Bikes are to u...

☞ 1:263 1. Supervision Better supervision, things break and JōECD Director cannot keep on replacing everything. Chi...

☞ 1:267 2. Supervision You guys are leaning on the swings and not watching the children. All your attention...

☞ 1:270 You all have to look good at your stations. We have a lot of people walking by and it does not look...

☞ 1:274 1. Stations You all have to be at your station. If you leave to go and change a child's nappy or to...

☞ 1:281 1. Stations Teacher that is on duty has to make sure that each assistant is at their station, it is...

☞ 1:303 We spoke to the teachers about the hut and supervision and cleanliness of the children.

☞ 1:338 Be in class at 7:00 SHARP. No running around or drinking coffee in kitchen. • No walking around allo...

☞ 1:339 Each teacher is responsible for her own class. She is the manager of the class

☞ 1:340 She takes full responsibility for her assistant. Assistants must follow her classroom instructions...

☞ 1:341 he teacher of the class is responsible to give the assistant(s) of the class a cleaning routine in l...

☞ 1:349 Supervision – In class, supervision is of utmost importance for both teachers and assistants. No bac...

☞ 1:350 Stations – children are not to be taken off the jungle gym. Please allow them to climb out, just sup...

☞ 1:351 Supervision – please ensure that you are always on your post to supervise children and do not ever l...

☞ 1:355 The Assistants are employed for CARING and SUPERVISION, first and foremost. Therefore, their main pr...

☞ 1:366 Biting – Please supervise children and try to avoid biting. Keep known “biters” occupied and give ex...

☞ 1:369 The grass by the sandpit and hut and jungle gym is the responsibility of the assistant at Green Tabl...

☞ 1:372 Biting – Not necessary to first bring child to inform management. Treat first (hot & cold method) an...

○ Education Programme Planning

Quotations:

☞ 1:202 1. Planning – Planning has to be ready every Tuesday, everything has to be laminated and cut out. It...

☞ 1:208 Planning When you have a party in your class start 5min earlier Class has to start at 10:15 No clean...

☞ 1:214 1. Planning Please give as a time schedule with the times on it to say what and when you do everythi...

☞ 1:222 Planning – All Files must be filed correctly – weekly theme file(Teacher planning check list/Daily s...

☞ 1:233 lanning – much better – work on musical, gross motor as well as messy art activities.

☞ 1:238 Planning – Theme discussion needs a lot more detail (think outside the box) – Its very important for...

☞ 1:253 If you are booked off and have a sick note your planning can be handed in when you are back at work...

☞ 1:255 Planning You have a deadline every Tuesday! No excuses are acceptable. If you are unable to print it...

☞ 1:261 SNACKS – If a child stays at school after 4 and they have snacks, the are only allowed to eat fruit...

☞ 1:269 1. Planning Art does not have to look pretty, or look like something. Painting a picture is not art....

☞ 1:279 1. Planning You are not allowed to do the same planning/rhymes/songs. The reason for this is because...

☞ 1:295 You have to put more effort into your theme tables. It looks empty and boring. Planning for 2020, th...

☞ 1:308 Your planning needs to be in on a Tuesday morning before 07:00, and everything HAS to be laminated a...

☞ 1:318 Your planning for the following week has to be on your theme board every Friday afternoon before you...

☞ 1:325 Books and symbols have to be done in the holiday programme

☞ 1:328 Both your theme board pictures have to be in the same direction. If one is horizontal the other one...

☞ 1:345 Give planning in each Tuesday Morning BEFORE 7:00 • Please tick all the boxes before handing in • Te...

☞ 1:358 Prepare her for the activities of the day before 7am and ensure that she has everything she needs in...

☞ 1:359 Planning – the activities must integrate with one another. (e.g. if you use toilet roll holders for...

☞ 1:370 Friday Letter – remind about Lovey Day and picnic snack (savoury). Children and staff to wear red, w...

☞ 1:390 Music -

○ Culture

Quotations:

☞ 1:207 Teacher and Assistant Relationship and class Rules – Make sure your assistants know what to clean an...

☞ 1:213 School Rules Never give me a sicknote with someone else name on the letter We will phone your Doctor...

☞ 1:221 1. Teacher and Assistant Relationship and class Rules – The Assistants is not allowed to talk to the...

☞ 1:240 1. School Rules – If you wear a long sleeve shirt then it must please match your work shirt. And in...

☞ 1:248 Be proud of the children in your class.

☞ 1:254 School Rules Please make sure that you know the school rules and the sick policy. If a parent asks y...

☞ 1:284 Sick policy, if a child has a rash they are not allowed at school. Only Afrikaans and English are al...

☞ 1:311 There are a lot of assistants still speaking their own languages in front of the children and parent...

☞ 1:337 KNOW THE SCHOOL RULES AT ALL TIMES • Ask if you do not know • Be FIRM but POLITE • Parents are no...

☞ 1:352 School Rules – remember to KNOW the school rules in case parents ask you something. If you are reall...

☞ 1:354 It is also very important that you and your Assistant know the Policies and Procedures • If you don't...

☞ 1:361 Parents – greet nicely and speak to parents nicely. Remind your assistants as well.

○ Administrative

Quotations:

☞ 1:163 and if you see it's a medicine that we do not administer then you have to tell them.

☞ 1:164 Medicine to be administered first and then we phone mom.

☞ 1:165 After medicine was administered, she has to be monitored for another hour after medicine has been ad...

☞ 1:166 Temp of 37.3 and up administer 8ml Panado or Calpol immediately and then phone mom If he gets a feve...

☞ 1:167 Medicine to be administered first and then we phone mom.

☞ 1:168 After medicine was administered, she has to be monitored for another hour after medicine has been ad...

☞ 1:169 Temp of 37.3 and up administer 8ml Panado or Calpol immediately and then phone mom If he gets a feve...

☞ 1:176 You will receive all your paperwork and books for next year

☞ 1:177 Staple all your paperwork that you used this year together.

☞ 1:203 mportant dates: Thursday 14February – Valentine’s day (Dress in red, black or white) and tell them...

○ Management

Quotations:

☞ 1:141 You are the assistant’s manager!

☞ 1:144 Time management – Only one assistant at a time is allowed to be changing a nappy inside in the after...

☞ 1:150 She is the manager of the class

☞ 1:151 Biting – Not necessary to first bring child to inform management.

☞ 1:152 management.

☞ 1:153 If the skin is broken – show management.

☞ 1:154 Management will

☞ 1:155 also be reported to management the next day and not discussed with anyone

☞ 1:156 During March, management will be focussing on TEAMWORK as a key indicator.

○ Physical Infrastructure

Quotations:

☞ 1:324 he school is being painted over the December holidays, ECD Director will give us a date when we have to ta...

☞ 1:330 All the classes are being painted in December so on the 12th all the pictures and everything else ne...

☞ 1:332 Do your mattress symbols, give ECD Director the mattress covers that’s wearied out so she can get them rea...

☞ 1:376 Classes – to be neat and clean at all times and to smell nice.

☞ 1:377 Aircon units have been serviced. Do not set the temp to less than 18 degrees.

○ Environment

Quotations:

☞ 1:313 Friday 15 Nov is national preemie day and we would like to support this day. Please wear your dark p...

- Parents

Quotations:

☞ 1:249 Grandparents day – Everything must be ready for Grandparents day (stations, activities, and toys) -...

- Training

Quotations:

☞ 1:223 1.Courses – 303 & 404 – 6 April 505 – 1 June

11.9 Quality appraisal

11.9.1 Quantitative appraisal

Nr	Document group	Number	Name	Year	Country Type	Primary RC applicable	Secondary RC's applicable	Institutional capacity defined	Article based on ECD context	Class of problem validation	Solution area validation	Code word impact (Occurrence)	Quantitative Total	
				Weighting of importance (1 - Low to 10 - High)										
1	IC definition	10	Understanding IC in Indonesia.pdf	2003	Developing	10	8	10	0	10	10	85	825	
2	IC implementation in ECD	18	Influence of financing on institutional capacity of early childhood centres.pdf	2012	Developing	10	10	10	10	10	10	59	805	
3	IC definition	4	InstitutionalCapacityofLocalGovernmentImplementingNationalPolicyofEtiopiaWork	2014	Developing	10	5	10	0	5	5	53	550	
4	Quality in ECD	33	Quality in SA ECD - UP.pdf	2016	Developing	0	5	0	10	5	5	59	520	
5	ProQuest Journal	58	Transforming Early Childhood Systems for Future Generations- Obligations and Opp	2017	Developed	10	5	5	10	5	10	405		
6	IC in ECD	13	India challenge to scale up and IC.pdf	2017	Developing	10	5	0	10	10	5	4	395	
7	Leadership	46	Director ECD. Select Prepare Readiness.pdf	1997	Developed	10	10	5	10	5	5	380		
8	IC in ECD	15	Decentralization in Zambia - A case of policy and practice.pdf	2011	Developing	5	5	0	5	5	5	23	340	
9	IC in ECD	11	A thematic analysis regarding .pdf	2010	Developing	0	0	0	10	10	10	4	320	
10	ECD Policy related	39	DIFFERENCES BETWEEN STATED AND IMPLEMENTED POLICIES IN EARLY CH	2014	Developing	0	0	0	10	0	0	34	270	
11	Conceptual models (solution area)	25	The performance of long day care centres.pdf	2002	Developed	0	5	0	10	0	10	4	245	
12	Conceptual models (solution area)	27	ECD as Organisations_Systems perspective.pdf	1991	Developed	0	5	0	10	0	10	3	240	
13	Leadership	47	Framework for Developing Leadership Skills in Child Care Centres in Queensland, A	2006	Developed	5	5	0	10	5	0	225		
14	Leadership	48	Leadership and Management in Child Care Services- Contextual Factors and Their I	2005	Developed	5	5	0	10	5	0	4	225	
15	ProQuest Journal	57	The current state of early_chi.pdf	2010	Developed	5	5	0	10	5	0	225		
16	SpringerLink Journal	60	Enhancing quality of kindergarten in Singapore.pdf	2017	Developed	5	5	0	10	0	5	225		
17	Taylor & Francis Journal	61	Defining Quality Child Care Multiple Stakeholder Perspectives.pdf	2007	Developing	5	5	0	10	0	5	225		
18	Taylor & Francis Journal	71	Talking about Quality Report of a Consultation Process on Quality in Early Childhood	2005	Developed	5	5	0	10	0	5	225		
19	Taylor & Francis Journal	74	The role of system alignment in care and education of children from birth to grade 3	2014	Developed	5	5	0	10	0	5	225		
20	IC definition	1	Institutional capacity and climate actions.pdf	2003	Developed	0	0	10	0	0	5	22	220	
21	IC in ECD	14	South-African-Child-Gauge-2013.pdf	2013	Developing	5	5	0	10	5	5	4	220	
22	IC in ECD	12	Example of US ECD building systems IC on p11.pdf	2016	Developed	0	5	0	5	0	10	2	185	
23	IC implementation in ECD	19	Malawi Article_FromEarlyChildhoodDevelopment.pdf	2014	Developing	0	5	0	10	0	0	12	185	
24	IC implementation in ECD	20	Exploring Management Practices in Child Care Centres in Australia, Queensland fro	2005	Developed	0	5	0	10	0	0	12	185	
25	Conceptual models (solution area)	22	AN INSTITUTIONAL CAPACITY MODEL OF MUNICIPALITIES IN SOUTH AFRICA	2015	Developing	0	0	5	0	0	5	21	185	
26	IC definition	2	Spanish accounting reform IC themes.pdf	2018	Developed	0	0	10	0	5	0	13	175	
27	Conceptual models (solution area)	23	Building sustainable capacity in the public sector- what can be done?.pdf	1995	Developing	0	5	0	0	5	10	0	175	
28	Quality in ECD	29	Maska_Determinants of implementation of quality early Childhood education (ecd) p	2015	Developing	0	0	0	10	0	0	15	175	
29	IC definition	3	Colombia challenges decentralisation and IC.pdf	2015	Developing	0	0	5	0	5	5	5	155	
30	IC implementation in ECD	16	Institutional_VIM_statements.pdf	2011	Developed	0	0	0	5	0	10	1	155	
31	Quality in ECD	32	A vision for quality in ECD.pdf	1999	Developing	0	5	0	10	0	0	5	150	
32	IC definition	8	Institutional capacity UK London.pdf	1995	Developed	0	5	0	0	0	5	8	138	
33	IC definition	5	Administrative capacity definition p46.pdf	2007	Developed	0	0	10	0	0	0	15	135	
34	IC definition	6	Indicators to identify IC at municipality .pdf	2010	Developed	0	0	0	0	0	5	15	125	
35	IC implementation in ECD	17	Strengthening systems for integrated early childhood development services- a cross	0	Developing	0	0	0	10	0	0	5	125	
36	ECD Policy related	34	Challenges Faced by Educators in Implementing Early Childhood Development (ECD	2017	Developing	0	0	0	10	0	0	5	125	
37	ECD Policy related	36	Problems and Prospects in Early childhood Education provisioning in Turkey and SA	2015	Developing	0	0	0	10	0	0	5	125	
38	Taylor & Francis Journal	62	Education reform and the quality of kindergartens in Jordan.pdf	2009	Developing	0	5	0	10	0	0	125		
39	Taylor & Francis Journal	64	Enhancing Quality in Day Care Theories of Organisational Change.pdf	2006	Developed	0	5	0	10	0	0	125		
40	Taylor & Francis Journal	74	Leading a Learning Organisation: Australian early years centres as learning networks	2009	Developed	0	5	0	10	0	0	125		
41	Taylor & Francis Journal	76	Understanding and achieving quality in Sure Start Children's Centres practitioners p	2011	Developed	0	5	0	10	0	0	125		
42	ECD Policy related	35	Investing in the Early Years: Western Cape.pdf	0	Developing	0	0	0	10	0	0	4	120	
43	Quality in ECD	28	Costa Rico transform Quality focus.pdf	2017	Developing	0	0	0	10	0	0	3	115	
44	ECD Policy related	45	Measure effectiveness of implementation ECD policy.pdf	2014	Developing	0	0	0	10	0	0	3	115	
45	Quality in ECD	31	Interrogating quality in early childhood development- Working towards a South Africa	2016	Developing	0	0	0	10	0	0	2	110	
46	ECD Policy related	37	ECD Evidence Based Policy Making Case Study.pdf	0	Developing	0	0	0	10	0	0	2	110	
47	ECD Policy related	42	RSA ECD Policy 2015.pdf	2015	Developing	0	0	0	10	0	0	2	110	
48	ECD Policy related	43	OECD Thematic Review of Early Childhood Education .pdf	2000	Developed	0	0	0	10	0	0	2	110	
49	ECD Policy related	41	ECD Diagnostic Report.pdf	2012	Developing	0	0	0	10	0	0	1	105	
50	ECD Policy related	44	Challenges facing the early childhood development sector in South Africa.pdf	2012	Developing	0	0	0	10	0	0	1	105	
51	ECD Policy related	38	Legislation and its impact on local childcare in North Carolina.pdf	2014	Developed	0	0	0	10	0	0	0	100	
52	Leadership	49	Leadership vs Management RSA.pdf	2007	Developing	0	0	0	10	0	0	100		
53	Leadership	50	Leadership_How_Do_They_ManageA_Review_of_the_Research_on_Lead.pdf	2006	Developed	0	0	0	10	0	0	100		
54	Leadership	51	Leadership in child care cent PDF .pdf	2000	Developed	0	0	0	10	0	0	100		
55	Leadership	52	The transition from teacher to director.pdf	1999	Developed	0	0	0	10	0	0	100		
56	ProQuest Journal	53	A reflective self-study Using.pdf	2015	Developed	0	0	0	10	0	0	100		
57	ProQuest Journal	54	Early_Care_and_Education_Leads.pdf	2014	Developed	0	0	0	10	0	0	100		
58	ProQuest Journal	55	Exploring the leadership style.pdf	2009	Developed	0	0	0	10	0	0	100		
59	ProQuest Journal	56	Knowledge_and_use_of_quality_s.pdf	2008	Developed	0	0	0	10	0	0	100		
60	SpringerLink Journal	59	Banlsmal2018 Article_TheKeyToSuccessfulManagementOf.pdf	2018	Developing	0	0	0	10	0	0	100		
61	Taylor & Francis Journal	63	Engaging With Quality Improvement Initiatives A Descriptive Study of Learning in the	2017	Developed	0	0	0	10	0	0	100		
62	Taylor & Francis Journal	65	From External Inspection to Self Evaluation A Study of Quality Assurance in Hong K	2010	Developed	0	0	0	10	0	0	100		
63	Taylor & Francis Journal	67	Implementing Performance Indicators of early learning and teaching: A Chinese stud	2008	Developed	0	0	0	10	0	0	100		
64	Taylor & Francis Journal	68	Leadership Tasks in Early Childhood Education in Finland Japan and Singapore.pdf	2015	Developed	0	0	0	10	0	0	100		
65	Taylor & Francis Journal	72	The birth of university affiliated early childhood centres of excellence investing in chil	2015	Developing	0	0	0	10	0	0	100		
66	Taylor & Francis Journal	73	The Development of a Model of Process Oriented Quality in Early Childhood Service	2001	Developed	0	0	0	10	0	0	100		
67	Taylor & Francis Journal	77	Variations in Chinese parental perceptions of early childhood education quality.pdf	2017	Developed	0	0	0	10	0	0	100		
68	Conceptual models (solution area)	21	Generic Aspects of Institutional Capacity Development in Developing Countries.pdf	2004	Developing	0	0	10	0	0	0	5	85	
69	IC definition	9	Jennifer Brown Masters Thesis_Final Body.pdf	0	Developed	0	0	10	0	0	0	2	70	
70	Quality in ECD	30	Campus-based child care needs assessment- A study of campus-based child care	2011	Developed	0	0	0	5	0	0	3	65	
71	Conceptual models (solution area)	24	Cost-benefit analysis for identifying institutional capacity building priorities in LDCs-a	2016	Developing	0	0	5	0	0	0	3	45	
72	ECD Policy related	40	SAF_resources_ecdguidelines.pdf	2006	Developing	0	0	0	0	0	0	5	25	
73	IC definition	7	Evaluation of UNDP Support to Mine Action.pdf	2016	Developing	0	0	0	0	0	0	0	0	
74	Conceptual models (solution area)	26	Clarifying the entrepreneurial context .pdf	1996	Developed	0	0	0	0	0	0	0	0	

11.9.2 Qualitative appraisal

Nr	Document group	Number	Name	Quality score (-1: Absent, 0: Not stated, +1: Present)	What claims are being made	What evidence is provided to support the claims	Evidence warranted	How is evidence backed	Total
1	IC definition	10	Understanding IC in Indonesia.pdf	Sets a clear definition of IC within the public services arena, followed by a well defined statement on quality services. It explores quality issues, challenges and how the lack of IC contributes to this phenomenon. It focuses on enhancing organisational structure, managerial practices, and management of human resources to improve quality of services delivered.		1	1	1	3
2	IC implementation in ECD	18	Influence of financing on institutional capacity of early childhood centres.pdf	The study establishes that financing is a major impediment to the realisation of IC. Adequacy of financing should be put towards human and material resources plus physical facilities to improve IC.		1	1	1	3
3	IC in ECD	15	Decentralization in Zambia - A case of policy and practice.pdf	Generally the study revealed that implementation is hampered by more serious challenges, with weak institutional capacities and accountability mechanisms. Findings are consistent with the view that as much as institutional capacity, accountability and local autonomy are critical success factors, some problems are encountered irrespective of central or decentralisation.		1	1	1	3
4	ECD Policy related	39	DIFFERENCES BETWEEN STATED AND IMPLEMENTED POLICIES IN EARLY CHILDHOOD EDUCATION LEADERSHIP: A CASE STUDY OF TANZANIA.pdf	Therefore, the three main findings from this study are lack of funding to ECE activities, lack or limited opportunities for ECE leadership training especially for head teachers who are supposed to provide pedagogical leadership and support to teachers and parents and the poor government communication which tends to be bureaucratic and one direction. The study draws on various references as reasons for policy implementation issues.		1	1	1	3
5	Conceptual models (solution area)	25	The performance of long day care centres.pdf	In the past decade growing numbers of privately operated child care centres have been established as a result of encouragement by government. Although extensive study about centre management and leadership issues has been undertaken there exists a gap in research about the performance of centres from a viability perspective. Therefore, this paper extends knowledge and understanding about successful centre operation and considers the obstacles that hinder performance.		1	1	1	3
6	Conceptual models (solution area)	27	ECD as Organisations_Systems perspective.pdf	This article proposes another view of early childhood centers that takes a broader perspective of organizational life. This approach views centers as dynamic and open social systems. A social systems perspective draws on the literature of organizational theorists.		1	1	1	3
7	IC in ECD	14	South-African-Child-Gauge-2013.pdf	This document explores challenges facing ECD in South-Africa, and how the lack of IC impeded policy implementation. It demonstrates government's attempt to define new strategies, to ensure vulnerable young children receive quality services. It focuses predominantly on the implementation of policy to achieve set goals.		1	1	1	3
8	IC implementation in ECD	19	Malawi_Article_FromEarlyChildhoodDevelopment.pdf	The Malawi national policy is to expand this network of CBCCs to improve early childhood development outcomes, however, sustainability of these services has been an ongoing challenge. This article discusses the roots of and extent of this sustainability challenge, drawing on lessons learned from recent fieldwork conducted as part of a baseline study.		1	1	1	3
9	IC definition	2	Spanish accounting reform IC themes.pdf	In 2015, Spanish local governments began to apply a new accounting standard. The success achieved in its implementation is related with stimuli from outside the organization and with the institutional capacity – administrative and political – developed by it.		1	1	1	3
10	Conceptual models (solution area)	23	Building sustainable capacity in the public sector- what can be done?.pdf	Capacity building to improve public sector performance is thus an important focus of development initiatives.		1	1	1	3
11	IC definition	5	Administrative capacity definition p46.pdf	Why, after 16 years Structural Funds, do of receiving some regions still have difficulties in spending their allocated resources? The level of administrative capacity is influenced by three key factors: accountability, namely, political interference, government stability and political.		1	1	1	3
12	IC implementation in ECD	17	Strengthening systems for integrated early childhood development services- a cross-national analysis of governance.pdf	The aim of this paper is to present findings from four countries, using a cross-national case study approach to explore governance mechanisms required to strengthen national systems of ECD services.		1	1	1	3
13	Leadership	46	Director ECD_Select Prepare Readiness.pdf	Article studies the role of Director in ECD setting, and explicitly states the impact of poor processes, leadership on quality of service. Very strong evidence link to primary RQ, plus problem validation.		1	1	1	3
14	Taylor & Francis Journal	61	Defining Quality Child Care Multiple Stakeholder Perspectives.pdf	Great definition and measures of quality - Multiple perspectives regarding the definition of quality child care, and how child care quality can be improved, were examined using a focus group methodology. Participants were representatives from stakeholder groups in the child care profession, including child care center owners and directors (3 groups), parents (3 groups), child caregivers (3 groups), policy makers (1 group), and social service providers (1 group).		1	1	1	3
15	SpringerLink Journal	60	Enhancing quality of kindergarten in Singapore.pdf	The key recommendations of these reviews were related to uplifting teacher, center, and program quality, and enhancing the affordability and accessibility of PSE. Opportunities and challenges associated with implementing recommendations for quality enhancement are discussed and suggestions to further enhance PSE in Singapore are explored.		1	1	1	3
16	ProQuest Journal	57	The_current_state_of_early_chi.pdf	The purpose of this study was to investigate early childhood center directors' human resource management practices. The purpose of this study was to describe ECE directors' reported human resource management practices and to investigate associations between those practices and the directors' education level, early childhood and management coursework, and experience.		1	1	1	3
17	Leadership	48	Leadership and Management in Child Care Services- Contextual Factors and Their Impact on Practice.pdf	The conceptual framework adopted in this study views leadership from a Social Systems framework. Central to a Social Systems framework is the notion that organizations do not exist in isolation rather, leadership and management in these settings are embedded in a broader social context.		1	1	1	3
18	Quality in ECD	33	Quality in SA ECD - UP.pdf	This study investigated how quality in early learning centres (preschools) in South Africa was experienced and perceived by mothers and teachers. A theoretical framework, based on a model of quality development by Woodhead (1996), informed the study.		0	1	1	2
19	IC definition	1	Institutional_capacity_and_climate_actions.pdf	Thus, the paper proposes a generic assessment of institutional capacity, with the aim to help develop a common understanding across countries of what institutional capacity actually is and what institutional capacity would be required for various forms of future actions.		1	0	1	2
20	IC in ECD	12	Example of US ECD building systems IC on p11.pdf	Understanding and navigating the differences in standards, and the roots and rationales underlying accreditation reviews, is necessary for all institutions that seek multiple accreditations.		1	0	1	2
21	IC implementation in ECD	20	Exploring Management Practices in Child Care Centres in Australia, Queensland from a Social Systems Framework.pdf	The focus of this research was on the nature and characteristics of effective leadership and management practices in centre-based child care.		1	1	0	2
22	Quality in ECD	32	A_vision_for_quality_in_ECD.pdf	This article argues that quality should be perceived as a process which is specific to the context of each service, and is therefore best defined by the values and beliefs of the stakeholders.		0	1	1	2
23	IC definition	6	Indicators to identify IC at municipality .pdf	This research study develops a framework of indicators to evaluate the 'institutional capacity' of a municipality to implement the soft path approach. The soft path approach is a new strategy for water conservation that complements existing supply and demand water management regimes.		1	0	1	2
24	Taylor & Francis Journal	74	The role of system alignment in care and education of children from birth to grade 3 (1).pdf	Test applicability to drive system alignment via IC. The purpose of this article is to provide a review of the existing literature on system alignment in terms of the definition and operationalisation of this concept. The focus is on various models (frameworks) that guide the effort of system alignment as well as factors (strategies) that influence the effectiveness of system alignment.		1	1	0	2
25	Taylor & Francis Journal	71	Talking about Quality Report of a Consultation Process on Quality in Early Childhood Care and Education in Ireland.pdf	Focused on quality and leadership. It outlines a process of national consultation to establish baseline perceptions among all stakeholders in relation to the core elements of the framework (defining, assessing and supporting quality).		1	0	1	2
26	Leadership	47	Framework for Developing Leadership Skills in Child Care Centres in Queensland, Australia.pdf	Article studies role of Director, and developmental areas for improvement. Directors need experience in Business management and leadership to enhance their competence for management of these centres.		1	0	1	2
27	IC in ECD	11	A_thematic_analysis_regarding_.pdf	Three vital concerns regarding the development of education in senior secondary schools are highlighted: resource availability, information and communications technology (ICT) development, and teacher satisfaction. The findings report that chronic resource shortages at all levels have stalled institutional readiness and diminished institutional capacity.		0	0	1	1
28	Quality in ECD	29	Masika_Determinants_of_implementation_of_quality_early_Childhood_education_(ecd)_programmes_in_Mombasa_County,_Kenya.pdf	The purpose of this study was to investigate on the factors influencing the quality implementation of ECD programmes in Kisumu sub-county.		1	1	-1	1
29	ProQuest Journal	58	Transforming Early Childhood Systems for Future Generations- Obligations and Opportunities.pdf	This article has set the stage for a new approach to advancing ECEC. It contends that simply addressing classroom pedagogy or individual programs, while necessary, is insufficient to render the major social change that will result not only in higher-quality programs and services, but in services that are equitably distributed and sustained over time. In so doing, the article makes a case for both thinking and acting systemically. Taking a fresh perspective on how best to achieve the goals of ECEC, this article underscores the need to move beyond conventional thinking about quality and to extend the desired outcomes to those that include quality, equity, and sustainability.		0	1	0	1
30	IC definition	4	InstitutionalCapacityofLocalGovernmentImplementingNationalPolicyofEthiopianWomen.pdf	The local governments in Dilla town suffer from limited IC, and the study highlights various factors or reasons contributing to this. This in turn resulted in poor quality service to the community in general and women in particular. Sets a clear link between IC and quality service.		-1	0	1	0
31	IC in ECD	13	India challenge to scale up and IC.pdf	Various factors have hindered scaling up, while the approach to service delivery, low IC and poor infrastructure have impeded scaling up of implementation quality. The study mainly highlights the problems of scaling within the ECD context.		1	0	-1	0
32	Conceptual models (solution area)	22	AN INSTITUTIONAL CAPACITY MODEL OF MUNICIPALITIES IN SOUTH AFRICA.pdf	There is, however, also a need to focus on the capacity of individual municipalities to improve their quality of governance and levels of service delivery. This dissertation therefore presents a model, the Municipal Institutional Capacity Model (MICM) that can be used, outside of the present research for the dissertation, to facilitate the development of tools for the assessment of the institutional capacity of municipalities in South Africa.		1	-1	0	0
33	IC definition	3	Colombia challenges decentralisation and IC.pdf	This article explores some aspects of intergovernmental relations with the aim of identifying key elements to help advance a better understanding of decentralization in Colombia. We begin by analyzing two decades of decentralization in Colombia, going on to propose some central questions and identifying key challenges and recommendations.		0	-1	-1	-2
34	IC implementation in ECD	16	Institutional_VVM_statements.pdf	Educational leaders rely on compelling statements of institutional beliefs, strategic direction, and purpose as the three major pillars by which to launch new program/service initiatives, to enhance academic and administrative operations, and to chart sustainable options in building future institutional capacity for change.		-1	0	-1	-2
35	IC definition	8	Institutional capacity UK London.pdf	It placed additional demands on the two parties, giving rise to the essential concern of this thesis: do the two sides possess the requisite institutional capacity to meet those demands.		-1	-1	-1	-3
36	ECD Policy related	34	Challenges Faced by Educators in Implementing Early Childhood Development (ECD) Policies.pdf	This paper is a desk review on the challenges that the educators face when implementing Early Childhood Development (ECD) policy.		0	0	0	0
37	ECD Policy related	36	Problems and Prospects in Early childhood Education provisioning in Turkey and SA.pdf	As a theoretical framework the paper has followed the World Bank's Systems Approach for Better Education Results (SABER)-ECD Analytical Framework. Findings indicate that both countries have established an enabling policy environment for ECD but implementation and the setting of and compliance to standards for quality is still emerging, in spite of massive strides made in this field during the past fifteen years.		0	0	0	0
38	Taylor & Francis Journal	62	Education reform and the quality of kindergartens in Jordan.pdf	The present study evaluates a major education reform in Jordan – the implementation of public kindergartens – and provides an example of how evaluation can be incorporated into education reform.		1	1	1	3
39	Taylor & Francis Journal	64	Enhancing Quality in Day Care Theories of Organisational Change.pdf	However, theoretical and empirical evidence from the literature on organisational change suggests that staff performance is only one, albeit important, element of enhancing service provision. This paper will describe, briefly, different approaches to organisational change. It will argue that one particular approach to organisational change, organisational development (OD), offers a valuable way of thinking about how best to improve quality of day care provision in the UK.		1	1	1	3
40	Taylor & Francis Journal	70	Leading a learning organisation: Australian early years centres as learning networks: European Early.pdf	That process has required the development and leadership of a dynamic learning organisation, managing as well as leading change, and inspiring and motivating staff through devolved leadership and reflexivity.		-1	0	0	-1
41	Taylor & Francis Journal	76	Understanding and achieving quality in Sure Start Children's Centres practitioners perspectives.pdf	This article focuses on some of the issues that shape understandings of professional practice in the rapidly expanding context of children's centres in England.		1	1	0	2

11.10 Data extraction

No	Document group	Number	Name	Weighting of importance (0 - Low to 10 - High)	Year	Country Type	Primary RQ applicable	Secondary RQ applicable	Institutional capacity defined	Article based on ECD content	Case of problem resolution	Indicators area validation	Case validation (document)	Quantitative Year	Quality score	Authors	Research method	Main findings (if yes, state main)	Summary	Remarks
1	IC definition	1	Institutional_capacity_and_cimate_actions.pdf	0	2003	Developed	0	0	0	0	0	0	22	220	2	Shahana Williams and Kevin Blaxter	n/a	Set an institutional approach, based on capacity assessments.	The paper explores the concept and substance of country-level institutional capacity in the context of future climate-related actions.	This paper has attempted to provide a coherent view of institutional capacity as well as an initial assessment of institutional requirements for a range of future policy options.
2	IC definition	2	Spanish accounting reform IC themes.pdf	0	2018	Developed	0	0	10	0	0	0	13	176	3	Silvia Fernandez Fuentes + Julián Hernández Borrero	Electronic questionnaires and interviews	In 2016, Spanish local governments began to apply a new accounting standard. The success achieved in its implementation is related with stimuli from outside the organization and with the institutional capacity - administrative and political - developed by it.	Managers did not obtain necessary IC and will have to continue absorbing resources and time to the reform to improve it. Meaning, it can become costly without adequate ICT provisioning.	
3	IC definition	5	Administrative capacity definition p46.pdf	0	2007	Developed	0	0	10	0	0	0	15	135	3	Sronca Milo	Case study, as well as questionnaires and questionnaires	Report on results	Why, after 15 years Structural Funds, do of receiving some regions still have difficulties in spending that allocated resources? The level of administrative capacity is influenced by three key factors: accountability namely, political interference, government stability and political.	Lack of IC impedes the ability to adequately spend their allocated funds.
4	IC definition	6	Indicators to identify IC at municipality .pdf	0	2010	Developed	0	0	0	0	0	0	15	125	2	William Thomas Patch	Case study	Develops a framework of indicators to evaluate the institutional capacity of a municipality to implement the soft path approach. The soft path approach is a new strategy for water conservation that complements existing supply and demand water management regimes.	This research study develops a framework of indicators to evaluate the institutional capacity of a municipality to implement the soft path approach. The soft path approach is a new strategy for water conservation that complements existing supply and demand water management regimes.	This study proved that it is possible to successfully use indicators to determine elements of institutional capacity that are present or lacking in a municipality to implement a water conservation approach.
5	IC definition	10	Understanding IC in Indonesia.pdf	0	2003	Developing	10	8	10	0	10	10	85	825	3	Arie Imbaruddin	Case studies, questionnaires and questionnaires	Report on results	Sets a clear definition of IC within the public services arena, followed by a well-defined statement of quality services. It explores quality levels, challenges and how the lack of IC contributes to the phenomenon. It focuses on enhancing organisational structure, managerial practices, and management of human resources to improve quality of services delivered.	Results show that an effective strategy is to develop the capacity of government agencies to enhance the organisational structure, managerial practices and the management of human resources in the public organisations, while introducing competition in the delivery of public services.
6	IC in ECD	11	A_thematic_analysis_regarding_ .pdf	0	2010	Developing	0	0	0	10	10	10	4	320	1	Chui Scripter	Thematic analysis through various data sources	Report on results	Three vital concerns regarding the development of education in senior secondary schools are highlighted: resource availability, information and communications technology (ICT) development, and teacher satisfaction. The findings report that chronic resource shortages at all levels have stalled institutional readiness and diminished institutional capacity.	Three vital concerns regarding the development of education in senior secondary schools are highlighted: resource availability, information and communications technology (ICT) development, and teacher satisfaction.
7	IC in ECD	12	Example of US ECD building systems IC on p11.pdf	0	2016	Developed	0	5	0	0	0	10	2	185	2	Judy R. Wilkinson	Review and content analysis of various sources	Developed a core framework for designing institutional assessment systems.	Understanding and navigating the differences in standards, and the continuous improvement accreditation reviews, is necessary for all institutions that seek multiple accreditations.	Six themes emerged from their requirements, serving as a core framework for designing institutional assessment systems. The themes are student achievement and the continuous improvement curriculum quality; facilities, equipment and supplies; fiscal and administrative capacity; and student support services, admissions and information-gathering systems.
8	IC in ECD	14	South-African Child-Gauge-2013.pdf	0	2013	Developing	0	0	0	10	0	0	4	220	3	Loetie Bery, Linda Bantwile, Andrew Dawes, Loti Laka and Chumana Simh	Report and update	Report on results and findings	This document explores challenges facing ECD in South-Africa, and how the lack of IC impeded policy implementation. It demonstrates the need to adopt a holistic approach to address the needs of young children receive quality services. It focuses predominantly on the implementation of policy to achieve set goals.	No results, but a report against various topics.
9	IC in ECD	15	Decentralization in Zambia - A case of policy and practice	5	2011	Developing	5	5	0	5	5	5	23	340	3	Aron Skayke	Comparative case study approach	Report on results and findings	Generally the study revealed that implementation is hampered by more serious challenges, such as weak institutional capacities and accountability mechanisms. Findings are consistent with the view that as much as institutional capacity, technical and financial aid are critical success factors, same problems are encountered irrespective of central or decentralised approach.	Strengthening institutional capacity in a decentralised education system is not a "quick fix" given fiscal financial resources in developing countries such as Zambia but that does not mean it is totally unachievable.
10	IC implementation in ECD	17	Strengthening systems for integrated early childhood development	0	Developing	0	0	0	10	0	0	0	5	125	3	Ra Rubala Brito, Henkaku Tshehlo, Jan van Niekerk, Lillane Apollis Phoo, Mary Phiso, Gailu Ch, Richard Dzanga, Ana Maria de Azevedo, and Richard Seder	Cross national case study approach	Report on results and recommendations	The aim of this paper is to present findings from four countries, using a cross-national case study approach to explore governance mechanisms required to strengthen national systems of ECD services.	Study results focus on local, mid-level and central governance, with recommendations for effective implementation of ECD services in low middle income countries of ECD services.
11	IC implementation in ECD	18	Influence of financing on institutional capacity of early childhood	0	2012	Developing	10	10	10	10	10	10	59	805	3	MATUGA ELIFRA MORRA	Descriptive survey and focus group design	Report on findings and recommendations	The study establishes that financing is a major impediment to the realisation of IC. Adequacy of financing should be towards human and material resources plus physical facilities to improve IC.	From the analysis using inferential statistics, the study demonstrated that financing is a positive constraint to the financing and the institutional capacity of ECE Centres.
12	IC implementation in ECD	19	Maliwé_Article_FromEarlyChildhoodDevelopment.pdf	0	2014	Developing	0	5	0	10	0	0	12	165	3	Michelle J. Neuman - Christin McConnell - Fraser Okoniewski	Case study	Report on results and findings	The Malawian national policy to expand the network of CBCCs to improve early childhood education. However, sustainability of these services has been an ongoing challenge. This article discusses the roots and causes of the sustainability challenge, drawing on lessons learned from recent feedback conducted as part of a baseline study.	The research presented here adds evidence of the magnitude of CBCCs struggling to operate regularly.
13	IC implementation in ECD	20	Exploring Management Practices in Child Care Centres in F	0	2005	Developed	0	5	0	10	0	0	12	165	2	Hanna Nupponen	Interviews	Report on results and findings	The focus of the research was on the nature and characteristics of effective leadership and management practices in a shared child care centre.	The data provide a rich understanding of how director view their work. The research opens up many questions for future research in the current context of service quality.
14	Conceptual models (solution area)	23	Building sustainable capacity in the public sector- what can	0	1995	Developing	0	5	0	0	5	10	0	175	3	Melissa Grindle & Mary Helweg	Case study	Describe a framework or conceptual map (Dimension of capacity)	Capacity building to improve public sector performance is thus an important focus of development efforts.	Testing, organisational, financial, and administrative structures are embedded within complex environments that significantly constrain their success.
15	Conceptual models (solution area)	25	The performance of long day care centres.pdf	0	2002	Developed	0	5	0	10	0	10	4	245	3	Sue Bony-Games and John Bony	Questionnaires and site visits	Business performance framework	In the past decade growing numbers of privately operated child care centres have been established as a result of encouragement by government. Although extensive study about centre management and operation has been established there exists a gap in research about performance outcomes from a childbearing perspective. This paper extends knowledge and understanding about successful operation and considers the obstacles that hinder performance.	Therefore, this article extends knowledge and understanding about successful centre operation and considers the obstacles that hinder performance.
16	Conceptual models (solution area)	27	ECD as Organisations, Systems perspective.pdf	0	1991	Developed	0	5	0	10	0	10	3	240	3	Paula Jean Brome	Analysis and findings	Adopt a social systems perspective framework	This article proposes a review of early childhood centres that takes a broader perspective of organisational life. This approach views centres as social systems. A social systems perspective draws on the literature of organisational behaviour.	This article proposes another view of early childhood centres that takes a broader perspective of organisational life.
17	Quality in ECD	29	Maska_Determinants of implementation of quality early Ch	0	2015	Developing	0	0	0	10	0	0	15	175	1	MASIKA PHILIP RANDILI	Literature review, questionnaires and interviews	Report on results and findings	The purpose of this study was to investigate on the factors influencing the quality implementation of ECD programmes in KwaZulu-south-coast.	The study has shown that there is a great need for research on the determinants of quality implementation of ECD programmes in KwaZulu-south-coast.
18	Quality in ECD	32	A_vision_for_quality_in_ECD.pdf	0	1999	Developing	0	5	0	10	0	0	5	130	2	Aria E Gray	Discussion documents and proposals	Statements and proposals	This article argues that quality should be assessed as a process which is specific to the context of each service, and is therefore best defined by the values and beliefs of the stakeholders.	An inclusive vision for quality benefits all stakeholders in early childhood education.
19	Quality in ECD	33	Quality in SA ECD - UP.pdf	0	2016	Developing	0	0	10	0	5	5	59	520	2	Judy Van Heyden	Thematic analysis of interview data	A quality development framework informed the study	This study investigated early childhood centres (pre-schools) in South Africa and examined how they are perceived by mothers and teachers. A theoretical framework, based on a model of quality development by Broome (1998), informed the study.	A quality school climate enhances emotional and social wellbeing, and most important are process indicators that promote children's lifelong wellbeing.
20	ECD Policy related	39	DIFFERENCES BETWEEN STATED AND IMPLEMENTED	0	2014	Developing	0	0	0	10	0	0	34	270	3	Foridas Rumbumbwa Baluku	Qualitative case study	Report on results and findings	Article studies the role of Director in ECD setting, and explicitly states the report of poor processes, leadership or quality of service. Very strong evidence that primary ECE, plus problem resolution.	Three main findings are reported through this study (1) Funding, (2) Leadership training, and (3) Poor government communication.
21	Leadership	46	Director ECD_ Select Prepare Readiness.pdf	0	1997	Developed	10	10	5	0	5	5	3	380	3	Hayden, Jacqueline	Survey and interviews	Report on results and findings	Article studies the role of Director in ECD setting, and explicitly states the report of poor processes, leadership or quality of service. Very strong evidence that primary ECE, plus problem resolution.	This study has identified the importance of a focus on the role of the Director in early child care centres and has provided baseline data on the state and status of professional development in the area of human resource management (includes of higher education program)
22	Leadership	47	Framework for Developing Leadership Skills in Child Care	0	2006	Developed	5	5	0	10	5	0	2	225	2	HANNA NUPPONEN	Case studies through interviews were developed	Report on results and findings	There has been minimal Australian research focused on leadership and management aspects of director work in centre-based child care to date. This article draws on research in Business management and leadership to enhance that competence for management of these centres.	The findings indicate that director of child care centres need to have training and experience in business management and leadership to enhance their competence for management of centres in today's competitive environment.
23	Leadership	48	Leadership and Management in Child Care Services- Conte	0	2005	Developed	5	5	0	10	5	0	2	225	3	Hannale Nupponen	Case studies through interviews were developed	Views leadership as a social system perspective	The conceptual framework adopted in this study views leadership from the notion that organisations do not exist in isolation rather, leadership and management in these settings are embedded in a broader social context.	The findings indicate that the director of a child care centre needs to have training and experience in business management and leadership to enhance their competence for management of centres in today's competitive environment.
24	PhDQuest Journal	57	The_current_state_of_early_child.pdf	0	2010	Developed	5	5	0	10	5	0	2	225	3	Laurien E. Amond	Survey research and employed a survey tool	Report on results and findings	The purpose of this study was to investigate early childhood centre directors' human resource management practices. The purpose of the study was to describe ECE director reported human resource management practices and to investigate associations between those practices and the director education level, early childhood and management coursework, and experience.	This study suggested the need for professional development for directors in the area of human resource management (includes of higher education program)
25	PhDQuest Journal	58	Transforming Early Childhood Systems for Future Generat	0	2017	Developed	10	5	5	10	5	10	4	405	1	Sharon Lynn Gagne, Jessica L. Roth	System research	"Theory for change- Conceptual map & Flowchart & Gears Framework"	The article has set the stage for a new approach to advancing ECEC. It contends that simply addressing classroom pedagogy of individual programs, while necessary, is insufficient to realize the major social change that will result only in high-quality programs and services, but in services that are equitably delivered and sustained over time. In doing this, the article makes a case for both thinking and acting systematically. Taking full perspective on how best to advance the field of ECEC, the article underscores the need to move beyond conventional thinking about quality and to extend the desired outcomes to those that include quality, equity, and sustainability.	To demonstrate how systems thinking can and does take hold in ECEC, it explores the evidence for applying systems to the field, offers some examples of systems thinking, and recommends strategies for moving forward systematically.
26	SpringerLink Journal	60	Enhancing quality of kindergarten in Singapore.pdf	0	2017	Developed	5	5	0	10	0	5	2	225	3	Ching Tay Tan	Discussion and interviews	Report on results and findings	The key recommendations of these reviews were related to staffing, teacher, centre, and program quality, and enhancing the affordability and accessibility of PSE. Opportunities and challenges associated with implementing recommendations for quality enhance, merit are discussed and suggestions to further enhance PSE in Singapore are explored.	Key recommendations: Upholding teacher, centre and program quality enhance the affordability and accessibility of pre-school education.
27	Taylor & Francis Journal	61	Defining Quality Child Care Multiple Stakeholder Perspectives.pdf	0	2007	Developing	5	5	0	10	0	5	2	225	3	Amenda W. Hentel, Stacy D. Thompson & Deborah J. Neme	Focus groups	Conceptual model: Multi-tier perspectives on child care quality & proximity model (distance to child)	One definition of quality is quality. Multiple perspectives regarding the definition of quality child care, and how child care quality can be improved, were examined using a focus group methodology. Participants were representatives from stakeholder groups in the child care profession, including child care center directors and directors (3 groups), parents (3 groups), child development specialists (1 group), and local government (1 group).	A conceptual model is presented that (a) examines findings about how parents view child care quality, (b) highlights the importance of quality and (c) highlights the importance of quality in child care center selection. Implications for child care practice and policy are discussed.
28	Taylor & Francis Journal	62	Education reform and the quality of kindergartens in Jordan.pdf	0	2009	Developing	0	5	0	10	0	0	2	125	3	Baha M. Al-Hassan, Dasma M. Obeidat & Jennifer E. Lambert	Evaluation	Report on results and findings	The present study evaluates a major education reform in Jordan - the implementation of public kindergartens - and provides an example of how evaluation can be incorporated into education reform.	Overall, 13% of public kindergarten enrolments were observed to be inadequate, 43% were of minimal quality, 43% were good and 1% was excellent.
29	Taylor & Francis Journal	64	Enhancing Quality in Day Care Theories of Organisational Change.pdf	0	2008	Developed	0	5	0	10	0	0	2	125	3	Anthony G. Martin & Ann Mooney	Interviews	Report on results and findings	However, theoretical and empirical evidence from the literature on organisational change suggests that staff performance is only one, albeit important, element of enhancing service provision. The paper will describe, briefly, different approaches to organisational change. It will argue that one particular approach to organisational change, organisational development (OD), offers a valuable way of thinking about how best to improve quality of day care provision in the UK.	Synthesis of all responses across the three themes reveals a number of core elements of quality under which development activities should be focused: (1) Multiple perspectives, (2) Environment, (3) Child-centred, (4) Staffing, (5) Education, training and qualifications, (6) Parental involvement, (7) Curriculum/Programme, (8) Standards, (9) Adult-Child Interactions, (10) Research for Quality, (11) Leadership, (12) Assessment, (12) Government support, commitment and funding.
30	Taylor & Francis Journal	71	Talking about Quality Report of a Consultation Process on Quality in Early Childhood Care and Education in Ireland.pdf	0	2005	Developed	5	5	0	10	0	5	2	225	2	Meresa Duignan	Discussion	National framework for Quality (Ireland)	Focused on quality and leadership. It outlines a process of national research in Ireland based on a consultation process among all stakeholders in relation to the core elements of the framework (staffing, national management practice and to investigate associations between those practices and the director education level, early childhood and management coursework, and experience).	Established a comprehensive framework for system alignment as well as a classification of macro-level and micro-level factors that facilitate system alignment.
31	Taylor & Francis Journal	74	The role of system alignment in care and education of children from birth to grade 2 (1).pdf	0	2014	Developed	5	5	0	10	0	5	2	225	2	Zo Ma, Jangyong Ehm, Helen Y. Kwon, Jinyun Y. & Shanahan Hu	Review and discussion of existing literature	Various frameworks that guide the effort of system alignment	Test application to drive system alignment in IC. The purpose of this article is to provide a review of the existing literature on system alignment in terms of the definition and operationalisation of the concept. The focus is on various models (frameworks) that guide the effort of system alignment as well as factors (practices) that influence the effectiveness of system alignment.	Established a comprehensive framework for system alignment as well as a classification of macro-level and micro-level factors that facilitate system alignment.
32	Taylor & Francis Journal	76	Understanding and achieving quality in Sure Start Children's Centres practitioners perspectives.pdf	0	2011	Developed	0	5	0	10	0	0	2	125	3	Michelle Cotte	Review of data and perspectives	Report on results and findings	This article focuses on some of the issues that shape understanding of professional practice in the rapidly expanding context of children's centres in England.	It has been suggested that the concept of 'quality' can be elusive and dynamic and that positive, sustainable, open dialogue and critical reflection are key to developing the shared understanding which enables responsive services for children and families.

11.11 SLR codebook

“Structural topics are imposed by the research design, whilst content or emergent themes describe what is observed or discussed in the context of the imposed research design”, according to Guest, MacQueen and Namey (2011, p. 50). Further to this, one of the most critical components of thematic analysis is the codebook, per Guest et al. (2012). All literature included as part of the SLR is iteratively reread and analysed via segmenting and coding, and dimensional boundaries attached as shown in below table.

Research Question	Structural code	Structural code definition
Question 1 (refer section 1.3.1)	Education / Non- Education	<p>Brief definition: Classify literature included in the SLR as either from the education -, or non-education domain.</p> <p>Full definition: Code studies emanating directly from the educational domain, specific to the ECD environment. This code is intended to distinguish literature at a holistic level, while demonstrating educational, and non-educational content.</p> <p>When to use: Use this code to highlight articles that is applicable to the educational domain, and aligned to the primary research question mentioned in section 1.3.1.</p> <p>When not to use: Do not use this code to reference educational content within an article, in parts or chapters.</p>
	Developed-, developing country	<p>Brief definition: Classify literature included in the SLR in accordance to the country the study was done, or conducted.</p> <p>Full definition: Code studies according to developed, and developing countries. Adopting the World Bank’s economies definition, high and upper middle as developed, whilst lower-middle and low as developing according to World Bank (2019)</p> <p>When to use: Use this code to highlight articles that emanates from either developed or developing countries.</p> <p>When not to use: Do not use this code to reference country specific content mentioned within an article.</p>
	IC Definition	<p>Brief definition: Sets a very clear definition for IC.</p> <p>Full definition: Code content that sets a very clear definition of IC. This code is intended to define what IC is, as well as characteristics and signs of IC in studies analysed.</p> <p>When to use: Use this code to highlight article content where IC is defined, elements of IC noted, as well as principles about IC anchored.</p>

Research Question	Structural code	Structural code definition
		<p>When not to use: Where the definition is ungrounded, or purely an opinion or perspective.</p>
	IC Problems	<p>Brief definition: Identifies text that is concerned about problems associated with IC.</p> <p>Full definition: Code content that identifies problems, the effect or signs of weak or absent IC. Identify the impact or result of weak IC, as well as causes of this phenomenon.</p> <p>When to use: Use this code to highlight article content where IC is defined, elements of IC noted, as well as principles about IC anchored.</p> <p>When not to use: Where it is not very clear that the problem or effect is a result of weak or absent IC.</p>
	IC Measurement	<p>Brief definition: Identifies text that refers to the measurement or assessment of IC.</p> <p>Full definition: Code content that measures IC, either looking at tools or techniques together with approaches to conduct assessments.</p> <p>When to use: Use this code to highlight article content where IC is measured or assessed, using tools or specific approaches.</p> <p>When not to use: When the measurement tool or approach is not explicitly outlined, as well as inconclusive evidence of effectiveness and impact of measurement approach.</p>
	Solution	<p>Brief definition: Identifies text that presents a solution or approach to address IC within a particular context.</p> <p>Full definition: Code content that presents a solution, framework, artefact and or approach to address IC as a class of problem.</p> <p>When to use: Use this code to highlight article content where solutions or approaches aim to develop IC. Code text where there is a clear definition and outline of the artefact as well as approach to implementation.</p> <p>When not to use: Where no clear alignment or linkage to IC is established or demonstrated.</p>

The coding process is an iterative process, and as themes emerge sub-codes are identified. Using the structural coding definitions as per **Error! Reference source not found.**, in excess of 580 quotations were identified, classified in below table.

Structural code	Groundedness	Total
A1. Education	93	383
A1.1 Developed country	1	
A1.2 Developing country	90	
A1.2 Definition	8	
A1.3 Problems	37	
A1.4 Measurement	11	
A1.5 Solution	52	
A2. Non-Education	169	679
A2.1 Developed country	73	
A2.2 Developing country	95	
A2.2 Definition	64	
A2.3 Problems	19	
A2.4 Measurement	64	
A2.5 Solution	27	

11.11.1 Quotations extract – Class of Problem

Institutional Capacity Problems

- IC Problems

Used In Documents:

- 1 Institutional_capacity_and_climate_actions.pdf 2 Spanish accounting reform IC themes.pdf 3 Colombia challenges decentralisation and IC.pdf 4 InstitutionalCapacityofLocalGovernmentinImplementingNationalPolicyofEthiopianWomen .pdf 6 Indicators to identify IC at municipality .pdf 8 Insitutional capacity UK London.pdf 10 Understanding IC in Indonesia.pdf 11 A_thematic_analysis_regarding_.pdf 13 India challenge to scale up and IC.pdf 14 South-African-Child-Gauge-2013.pdf 15 Decentralization in Zambia – A case of policy and practice.pdf 18 Influence of financing on institutional capacity of early childhood centres.pdf 22 AN INSTITUTIONAL CAPACITY MODEL OF MUNICIPALITIES IN SOUTH AFRICA.pdf 24 Cost-benefit analysis for identifying institutional capacity building priorities in LDCs- an application to Uganda.pdf 35 Investing in the Early Years_Western Cape.pdf

56 Quotations:

- 1:67 Complexity can have major implications for institutional capacity needs for participation in interna...

Content:

Complexity can have major implications for institutional capacity needs for participation in international negotiations.

- 2:14 Nevertheless, no matter how decisive the human factor is to the success of any action or policy, its...

Content:

Nevertheless, no matter how decisive the human factor is to the success of any action or policy, its performances are not enough to achieve a relevant degree of institutional capacity.

- 2:28 Institutional capacity depends not only on administrative capac- ity, but also on the socio-politica...

Content:

Institutional capacity depends not only on administrative capac- ity, but also on the socio-political actors actively participating in the process and making timely decisions to favor

the provision and adequacy of resources for the new needs (political capacity) (Rosas & Gil, 2013).

☞ 2:32 In spite of this, unlike other cases, such as that of Italy (Salvatore & Del Gesso, 2013), in the Sp...

Content:

In spite of this, unlike other cases, such as that of Italy (Salvatore & Del Gesso, 2013), in the Spanish case a top-down process has been followed, pilot experiences to detect problems have not been developed, nor has the active participation of the financial controllers been counted on in the standard's elaboration committees, nor have important actions been taken and implemented to develop the necessary institutional capacity.

☞ 3:5 The point is, while a law can distribute and decentralize power, it cannot always distribute institu...

Content:

The point is, while a law can distribute and decentralize power, it cannot always distribute institutional capacity, which

☞ 4:7 The local governments in Dilla town suffer from limited institutional capacity such as shortage of h...

Content:

The local governments in Dilla town suffer from limited institutional capacity such as shortage of human resource, lack of effective leadership, professionals and experts; lack of adequate material resource such as finance, office equipments and building for permanent office; limited policy knowledge and understanding, absence of organizational objective, plan, vision, mission and values especially at grass root level; there is also a limited/absence of coordination and well established network both among local governments and between the actor and other sectors; lack of gender disaggregated data in the local governments; limited level of community participation; lack of institutional experience are among the capacity problems faced by the governments in the town in discharging their responsibilities.

☞ 4:38 The majority of these policy implementation barriers are related to the institutional capacity of th...

Content:

The majority of these policy implementation barriers are related to the institutional capacity of the implementing institution.

☞ 6:46 improve the institutional capacity for the implementation of the soft path

Content:

improve the institutional capacity for the implementation of the soft path

☞ 8:27 This approach rejects the notion that human and institutional capacity can be built in a mechanistic...

Content:

This approach rejects the notion that human and institutional capacity can be built in a mechanistic fashion.

☞ 8:43 Helping to strengthen the institutional capacity of the ACP is of critical import to that success.

Content:

Helping to strengthen the institutional capacity of the ACP is of critical import to that success.

☞ 10:22 However, despite the significant attention paid to developing institutional capacity of public sector...

Content:

However, despite the significant attention paid to developing institutional capacity of public sector agencies in developing countries over the last five decades, there is increasing evidence that institutional investments have not led to improved and sustained policy formulation and implementation performance (Cohen

☞ 10:23 In short, it is clear that institutions play a pivotal role in the development process and therefore...

Content:

In short, it is clear that institutions play a pivotal role in the development process and therefore focusing on institutional capacity remains relevant in today's development studies.

☞ 10:50 It is argued that better institutional capacity in public organisations is impossible to achieve unl...

Content:

It is argued that better institutional capacity in public organisations is impossible to achieve unless government salaries and incentives are able to attract a capable workforce and there are some rules and guidelines about organisational structures, job descriptions, hiring procedures, information systems, and performance standards (Hilderbrand and Grindle 1997:37).

☞ 10:85 This chapter concludes that the overall institutional capacity of local government agencies in the c...

Content:

This chapter concludes that the overall institutional capacity of local government agencies in the case studies is relatively unsatisfactory with only one agency delivering quality services at the level expected by its clients.

☞ 10:102 This chapter has shown that the institutional capacity of local government agencies in Makassar is g...

Content:

This chapter has shown that the institutional capacity of local government agencies in Makassar is generally unsatisfactory in terms of their capacity to deliver quality services as assessed by their clients.

☞ 10:130 This finding contrasts with many other studies which argue that developing the institutional capacit...

Content:

This finding contrasts with many other studies which argue that developing the institutional capacity of the public sector in many countries has also been constrained by difficulties in retaining qualified personnel, either because the highly trained and skillful staff in the public sector move to the private sector or because they emigrate to other countries in search of better jobs (see, for example, Rosselli et al.

☞ 10:132 Probably, one of the reasons for the failure of training to improve institutional capacity of public...

Content:

Probably, one of the reasons for the failure of training to improve institutional capacity of public organisations is that donors and public servants in developing countries frequently view the importance of training from different perspectives.

☞ 11:1 shortages at all levels have stalled institutional readiness and diminished institutional capacity.

Content:

shortages at all levels have stalled institutional readiness and diminished institutional capacity.

☞ 11:2 The need for greater institutional capacity through the development of ongoing professional developm...

Content:

The need for greater institutional capacity through the development of ongoing professional development opportunities and updated curricula.

☞ 11:3 The resources needed to improve institutional capacity require funding and effective implementation...

Content:

The resources needed to improve institutional capacity require funding and effective implementation strategies.

☞ 13:1 Correspondence: institutional capacity and poor infrastructure have impeded scaling up of implementa...

Content:

Correspondence: institutional capacity and poor infrastructure have impeded scaling up of implementation quality.

☞ 13:3 On paper, it is an excellent and contextually relevant scheme, but imple- mentation of the scheme ha...

Content:

On paper, it is an excellent and contextually relevant scheme, but imple- mentation of the scheme had not been accorded adequate priority, perhaps due to weak institutional capacity and/or a lack of political will.

☞ 13:5 • Challenges to implementation quality arise from the approach to service delivery, low institutional capacity and poor infrastructure.

Content:

- Challenges to implementation quality arise from the approach to service delivery, low institutional capacity and poor infrastructure.

☞ 14:1 It would also not be wise to do so, given that provincial Social Development departments do not have the plans or the institutional capacity to manage a significant expansion of ECD services.

Content:

It would also not be wise to do so, given that provincial Social Development departments do not have the plans or the institutional capacity to manage a significant expansion of ECD services.

☞ 15:11 For the purpose of this study, it is sufficient to situate the ‘statement of problem’ around three key factors which are institutional capacity, level of accountability and local autonomy.

Content:

For the purpose of this study, it is sufficient to situate the ‘statement of problem’ around three key factors which are institutional capacity, level of accountability and local autonomy.

☞ 15:12 It is presumably a futile agenda to undertake decentralization initiatives when your institutional capacity is weak and where there is no political will or commitment to increase the degree of local autonomy or promote accountability at the district level.

Content:

It is presumably a futile agenda to undertake decentralization initiatives when your institutional capacity is weak and where there is no political will or commitment to increase the degree of local autonomy or promote accountability at the district level.

☞ 15:13 Despite claims that institutional capacity, accountability, and autonomy are cornerstones of a well-decentralized education system, these principles present tough challenges which can be difficult to deal with.

Content:

Despite claims that institutional capacity, accountability, and autonomy are cornerstones of a well-decentralized education system, these principles present tough challenges which can be difficult to deal with.

☞ 15:29 Decentralizing decision making autonomy and strengthening institutional capacity are however, by the...

Content:

Decentralizing decision making autonomy and strengthening institutional capacity are however, by themselves not sufficient to guarantee effective delivery of education services.

☞ 15:33 Besides the commonly cited factors (thus poor accountability and lack of autonomy), critics also poi...

Content:

Besides the commonly cited factors (thus poor accountability and lack of autonomy), critics also point to weak institutional capacity as one of the contributing factors for poor implementation (Naido, 2002).

☞ 15:52 Studies have also shown that where institutional capacity is weak, chances of implementation failure...

Content:

Studies have also shown that where institutional capacity is weak, chances of implementation failures are higher than in settings with relatively stronger institutional capacity.

☞ 15:54 Besides, problems pertaining to weak institutional capacity such as manpower and funding requirement...

Content:

Besides, problems pertaining to weak institutional capacity such as manpower and funding requirements, poor coordination and lack of a strong regulatory framework are not new.

☞ 15:63 Further, findings underscored the challenges associated with weak institutional capacity, weak accou...

Content:

Further, findings underscored the challenges associated with weak institutional capacity, weak accountability and weak autonomy in as far as the working of Chongwe and Solwezi DEBs is concerned.

☞ 15:64 Weak institutional capacity: Findings revealed inadequate skilled personnel and financial resources...

Content:

Weak institutional capacity: Findings revealed inadequate skilled personnel and financial resources including the absence of a strong administrative and legal framework.

☞ 18:28 From the findings the study concluded that financing was a major impediment towards the realization...

Content:

From the findings the study concluded that financing was a major impediment towards the realization of institutional capacity.

☞ 18:34 The government should subsidize the cost of running ECE programme in terms of training, employment a...

Content:

The government should subsidize the cost of running ECE programme in terms of training, employment and payment of teachers' to reduce high teacher turnover thus promoting institutional capacity.

☞ 18:39 These consistent variations between public and private shares reflect different levels of institutio...

Content:

These consistent variations between public and private shares reflect different levels of institutional capacity in the ECE centres.

☞ 18:63 This impedes the possibility of provision of quality services in an institution and its ability to e...

Content:

This impedes the possibility of provision of quality services in an institution and its ability to enhance children's participation in ECE centers leading to low institutional capacity.

☞ 18:67 Heyman (1980) supported the idea (as cited in Beynon, 1997) that low levels of learning among childr...

Content:

Heyman (1980) supported the idea (as cited in Beynon, 1997) that low levels of learning among children can be partly attributed to poor and inadequate facilities of schools due to limited financial resources thus lowering the institutional capacity of the ECE centres.

☞ 18:71 It is probable that low pay will serve as a disincentive to the provision of quality of services and...

Content:

It is probable that low pay will serve as a disincentive to the provision of quality of services and will negatively influence the quality of applicant pool of caregivers thus lowering institutional capacity.

☞ 18:73 According to the Republic of Kenya (ROK, 2006) concerning the Nation ECD Policy Framework, insuffici...

Content:

According to the Republic of Kenya (ROK, 2006) concerning the Nation ECD Policy Framework, insufficient skilled manpower due to lack of access to training and personnel impacts on the services provided and consequently, the level on institutional capacity.

☞ 18:74 This mainly revolves around insufficient and inequitable distribution of training resources and lack...

Content:

This mainly revolves around insufficient and inequitable distribution of training resources and lack of funding, which affects the quality of human resource in ECE centers hence low institutional capacity.

☞ 18:80 This therefore translates to low level of institutional capacity.

Content:

This therefore translates to low level of institutional capacity.

☞ 18:111 Many ECE centres had inadequacies in the amount of money that was financed into their institutions d...

Content:

Many ECE centres had inadequacies in the amount of money that was financed into their institutions due to delay of payment and sometimes the fee was never paid indicating that

they incurred financial debt which hindered effective delivery of services indicating a low level of institutional capacity.

☞ 18:112 This suggestion does not gain much support as it will serve as a disincentive to the teachers if the...

Content:

This suggestion does not gain much support as it will serve as a disincentive to the teachers if they are not well remunerated as the findings were in agreement with studies from UNESCO/ OECD (2004) who stated that it is probable that low pay will serve as a disincentive to the provision of quality of services and will negatively influence the quality of applicant pool of caregivers thus lowering institutional capacity.

☞ 18:119 public, private and RS ECE centres indicated a fairly adequate revenue collection while 4(23.5%) ,9(...

Content:

public, private and RS ECE centres indicated a fairly adequate revenue collection while 4(23.5%) ,9(22.5%) ,2(18.2%), and 1(50%) from the four categories indicated an inadequate number of funds collected therefore lacking the financial capacity to employ sufficient number of teachers and consequently, unable to establish and maintain their institutional capacity in terms of human resource.

☞ 18:150 Therefore, further research should be conducted to investigate the other financing aspects (15.5%) t...

Content:

Therefore, further research should be conducted to investigate the other financing aspects (15.5%) that affect institutional capacity of ECE.

☞ 18:156 This infers that adequacy of financing contribute most to the institutional capacity of ECE followed...

Content:

This infers that adequacy of financing contribute most to the institutional capacity of ECE followed by availability of financing.

☞ 18:160 The majority of the ECE Centres had limited sources of financing which posed a major challenge in en...

Content:

The majority of the ECE Centres had limited sources of financing which posed a major challenge in enhancing the institutional capacity on ECE centres.

☞ 18:171 The limited source of financing was a major challenge in enhancing the institutional capacity on ECE...

Content:

The limited source of financing was a major challenge in enhancing the institutional capacity on ECE centres.

☞ 18:215 UNESCO (2007) contends that, budget allocation to the early years is low disproportionate to the rep...

Content:

UNESCO (2007) contends that, budget allocation to the early years is low disproportionate to the representation of that group in the population at large thus lowering the capacity of ECE Centres to provide quality services.

☞ 18:216 in inadequate provision of TLRs, inadequate physical facilities with overcrowded classrooms, low tea...

Content:

in inadequate provision of TLRs, inadequate physical facilities with overcrowded classrooms, low teacher' pay killing the morale to offer quality services, contributing further to deterioration on IC (Orodho, 2004).

☞ 18:224 The challenges put forward hindered effective provision of quality services as the centres faced fin...

Content:

The challenges put forward hindered effective provision of quality services as the centres faced financial crisis and therefore being unable to run the centres as required in terms of human resources, payment of salaries and provision of TLRs in the centres.

☞ 18:225 The availability and adequacy of the textbooks shows the capacity of the ECE centres in terms of fin...

Content:

The availability and adequacy of the textbooks shows the capacity of the ECE centres in terms of financing and provision of quality services.

☞ 22:83 Put differently, it can be posited that a lack of institutional capacity leads progressively to gove...

Content:

Put differently, it can be posited that a lack of institutional capacity leads progressively to governance stress and questionable financial viability, which ultimately leads to service delivery breakdown.

☞ 24:10 Institutional capacity constraints in using the trade-related support measures are related to a numb...

Content:

Institutional capacity constraints in using the trade-related support measures are related to a number of factors: 1) inadequate knowledge about special measures and other support available as well as about the existing procedures to request such assistance; 2) inappropriate institutional arrangements in and among government agencies, including, among others, the absence, or unsuitable application of rules and procedures which determine the authority of the institutions to identify and access ISMs of interest; 3) coordination and communication failures within and between LDC stakeholders (trade-related ministries, exporters, producers, standardization bodies, etc.); and 4) deficiencies related to human resources, technical infrastructure, and financial support (Cortez, 2011; UNDP, 2007; Support Measures Portal for LDCs).

☞ 35:3 Certainly in this province the evidence showed that with limited institutional capacity within the d...

Content:

Certainly in this province the evidence showed that with limited institutional capacity within the department of Social Development, quantity of provision outweighed quality.

11.11.2 Quotations extract – Solution areas

Institutional Capacity Solutions (approach, measure & assessment)

- IC approach

Used In Documents:

1 Institutional_capacity_and_climate_actions.pdf 2 Spanish accounting reform IC themes.pdf
3 Colombia challenges decentralisation and IC.pdf 4
InstitutionalCapacityofLocalGovernmentinImplementingNationalPolicyofEthiopianWomen
.pdf 6 Indicators to identify IC at municipality .pdf 8 Insitutional capacity UK
London.pdf 10 Understanding IC in Indonesia.pdf 11
A_thematic_analysis_regarding_.pdf 13 India challenge to scale up and IC.pdf 15
Decentralization in Zambia – A case of policy and practice.pdf 16
Institutional_VVM_statements.pdf 18 Influence of financing on institutional capacity of
early childhood centres.pdf 21 Generic Aspects of Institutional Capacity Development in
Developing Countries.pdf 22 AN INSTITUTIONAL CAPACITY MODEL OF
MUNICIPALITIES IN SOUTH AFRICA.pdf 35 Investing in the Early Years_Western
Cape.pdf 44 Challenges facing the early childhood development sector in South Africa.pdf

77 Quotations:

1:22 It recognises, however, that other aspects, such as adaptation, are equally important as far as inst...

Content:

It recognises, however, that other aspects, such as adaptation, are equally important as far as institutional capacity is concerned and may need at some point to be analysed in more depth together with mitigation.

1:47 Another way to approach the inherently systemic nature of institutional capacity is to analyse the f...

Content:

Another way to approach the inherently systemic nature of institutional capacity is to analyse the functions that need to be performed to achieve a policy objective.

2:24 Various authors (Alonso, 2007; Duque, 2012; Evans, 1996; Oslak & Orellana, 2001; Repetto, 2007; Tobe...

Content:

Various authors (Alonso, 2007; Duque, 2012; Evans, 1996; Oslak & Orellana, 2001; Repetto, 2007; Tobelem, 1992) indicate having available the appropriate number of people as a necessary condition to achieve the institutional capacity.

3:6 The catch is ensuring that each area has the institutional capacity to take advantage of this increase...

Content:

The catch is ensuring that each area has the institutional capacity to take advantage of this increased autonomy.

3:8 for those units with low institutional capacity. horizontal intergovernmental relations must become...

Content:

for those units with low institutional capacity. horizontal intergovernmental relations must become more diversified, along with mechanisms to address problems that exist outside of the traditional administrative boundaries between (and within) departments and municipalities.

4:26 Each of these constituent parts are interrelated and, if strengthened and can contribute to the overall...

Content:

Each of these constituent parts are interrelated and, if strengthened and can contribute to the overall strengthening of institutional capacity Wickham, Kinch and Lal (2009).

4:29 The individual level institutional capacity (refers to the skills and competencies of staff available...

Content:

The individual level institutional capacity (refers to the skills and competencies of staff available in each individual institution and the work ethic that the staff embraces in performing their functions efficiently and effectively within the entity or within a broader context.), the organizational level institutional capacity (relates to an organizations

structures and working mechanisms, its working culture, and its resources.) and system level institutional capacity (refers to the national and regional Regulatory framework and policies that manage the institutions, and how these institutions inter-relate, interact and depend on each other and these levels of institutional capacity are very important as it assist the broader perspectives of institutional analysis.) unlike that of the Willems and Baumert components of the institutional capacity, this components do not consider the broader societal perspectives such as culture, values, practice and tradition.

4:41 Institutional capacity in policy implementation could be enhanced by implementation enablers, the fa...

Content:

Institutional capacity in policy implementation could be enhanced by implementation enablers, the factors that enhance the effectiveness of the policy implementation.

4:42 The above policy implementation enablers are components of the institutional and policy capacity in...

Content:

The above policy implementation enablers are components of the institutional and policy capacity in that they are a bridge that connect policy capacity and institutional capacity and make them to be interdependent in the area of policy implementation.

6:8 More specifically, the study investigates the institutional capacity² that is necessary to implement...

Content:

More specifically, the study investigates the institutional capacity² that is necessary to implement the 'soft path approach'³ for water conservation in Canada at a municipal scale.

6:22 Healey (1998) discusses how to build 'institutional capacity' in European urban governance.

Content:

Healey (1998) discusses how to build 'institutional capacity' in European urban governance.

6:46 improve the institutional capacity for the implementation of the soft path

Content:

improve the institutional capacity for the implementation of the soft path

6:53 This research sought to determine the indicators of institutional capacity that are required to impl...

Content:

This research sought to determine the indicators of institutional capacity that are required to implement the soft path approach at the municipal scale.

6:54 Building institutional capacity through collaborative approaches to urban

Content:

Building institutional capacity through collaborative approaches to urban

8:28 Both the traditional and the alternative approaches lay emphasis on the inclusion of social and poli...

Content:

Both the traditional and the alternative approaches lay emphasis on the inclusion of social and political elements at the outset of efforts to build institutional capacity.

10:43 As discussed in the scope of this study in the previous chapter, this study comprehensively analyses...

Content:

As discussed in the scope of this study in the previous chapter, this study comprehensively analyses determinants of institutional capacity, using a five-dimensional framework developed by Hilderbrand and Grindle.

10:45 However, since the early 1980s the institutional capacity and analysis has been undertaken from a mo...

Content:

However, since the early 1980s the institutional capacity and analysis has been undertaken from a more comprehensive or systemic perspective (Morgan 1999).

10:48 Figure 2.2 A five-dimensional framework of institutional capacity

Content:

Figure 2.2 A five-dimensional framework of institutional capacity

10:54 For example, it is argued that the clarity of organisational goals affects institutional capacity be...

Content:

For example, it is argued that the clarity of organisational goals affects institutional capacity because clear organisational goals can guide staff to perform their tasks and responsibilities (Zeithaml et al.

10:55 Rewarding individuals within organisations who have successfully performed in accordance with the jo...

Content:

Rewarding individuals within organisations who have successfully performed in accordance with the job description, and punishing those who have failed, is another factor that may contribute to better institutional capacity.

10:122 This chapter concludes that factors such as realistic organisational objectives, a less hierarchical...

Content:

This chapter concludes that factors such as realistic organisational objectives, a less hierarchical management style, and more participatory decision-making processes have positively influenced the institutional capacity of the four local government agencies studied.

10:123 This finding, that clearer objectives positively influence the performance of organisations, is supp...

Content:

This finding, that clearer objectives positively influence the performance of organisations, is supported by a number of different studies on institutional capacity, and development initiatives around the world.

10:126 This study confirms previous research findings that clear and realistic organisational objectives, a...

Content:

This study confirms previous research findings that clear and realistic organisational objectives, a less-hierarchical management approach and a more participatory in decision-making

processes contribute to better institutional capacity in terms of an organisation's ability to deliver quality services as expected by the clients or service receivers.

10:134 On the other hand, transparent and merit-based recruitment practices with a probationary period to e...

Content:

On the other hand, transparent and merit-based recruitment practices with a probationary period to enable organisations to select the best available staff positively affected the institutional capacity of the agencies.

11:4 Certainly, effectively managing ongoing financial constraints and developing institutional capacity...

Content:

Certainly, effectively managing ongoing financial constraints and developing institutional capacity and readiness will require good leadership.

13:2 Consolidation of the design and strengthening institutional capacity (1980–1989)

Content:

Consolidation of the design and strengthening institutional capacity (1980–1989)

15:9 This was achieved by analysing the implications of institutional capacity, accountability and local...

Content:

This was achieved by analysing the implications of institutional capacity, accountability and local autonomy which are crucial towards implementation of the educational decentralization in Zambia.

15:22 Guided by the statement of the problem and research questions, it can be argued here that accountabi...

Content:

Guided by the statement of the problem and research questions, it can be argued here that accountability, institutional capacity and local autonomy are critical factors if devolved powers are to effectively serve educational needs of the local people.

15:24 In the context of educational decentralization, local autonomy, accountability and institutional cap...

Content:

In the context of educational decentralization, local autonomy, accountability and institutional capacity can be said to be key principles which have influenced the delivery of education in Norway (Helgøy & Homme, 2007).

15:25 Besides autonomy and accountability, the issue of institutional capacity is equally critical in as f...

Content:

Besides autonomy and accountability, the issue of institutional capacity is equally critical in as far as educational decentralization across SSA is concerned.

15:26 However, the rationale for strengthening institutional capacity whether at the regional or the distr...

Content:

However, the rationale for strengthening institutional capacity whether at the regional or the district level, equally demands resources and clear responsibilities.

15:37 Therefore, institutional capacity in this study is examined by focusing on formal organizational asp...

Content:

Therefore, institutional capacity in this study is examined by focusing on formal organizational aspects within the institutional setup of Chongwe and Solwezi boards.

15:38 Just as the case with policy and practice, autonomy may also be linked to institutional capacity.

Content:

Just as the case with policy and practice, autonomy may also be linked to institutional capacity.

15:39 One can argue for instance, that without adequate institutional capacity, it can be hard for local u...

Content:

One can argue for instance, that without adequate institutional capacity, it can be hard for local units in a devolved education system to exercise their flexibility (autonomy) in planning and decision-making.

15:48 Below, the theme of institutional capacity and findings pertaining to it are analysed under the three...

Content:

Below, the theme of institutional capacity and findings pertaining to it are analysed under the three sub themes: organizational support, organizational realignment and capacity to implement.

15:53 Hanson's study produced results which highlighted institutional capacity as one of the influential f...

Content:

Hanson's study produced results which highlighted institutional capacity as one of the influential factors affecting the operations of district education boards.

15:62 Findings confirm the principle argument in the introduction that institutional capacity, accountability...

Content:

Findings confirm the principle argument in the introduction that institutional capacity, accountability and autonomy are critical success factors since both Chongwe and Solwezi generally showed major weaknesses on these aspects.

16:1 Educational leaders rely on compelling statements of institutional beliefs, strategic direction, a...

Content:

Educational leaders rely on compelling statements of institutional beliefs, strategic direction, and purpose (i.e., values, vision, and mission statements or VVM statements) as the three major pillars by which to launch new programme/service initiatives, to enhance academic and administrative operations, and to chart sustainable options in building future institutional capacity for change.

18:32 The most significant financing aspect that influences institutional capacity was adequacy of financi...

Content:

The most significant financing aspect that influences institutional capacity was adequacy of financing followed by availability of financing, budgetary allocation and funding sources respectively.

18:33 The study recommends that the government should up-scale their budgetary allocation towards promotio...

Content:

The study recommends that the government should up-scale their budgetary allocation towards promotion of ECE through the MoE to facilitate the acquisition of both human and material resources, physical facilities in order to improve the institutional capacity of the ECE centres.

18:38 ECE centres with a variety of financing options have the ability to provide all the requirements in...

Content:

ECE centres with a variety of financing options have the ability to provide all the requirements in the institutions, perform duties efficiently hence a higher level of institutional capacity.

18:49 strengthening institutional capacity of ECE centres through identification of strengths and constrai...

Content:

strengthening institutional capacity of ECE centres through identification of strengths and constraints in the process of financial management thus enhancing the capacity in financial terms.

18:65 Financial resources available influence the management structures, procedures and styles employed in...

Content:

Financial resources available influence the management structures, procedures and styles employed in the affairs of community schools which affect the quality of education provided by either promoting or hindering institutional capacity of the ECE centres.

18:68 These statements are supported by Myers (2006) who noted that provision of physical facilities mainl...

Content:

These statements are supported by Myers (2006) who noted that provision of physical facilities mainly depends on the availability of financial resources in an ECE centre, which are sourced from parents, community and other stakeholders, without which institutional capacity is limited.

18:77 Quality is therefore associated with adequate levels of funding per child which increases the qualit...

Content:

Quality is therefore associated with adequate levels of funding per child which increases the quality and levels of institutional capacity in an ECE center where child funding is higher, and quality is assumed to be better.

18:78 To have the appropriate facilities, finance has to put in place in every institution which will in t...

Content:

To have the appropriate facilities, finance has to put in place in every institution which will in turn affect children's participation in the centres achievement as well as the institutional capacity.

18:79 This support from various levels within the state raise the level of adequacy of finance which influ...

Content:

This support from various levels within the state raise the level of adequacy of finance which influences the institutional capacity of the ECE centres.

18:82 If financial allocation is done properly, all aspects of institutional capacity will be catered for...

Content:

If financial allocation is done properly, all aspects of institutional capacity will be catered for thus enabling the institution to carry out its functions efficiently.

18:83 The above sentiments give an impression that institutional capacity is likely to be hindered or enha...

Content:

The above sentiments give an impression that institutional capacity is likely to be hindered or enhanced depending on the amount of financial resources available and allocated.

18:85 institutions need financing in order to boost their institutional capacity and for national developm...

Content:

institutions need financing in order to boost their institutional capacity and for national development.

18:86 Financing should be intensified in ECE institutions to ensure that institutional capacity is promote...

Content:

Financing should be intensified in ECE institutions to ensure that institutional capacity is promoted hence quality service provision.

18:92 The institutional capacity factors include human resource, financial resources, governance and manag...

Content:

The institutional capacity factors include human resource, financial resources, governance and management, physical facilities, feeding programmes and teaching and learning resources.

18:100 This signified that the respondents were capable of improving and maintaining the institutional capa...

Content:

This signified that the respondents were capable of improving and maintaining the institutional capacity in their respective ECE centres. (Iumo (2003) notes that specialists with high educational level are known to possess appropriate knowledge, skills, values and attitudes indicating that they are competent in

18:110 Their institutional capacity was remarkable.

Content:

Their institutional capacity was remarkable.

18:112 This suggestion does not gain much support as it will serve as a disincentive to the teachers if the...

Content:

This suggestion does not gain much support as it will serve as a disincentive to the teachers if they are not well remunerated as the findings were in agreement with studies from UNESCO/ OECD (2004) who stated that it is probable that low pay will serve as a disincentive to the provision of quality of services and will negatively influence the quality of applicant pool of caregivers thus lowering institutional capacity.

18:121 Parents play a major role in providing textbooks, exercise books, pencils, and play materials to boost...

Content:

Parents play a major role in providing textbooks, exercise books, pencils, and play materials to boost the centres institutional capacity.

18:124 This illustrates that adequacy of financing is a key aspect of financing that influences the institu...

Content:

This illustrates that adequacy of financing is a key aspect of financing that influences the institutional capacity of ECE centres as it determined the availability of teaching/learning materials and physical facilities in a given ECE centres.

18:128 The salary awarded to teachers based on a teacher's experience, qualifications and the skills that c...

Content:

The salary awarded to teachers based on a teacher's experience, qualifications and the skills that could enhance performance hence raising the institutional capacity in terms of educational achievement.

18:138 The findings depicts that to impact on institutional capacity through budgetary allocation in majori...

Content:

The findings depicts that to impact on institutional capacity through budgetary allocation in majority of the ECE centres required to be supported by the top management of the institutions.

18:144 The findings are collaborated by Young (2007) who attested that there is a positive correlation betw...

Content:

The findings are collaborated by Young (2007) who attested that there is a positive correlation between financing and the institutional capacity of ECE with adequacy of financing being the major aspect of financing (Young, 2007).

18:155 unit increase in availability of financing will lead to a 0.545 increase in institutional capacity o...

Content:

unit increase in availability of financing will lead to a 0.545 increase in institutional capacity of ECE, while a unit increase in funding sources will lead to a 0.439 increase in institutional capacity of ECE.

18:162 In respect to budgetary allocation the study established that good management was key to enhancing i...

Content:

In respect to budgetary allocation the study established that good management was key to enhancing institutional capacity of the ECE centres.

18:163 The budgetary allocation required improved transparency, accuracy, record keeping and accountability...

Content:

The budgetary allocation required improved transparency, accuracy, record keeping and accountability to positively impact the institutional capacity of an ECE centre.

18:164 To impact positively on institutional capacity through budgetary allocation the study revealed that...

Content:

To impact positively on institutional capacity through budgetary allocation the study revealed that the ECE centres required support by the top management of the institutions.

18:165 The study further established that there is a positive relationship between institutional capacity o...

Content:

The study further established that there is a positive relationship between institutional capacity o f ECE and adequacy o f financing, budgetary allocation, availability o f

18:172 The adequacy of financing is a key aspect of financing that influences the institutional capacity of...

Content:

The adequacy of financing is a key aspect of financing that influences the institutional capacity of ECE centres as it determined the availability of teaching/learning materials and physical facilities in a given ECE centres.

18:177 The adequacy of financing contribute most to the institutional capacity of ECE followed by availabil...

Content:

The adequacy of financing contribute most to the institutional capacity of ECE followed by availability of financing hence the most significant financing aspect that influences institutional capacity of ECE is adequacy of financing.

18:178 Since the study established that ECE centres had limited financial resources to cater for various as...

Content:

Since the study established that ECE centres had limited financial resources to cater for various aspects of institutional capacity, the study recommends that the ECE centres management should adopt a hybrid approach in seeking financing options for their institutions.

18:179 The study recommends that the government, NGOs and religious organizations should up-scale the amoun...

Content:

The study recommends that the government, NGOs and religious organizations should up-scale the amount of funds allocated to ECE centres to enhance their institutional capacity.

18:185 It is also critical because it ensures all the aspects of institutional capacity are catered for and...

Content:

It is also critical because it ensures all the aspects of institutional capacity are catered for and allocation is done according to need and priority is given to the most urgent need for an institution and also promotes the administration of the educational process in the centres.

18:208 This study seeks to investigate on the influence of financing on institutional capacity of ECE centr...

Content:

This study seeks to investigate on the influence of financing on institutional capacity of ECE centres in Kikuyu District based on the fact that financing is key to any institution in order to boost the institutional capacity.

18:225 The availability and adequacy of the textbooks shows the capacity of the ECE centres in terms of fin...

Content:

The availability and adequacy of the textbooks shows the capacity of the ECE centres in terms of financing and provision of quality services.

21:11 We regard the “development of institutional capacity “ as the securing of the resources and structur...

Content:

We regard the “development of institutional capacity “ as the securing of the resources and structures that are appropriate and essential for satisfactorily performing the functions (tasks) that the institution is mandated to.

22:141 It is almost without question that leadership is an important, if not the most important, area when...

Content:

It is almost without question that leadership is an important, if not the most important, area when designing an institutional capacity model.

22:142 A municipality's ability to do long-term visioning and planning is a key area in determining the ins...

Content:

A municipality's ability to do long-term visioning and planning is a key area in determining the institutional capacity of municipalities in South Africa, and is therefore included in the MICM.

35:7 In addition, the key Departments must be appropriately resourced so that they have the institutional...

Content:

In addition, the key Departments must be appropriately resourced so that they have the institutional capacity to deal with the size and scope of their portfolios and also the statutory requirements of the Children's Act.

44:5 With their superior institutional capacity, Grade R facilities in public schools are seen as the ben...

Content:

With their superior institutional capacity, Grade R facilities in public schools are seen as the benchmark for community-based ECD facilities.

- IC assessment

Used In Documents:

- 1 Institutional_capacity_and_climate_actions.pdf 2 Spanish accounting reform IC themes.pdf
4
InstitutionalCapacityofLocalGovernmentinImplementingNationalPolicyofEthiopianWomen
.pdf 6 Indicators to identify IC at municipality .pdf 10 Understanding IC in Indonesia.pdf
18 Influence of financing on institutional capacity of early childhood centres.pdf 21
Generic Aspects of Institutional Capacity Development in Developing Countries.pdf 22

AN INSTITUTIONAL CAPACITY MODEL OF MUNICIPALITIES IN SOUTH AFRICA.pdf

19 Quotations:

1:7 Thus, the paper proposes a generic assessment of institutional capacity, with the aim to help develop...

Content:

Thus, the paper proposes a generic assessment of institutional capacity, with the aim to help develop a common understanding across countries of what institutional capacity actually is and what institutional capacity would be required for various forms of future actions.

1:19 The paper proposes a generic assessment of institutional capacity, with the aim to help develop a co...

Content:

The paper proposes a generic assessment of institutional capacity, with the aim to help develop a common understanding across countries of what institutional capacity actually is and what institutional capacity would be required for various forms of future actions.

1:24 A few general thoughts on the role that institutional capacity assessments might play in shaping up...

Content:

A few general thoughts on the role that institutional capacity assessments might play in shaping up future actions may provide some background to the more specific analysis developed in this paper.

1:53 Thus, only country-specific assessments can identify strengths or weaknesses of institutional capaci...

Content:

Thus, only country-specific assessments can identify strengths or weaknesses of institutional capacity within a country.

2:15 The analysis of the public sector's institutional capacity begins at the level of the individual.

Content:

The analysis of the public sector's institutional capacity begins at the level of the individual.

4:32 Here they use the holistic view of the institutional capacity by which multilateral and bilateral de...

Content:

Here they use the holistic view of the institutional capacity by which multilateral and bilateral development agencies have been used for capacity assessment framework.

6:1 This research study develops a framework of indicators to evaluate the 'institutional capacity' of a...

Content:

This research study develops a framework of indicators to evaluate the 'institutional capacity' of a municipality to implement the soft path approach.

6:2 These indicators are also applied to evaluate the institutional capacity of a case study (southern Y...

Content:

These indicators are also applied to evaluate the institutional capacity of a case study (southern York Region, Ontario, Canada) for its potential to implement the soft path approach.

6:33 This study adapts the evaluative framework of Kean (2008) to develop a preliminary evaluative framew...

Content:

This study adapts the evaluative framework of Kean (2008) to develop a preliminary evaluative framework (including preliminary indicators) of the institutional capacity of municipalities to implement the soft path approach to water management.

10:56 However, there has been an increasing argument to suggest that a more comprehensive perspective or s...

Content:

However, there has been an increasing argument to suggest that a more comprehensive perspective or systemic approach should be used to analyse institutional capacity.

18:32 The most significant financing aspect that influences institutional capacity was adequacy of financi...

Content:

The most significant financing aspect that influences institutional capacity was adequacy of financing followed by availability of financing, budgetary allocation and funding sources respectively.

18:92 The institutional capacity factors include human resource, financial resources, governance and manag...

Content:

The institutional capacity factors include human resource, financial resources, governance and management, physical facilities, feeding programmes and teaching and learning resources.

21:19 Lessik and Michener (2000) present several approaches developed by various agencies for assessing in...

Content:

Lessik and Michener (2000) present several approaches developed by various agencies for assessing institutional capacity and monitoring its development over time.

22:2 This dissertation therefore presents a model, the Municipal Institutional Capacity Model (MICM) that...

Content:

This dissertation therefore presents a model, the Municipal Institutional Capacity Model (MICM) that can be used, outside of the present research for the dissertation, to facilitate the development of tools for the assessment of the institutional capacity of municipalities in South Africa.

22:28 It sets out to develop an institutional capacity model that can facilitate the assessment of the ins...

Content:

It sets out to develop an institutional capacity model that can facilitate the assessment of the institutional capacity of municipalities in South Africa.

22:75 Wachira (2009:7) identifies ten elements of institutional capacity.

Content:

Wachira (2009:7) identifies ten elements of institutional capacity.

22:76 Lusthaus, Anderson and Murphy (1995:29) describe the elements and sub-elements of institutional capa...

Content:

Lusthaus, Anderson and Murphy (1995:29) describe the elements and sub-elements of institutional capacity as follows:

22:78 The European Commission (2005:16) proposes a six-box model to explain the elements of institutional...

Content:

The European Commission (2005:16) proposes a six-box model to explain the elements of institutional capacity.

22:101 The views of different authors on the elements making up institutional capacity were examined and th...

Content:

The views of different authors on the elements making up institutional capacity were examined and the conclusion drawn that these elements can be grouped into three broad categories, namely, (1) people (leadership, human resources, management, etc.), (2) resources (financial, technology, infrastructure, etc.), and (3) processes (strategy, planning, monitoring, communication, etc.).

- IC measure

Used In Documents:

1 Institutional_capacity_and_climate_actions.pdf 2 Spanish accounting reform IC themes.pdf
3 Colombia challenges decentralisation and IC.pdf 4
InstitutionalCapacityofLocalGovernmentinImplementingNationalPolicyofEthiopianWomen
.pdf 5 Administrative capacity definition p46.pdf 6 Indicators to identify IC at
municipality .pdf 8 Insitutional capacity UK London.pdf 10 Understanding IC in
Indonesia.pdf 15 Decentralization in Zambia – A case of policy and practice.pdf 18
Influence of financing on institutional capacity of early childhood centres.pdf 21 Generic

Aspects of Institutional Capacity Development in Developing Countries.pdf 22 AN INSTITUTIONAL CAPACITY MODEL OF MUNICIPALITIES IN SOUTH AFRICA.pdf 24 Cost-benefit analysis for identifying institutional capacity building priorities in LDCs- an application to Uganda.pdf

59 Quotations:

1:43 The performance of organisations is also a key measure of institutional capacity.

Content:

The performance of organisations is also a key measure of institutional capacity.

1:44 However, the performance of organisations is also very much dependent on the broad institutional set...

Content:

However, the performance of organisations is also very much dependent on the broad institutional setting of the country, which is represented by the next three levels of institutional capacity.

1:58 Although margins of errors can be quite substantial in these measurements of institutional capacity,...

Content:

Although margins of errors can be quite substantial in these measurements of institutional capacity, there are indeed quite large gaps between developed and developing countries (Kaufmann & al., 2003).

2:22 The necessary institutional capacity is reached when the answer to the three issues is affirmative.

Content:

The necessary institutional capacity is reached when the answer to the three issues is affirmative.

2:33 Among the factors which determine this institutional capacity in both its administrative and politic...

Content:

Among the factors which determine this institutional capacity in both its administrative and political aspects, and in line with Oslak's (2004) conception, the quantity of human resources, the training received concerning the new standard and the availability of the computer resources must be highlighted.

3:10 a single measurement of their ability is unfair and unhelpful. researchers should consult with depar...

Content:

a single measurement of their ability is unfair and unhelpful. researchers should consult with departments and municipalities about their goals, expectations and abilities to define a more comprehensive concept of institutional capacity in its

4:28 This is the UNDP conceptual approach to the institutional capacity and it emphasize on three level a...

Content:

This is the UNDP conceptual approach to the institutional capacity and it emphasize on three level approaches to the institutional capacity analysis.

4:33 Performance of the organization is also a key for the measure of institutional capacity) and macro-l...

Content:

Performance of the organization is also a key for the measure of institutional capacity) and macro-level (broader organizational context or system level).

4:49 The following table shows the response of the staffs of the actor to the checklist that helps to ide...

Content:

The following table shows the response of the staffs of the actor to the checklist that helps to identify the institutional capacity of the actor.

4:52 The network among actor in policy implementation is also one of the indicators of the institutional...

Content:

The network among actor in policy implementation is also one of the indicators of the institutional capacity of implementing institutions.

4:53 Provision of quality service to the concerned stakeholder and satisfaction of the users is one of th...

Content:

Provision of quality service to the concerned stakeholder and satisfaction of the users is one of the manifestation and implication of institutional capacity.

4:54 Participation of community in decision making and planning process of any institution is also an ind...

Content:

Participation of community in decision making and planning process of any institution is also an indication of institutional capacity.

5:21 27Two issues will be taken into account, accordingly with the rules of measurement of institutional c...

Content:

27Two issues will be taken into account, accordingly with the rules of measurement of institutional capacity suggested by USAID 2000: "1.

5:22 helpful when they are recognized as relative and not absolute measures. Many tools for measuring inst...

Content:

helpful when they are recognized as relative and not absolute measures. Many tools for measuring institutional capacity rely on ordinal scales. Ordinal scales are scales in which values can be ranked from

6:35 The literature review summarized in Tables 2 through 7 identified twenty-four preliminary indicators...

Content:

The literature review summarized in Tables 2 through 7 identified twenty-four preliminary indicators of institutional capacity for water soft path implementation in municipalities.

6:39 This case study serves three main purposes: (1) to strengthen the framework of final institutional c...

Content:

This case study serves three main purposes: (1) to strengthen the framework of final institutional capacity indicators as a body of theory by demonstrating that it can be meaningfully applied to real-life examples; (2) to demonstrate an example of how the framework could be used to evaluate a municipality; and (3) to evaluate the case study itself.

6:40 Table 11 displays the framework of final indicators of institutional capacity that would need to be...

Content:

Table 11 displays the framework of final indicators of institutional capacity that would need to be present in a municipality to implement the soft path approach for water conservation.

6:42 Table 11: Framework of final indicators for institutional capacity

Content:

Table 11: Framework of final indicators for institutional capacity

6:47 As the case study demonstrates, it is possible to successfully use indicators to determine elements...

Content:

As the case study demonstrates, it is possible to successfully use indicators to determine elements of institutional capacity that are present or lacking in a municipality to implement the soft path approach.

6:52 First, preliminary indicators were developed of the institutional capacity for municipalities to imp...

Content:

First, preliminary indicators were developed of the institutional capacity for municipalities to implement the soft path approach.

8:25 One measurement of operational capacity is to determine what use has been made of the potential whic...

Content:

One measurement of operational capacity is to determine what use has been made of the potential which joint evaluation offers and how has it contributed to ACP institutional capacity.

10:3 Institutional capacity is measured by the quality of services provided by the local government agenc...

Content:

Institutional capacity is measured by the quality of services provided by the local government agencies as assessed by their clients through both questionnaires and interviews, whereas the data regarding the role internal and external factors play in determining the institutional capacity of local government agencies were collected by in-depth interviews and focus group discussions.

10:24 For example, determinants of effective institutional capacity are contextually determined, not only...

Content:

For example, determinants of effective institutional capacity are contextually determined, not only by political conditions but also by other things such as civic culture, social structure, social capital, and economic growth (Morgan and Qualman 1996:7-8).

10:28 Over the last 20 years, however, an increasing number of studies have used subjective measures such...

Content:

Over the last 20 years, however, an increasing number of studies have used subjective measures such as citizen or customer satisfaction to assess the institutional capacity of government agencies.

10:37 Therefore, in Chapter Three, besides discussing the importance of measuring organisational performan...

Content:

Therefore, in Chapter Three, besides discussing the importance of measuring organisational performance, arguments regarding the use of objective and subjective measures in assessing the institutional capacity of government agencies will be presented.

10:56 However, there has been an increasing argument to suggest that a more comprehensive perspective or s...

Content:

However, there has been an increasing argument to suggest that a more comprehensive perspective or systemic approach should be used to analyse institutional capacity.

10:60 Efficiency and effectiveness are probably the most prevalent terms used in measuring objectively ins...

Content:

Efficiency and effectiveness are probably the most prevalent terms used in measuring objectively institutional capacity of government agencies, although the terms are sometimes used imprecisely (Mulreany 1991:7).

10:61 However, a customer or citizen survey to understand customer satisfaction with the quality of public...

Content:

However, a customer or citizen survey to understand customer satisfaction with the quality of public service delivery seems to be the most popular method used to assess subjectively the institutional capacity or performance of government agencies (see, for example, OPSR 2002; Wisniewski 2001; Claver et al.

10:62 Therefore, this chapter discusses a number of key concepts relating to service quality and how the i...

Content:

Therefore, this chapter discusses a number of key concepts relating to service quality and how the institutional capacity of government agencies may be measured subjectively by asking customers how satisfied

10:64 Objective measures with indicators of efficiency, effectiveness, economy and productivity traditiona...

Content:

Objective measures with indicators of efficiency, effectiveness, economy and productivity traditionally have been used to measure the institutional capacity of government agencies.

10:65 Despite attracting some criticism, especially in its early introduction for lack of validity, there...

Content:

Despite attracting some criticism, especially in its early introduction for lack of validity, there has been increasing demand to incorporate subjective measures, such as citizen satisfaction, in assessing institutional capacity of government agencies.

10:66 Besides philosophical arguments such as the need for a more democratic government and more responsiv...

Content:

Besides philosophical arguments such as the need for a more democratic government and more responsive public servants and public service delivery, there are also managerial and practical benefits to be gained from using subjective measures in assessing the institutional capacity of government agencies.

10:67 Over the last 20 years, surveys of citizen satisfaction of the quality of public service delivery ha...

Content:

Over the last 20 years, surveys of citizen satisfaction of the quality of public service delivery have been widely used to measure subjectively the institutional capacity of government agencies.

10:69 The use of a citizen satisfaction survey to measure institutional capacity of local government agenc...

Content:

The use of a citizen satisfaction survey to measure institutional capacity of local government agencies in this study is appropriate because, as argued earlier, citizens as service receivers are the best judge of the level of service quality, and citizens are likely to develop knowledge to make well informed judgements about the performance of government agencies delivering the

10:70 The previous chapter reviewed the literature on how the institutional capacity of organisations has...

Content:

The previous chapter reviewed the literature on how the institutional capacity of organisations has been measured, and concluded that despite having been focused on objective measures such as efficiency and effectiveness, there has been an increasing pressure to measure institutional capacity of public sector organisations subjectively or qualitatively in terms of service quality.

10:77 The higher the positive gap score the better the institutional capacity.

Content:

The higher the positive gap score the better the institutional capacity.

10:147 Some might argue that this study arrives at this conclusion because the institutional capacity of th...

Content:

Some might argue that this study arrives at this conclusion because the institutional capacity of the local government agencies is assessed with subjective measures based on the client satisfaction of the quality of services they receive from the agencies, whereas the performance of public sector institutions in Indonesia is usually assessed by objective indicators, especially in monetary terms and based on the data and information provided by the institutions themselves.

15:43 By and large, the generic presentation of the data in this figure below implicitly denotes the raw d...

Content:

By and large, the generic presentation of the data in this figure below implicitly denotes the raw data from the field representing respondents' views, experiences and opinions regarding educational decentralization in general and how institutional capacity, accountability and local autonomy in particular affect implementation of the policy in Chongwe and Solwezi districts.

18:77 Quality is therefore associated with adequate levels of funding per child which increases the qualit...

Content:

Quality is therefore associated with adequate levels of funding per child which increases the quality and levels of institutional capacity in an ECE center where child funding is higher, and quality is assumed to be better.

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Content:

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Parents play a major role in providing textbooks, exercise books, pencils, and play materials to boost the centres institutional capacity.

18:128 The salary awarded to teachers based on a teacher's experience, qualifications and the skills that c...

Content:

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Content:

unit increase in availability of financing will lead to a 0.545 increase in institutional capacity of ECE, while a unit increase in funding sources will lead to a 0.439 increase in institutional capacity of ECE.

18:163 The budgetary allocation required improved transparency, accuracy, record keeping and accountability...

Content:

The budgetary allocation required improved transparency, accuracy, record keeping and accountability to positively impact the institutional capacity of an ECE centre.

18:165 The study further established that there is a positive relationship between institutional capacity o...

Content:

The study further established that there is a positive relationship between institutional capacity of ECE and adequacy of financing, budgetary allocation, availability of

18:208 This study seeks to investigate on the influence of financing on institutional capacity of ECE centr...

Content:

This study seeks to investigate on the influence of financing on institutional capacity of ECE centres in Kikuyu District based on the fact that financing is key to any institution in order to boost the institutional capacity.

21:19 Lessik and Michener (2000) present several approaches developed by various agencies for assessing in...

Content:

Lessik and Michener (2000) present several approaches developed by various agencies for assessing institutional capacity and monitoring its development over time.

22:2 This dissertation therefore presents a model, the Municipal Institutional Capacity Model (MICM) that...

Content:

This dissertation therefore presents a model, the Municipal Institutional Capacity Model (MICM) that can be used, outside of the present research for the dissertation, to facilitate

the development of tools for the assessment of the institutional capacity of municipalities in South Africa.

22:3 The MICM is constructed in three chapters consisting of two capacity areas, namely, a primary capaci...

Content:

The MICM is constructed in three chapters consisting of two capacity areas, namely, a primary capacity area (leadership) and a secondary capacity area (innovation); and a set of four key institutional capacity elements, namely (1) long-term visioning and planning; (2) fiscal management; (3) public participation; and (4) human resources.

22:18 The current situation in South Africa, however, calls for a fresh synthesis of the question of munic...

Content:

The current situation in South Africa, however, calls for a fresh synthesis of the question of municipal performance and the scientific means to assess the institutional capacity necessary for municipalities to perform their constitutional obligations.

22:23 Even if all the governance and service delivery challenges that beset local government at present we...

Content:

Even if all the governance and service delivery challenges that beset local government at present were resolved, and municipalities were all able to fulfil their constitutional and developmental mandates, it would still be necessary to measure the institutional capacity of municipalities on a regular basis.

22:42 A slight adaptation of the eight-step process described by DeVellis (2003:60–101) was used as a basi...

Content:

A slight adaptation of the eight-step process described by DeVellis (2003:60–101) was used as a basis for developing the institutional capacity model.

22:90 Morgan and Taschereau (1996) describe institutional assessment as “a comprehensive approach for prof...

Content:

Morgan and Taschereau (1996) describe institutional assessment as “a comprehensive approach for profiling institutional capacity and performance”.

22:93 A model purporting to represent institutional capacity must have a diagnostic orientation, or, put d...

Content:

A model purporting to represent institutional capacity must have a diagnostic orientation, or, put differently, must provide the framework to: (1) determine the status quo, (2) evaluate the status quo against a desired state, and (3) identify the gap between status quo and desired state.

22:99 This goal is achieved through a focus on five broad objectives, namely (1) defining the concept ‘ins...

Content:

This goal is achieved through a focus on five broad objectives, namely (1) defining the concept ‘institutional capacity’; (2) examining the use of institutional capacity assessment as a diagnostic tool; (3) reviewing the usefulness of institutional capacity assessment; (4) analysing existing institutional capacity models; and (5) isolating the dimensions of institutional capacity in municipalities in South Africa.

22:129 The model presented here therefore can serve as framework to develop tools to predict what the likel...

Content:

The model presented here therefore can serve as framework to develop tools to predict what the likely performance of a municipality will be, given its institutional capacity (the meso level).

22:139 The MICM on its own can therefore not be used to diagnose institutional capacity, but provides a the...

Content:

The MICM on its own can therefore not be used to diagnose institutional capacity, but provides a theoretical framework within which an institutional capacity assessment tool can be developed and applied.

24:21 While, many of the aspects of institutional capacity are often intangible and conceptual, it is poss...

Content:

While, many of the aspects of institutional capacity are often intangible and conceptual, it is possible to identify ambitious, but realistic, measurable targets of institutional capacity which can be achieved within a reasonable time period, reflecting a level of institutional capacity that would be consistent with the extent of utilization of ISMs and a desirable level of performance.

11.12 ECDA Interview analysis

The following chapter denotes the detailed response of the main user as well as independent approach user responses pertaining to the ECDA.

11.12.1 Main user response

Developing and validating ECDA to satisfy requirements

Principle A: Explicit concept of the enterprise

(1) How is an ECDC perceived or conceptualized? Probe

The ECDC is a living organisation, with a lot of staff, children and parents mean there is always change and that it is a dynamic organisation.

(2) Considering Bloom's representation of ECDC, is this sufficient? Probe

People, structure and processes and outcomes. The main user concurs that Bloom's description of the ECDC is representative of the current scenario and business.

(3) ECDC is explained using Enterprise Engineering theory, is this adequate and sufficient? Probe

The main user deems EE explanation as adequate and noting to further add.

(4) In your words, how would you describe an ECDC? Probe

An ECDC is a very complex business, because you are working with people and not machinery. There is always a variation in someone's principles or even quality or quantity depending on what you are doing. It is a very complex thing, and you need to be successful

and to put your own mark on it you will have to from the beginning say how your culture will be. This is for an example the culture you want to implement with your parents, or with children or staff. You will have your own processes, in fact strict processes and protocols in place to achieve this.

Principle C: Explicit paradigm of value creation

(1) What is the value ECDA will deliver to (a) Children, (b) Parents, (c) Community?

Probe

Children – If there are more effective staff there will be more time to be spent on time for caring, and time to spend on their education.

Parents – Parents will see how much time is given to their children and will most definitely show the parents that the children are developing the way they are supposed to.

Community – The school will be one of the organisations you need to put your child in, thus a positive effect on the community knowing there is a quality centre where their children are cared for and looked after.

(2) IF ECDA is developed and implemented, what value will it bring to an ECDC?

Probe

A quality centre, parents students and staff will work in a pleasant environment. Parents will see the quality staff give, and the children will benefit from it.

(3) Which factors need to be considered when designing the ECDA in an ECDC context, specific to value creation, i.e. having the desired impact intended? Probe

At the onset of this question, confusion did exist on the word *factors* and its meaning in this particular context. The ECD Director understood this to be factors to implement in contrast to areas of concern. The detailed response is recorded:

My understanding is that the factors needed to be considered when implementing ECDA in ECDC is how many staff you have, sizes of classes and the background of the children. For example, is this an ECDC in a very low-income area, or in a very wealthy community and must also remember that a school is always a living and ongoing thing and no one else looking after the kids. So when implementing this the teacher's work still needs to be done – so when is this going to be implemented, after school time, during school time, use one class and implement this with the Director and administrator and teacher or do you upset everyone or the whole school as the main factors to consider.

Principle D: Explicit means (ways) of demarcating and representing design scope

(1) What part of the ECDC & environment should be in scope for the ECDA? Probe
The admin of the school, meaning daily tasks and legal (regulatory) things that need to be done like attendance registers, medicine files, when a child gets like an accident report, things such as the management of the school behind the scenes. The school is not only giving class or doing planning or teaching children and there are so many aspects needed in the background that the Director and administrator need to get done, and the ECDA must focus on those aspects.

(2) Confirm, validate and discuss design domains, as well as performance areas in scope.

Probe

- a. Validate the organisational domain as scoped area

The main user confirms and validates the organisational domain as complete.

- b. Discuss any components or aspects that needs to be included

Nothing needs to be included.

- c. Review, and discuss the performance areas outlined, and confirm completeness and effectiveness of areas

All areas mentioned focus on different perspectives, I would say Bloom is more complete and more comprehensive and broader than Arend and Nupponen. What is left out is the norms and values of the ECDC as well as the employee involvement, teamwork and everyone work together in terms of one follows the other, when one hand leaves something the other needs to pick it up and run with it. Cleanliness of the centre, and seems that this is not specifically mentioned. Knowledge sharing, as well as the processes that needs to be on a specific standard and quality. In general, more focus must be placed on working with the employees to get the centre more manageable.

(3) Validate and or add concerns using Bloom's ECDC outcomes as foundation. Probe
Bloom is as explained in previous questions broader than the other areas of concern.

Organisation:

- The *reputation* is extremely important for a ECDC, and the reputation can make or break this type of business. Reputation will be measured through children, if children are happy parents will be happy. Children must feel safe, cared for and if they (parents) see that their child is looked after, clean when they fetch them, happy, represents almost the child's emotional well-being is then an indication of the reputation of the ECDC.

- *How do you know or establish current reputation?* You can see this in your school, if children are crying all the time, parents will not be happy when they collect their child. If this happens you need to go look inside the class, what is going on there – perhaps the teacher is having a difficult week, or which emotional well-being you need to work on.

That actually goes with the job satisfaction of employees. Teachers and assistants (those working with the children) need to have a level of job satisfaction otherwise they will not provide that emotional satisfaction required by children.

- *Finances* always need to be looked after and fully support the measurement of this.
- *Internal effectiveness* (was not well understood by the main user, and was explained as follows: Are you doing things the fastest way possible, is it slick working according to plan?) Definitely, if you waste time, in an ECDC there is no time to waste as there's always children that needs to put your hands on them, and your processes and efficiencies need to be well developed.
 - *How do you measure efficiency?* You will look at your daily programme, and if it runs smoothly on time with no hick-ups you know you getting that right. Secondly, you have to put the assistants and teachers need to be a good match as they need to work together and support each other.
- *Professional orientation*, although an ECDC is so closely involved with children and parents you must always remember we are doing a professional job, and keep a strict line between personal and professional boundaries.
- *Absenteeism* is going to hurt the ECDC if there's always people or staff absent and fully agree to have as a measurement.
- *Turnover* is important, for example if a child has four teachers in one year it is not going to add any value to the ECDC.
- *Level of competence* very important. The employee with highest degree or qualification is not always the one that's most competent in the job, I look at where they worked, how long they had experience in the field, and a specific age group. They must have a formal degree or qualification, but teachers are born and must have a feeling for it. I usually look at the previous work experience.
- *Job satisfaction* as mentioned earlier as part of the reputation is accepted and agreed as a key aspect.

- *Commitment* is important, because the lack of commitment will not allow the ECDC to grow and it can do your reputation harm. Commitment is measured by looking specifically at their absenteeism, work and tasks completed on time, as well as the quality of work. The interaction with parents and kids are another sign of commitment.
- *Professional fulfilment* is something that needs to be worked on in an ECDC. Sometimes teachers feel they are at times seen as babysitters and not teachers or caregivers so actually suggest to add to have courses and doing more workshops in order to feel they grow in their job and not stand still. It is important to feel that they are developed, and I always see that teachers resign because they feel they are standing still and can't go any further. This does create a gap and needs to be addressed.
- *The product (child)*: Considering social, cognitive and overall health is measured I would suggest to add *emotional health*. If a child is not emotionally happy, or stable at the ECDC one have to take a deeper look. The emotional health is almost the most important aspect. If a child is emotionally healthy, their overall health will be stable. The cleanliness of the space they are in, and is the child looked after, like faces cleaned, hands sanitised regularly and so on.
- *Parents*: The relationship the parent builds with the teacher and assistant is important, and the perceived support is important. During COVID-19 as an example ECDCs are the only support certain parents have and the ECDC forms an integral part of their family structure and function.
- Relationships with parents are a key aspect that might need a unique focus, provide regular feedback to parents and therein build stronger relationships.

Will Bloom as reference guide you as ECD Director of the school in knowing your quality standards and overall performance?

- One topic that needs to add is the management of the ECDC. This should perhaps build out under the organisation chapter, there must be a management chapter. The principal and manager should measure and manage rules and regulations as prescribed by the Department of Social Development (DSD) in South Africa, and more on the administrative aspects behind the school. It is almost a reference to compliance of the regulations and rules, and parents at times need to be reminded that it is not school rules, but actually enforced from the DSD.

Principle E: Well-demarcated, and well-defended design scope

- (1) Explaining *inside-the-boundary* vs *outside-the-boundary* complexities, clarify where ECDA should be focused?

The ECDA must focus on the inside, because you can't change the perception from the outside but on the inside you can create a culture and a work ethic.

- (2) ECDA impacts IC within an ECDC, discuss, verify and validate design domains in scope.

In scope must be the management side, not specific to IT, but more the management or organisation of managing staff, regulations and processes plus protocols.

- (3) Confirm and validate areas of concern, probe in discussion.

Discussed in more detail under principle D.

- (4) Which stakeholder or role-players need to use ECDA in practice? Probe

The stakeholders are managers, owners or even principles of ECDCs.

Principle F: Representations of design scope

- (1) ECDA will evolve the current as-is processes to a to-be state. Probe process modelling languages, notations plus standards and alignment to an ECDC environment.

No, no specific languages but sounds too technical for an ECDC, this is not like a corporate and here we focus on children, processes and protocols so I would say if you want to use language it will be our processes and protocols. There is no other notations we use to describe it.

Probe: How do you currently define or document processes in the ECDC?

Yes, it is a process like how to change nappies as a practical example – there is a step by step process and procedure how to do it, with regards to the child, assistant safety as well as health regulations. This is drawn up and all staff are trained and need to ensure they follow and adhere to this.

- (2) Test and validate languages commonly used in Enterprise Engineering, and discuss alignment with the ECD domain.

I would say there is a lack of this in ECDCs, there is regulations provided by the Department of Social Development (DSD), but it takes years for a school to put there processes in procedures in place. There is a lack of it in the ECDCs and would like to use more engineering inspired tools and practices in this environment.

Principle G: Approach form and function

(1) Considering the ECDA, present and discuss all aspects of the methodology with the end-user, discussing and probing the following key aspects for completeness:

- a. Describe all aspects of the ECDA to the end-user
- b. Explain, and discuss the focus of each phase of the ECDA
- c. Present, and discuss the ECDA methodology, and solicit feedback and inputs
- d. Explain and demonstrate how the ECDA will be used, in terms of documentation as well as methodology

Step 1: Well, if I look at the concept of the enterprise (step 1), I would definitely say you always want to make the school better, improve quality and if you manage to achieve this there is always more kids and parents likewise are happy because their children are looked after.

Step 2: The ECDA must focus extensively on the organisation but what I wanted to say in the beginning, you can't forget the human skills associated with this, but also do think that the skills and development of staff will pick up when the management knows exactly how the protocols and processes need to work. The human skill will then actually develop with it.

Step 3: The performance areas, if designed properly, training conducted on it, then it will be good for staff and management and everyone to be on the same page and work together to implement this in the organisation.

Step 4: In relation to the requirements, I believe there needs to be a manual as reference to review when uncertain on how to do something, see where I went wrong and let's try something different tomorrow. Everybody should have access to it, and can go through it multiple times as and when needed.

Step 5: This should really guide to put the design in action, and implement this in the ECDA in the ECDC.

(2) What elements will be important as part of the *packaging* and *presentation* of the ECDA, specific to an ECDC? Probe

Manuals will be important, with training attached. The training must be practical, needs to have ample examples and filled with case studies as an example. This will make it or bring it over in a simpler manner for staff to relate and understand. There will be a case study of how you will handle the principles and apply it to the test case, therein ensuring everything in the ECDC aligns to being practical. Always remember that the ECDC is practical in every sense of its being.

(3) What roles are envisaged to use the ECDA within an ECDC? Probe

Like I said, the owner, principal and manager as well as staff. The staff will be very much part of the process, but the manager needs to oversee if the processes and protocols are implemented, but the staff needs to execute on the ground.

(4) Discuss and probe and changes or modifications needed to ECDA, and probe.

Not changes, but more input on the human skills and relation to training. The manuals and the case studies can assist in enhancing the concept and grasp of ECDA, considering its context and environment.

Principle H: Justificatory knowledge

(1) Provide an explanation on why the ECDA is developed? Probe

I would say to create quality in an ECDC and if there is quality it will lead to more and better care for children. If there is better care for children, it will rub off on parents and the community and then staff will be more satisfied with their jobs because they'll get this positive feedback. Quality is the most important thing with ECDA.

Probe: How can the ECDA be helpful to the Director?

Most of Directors, owners or even principles come from an educational background or foundation phase degree, with no background in running processes and protocols, so we usually teach that ourselves and if we have a guideline from the beginning will make it a lot easier to start and manage our own ECDCs from the beginning.

(2) Why would you think the ECDA can work, if designed and implemented effectively?

Probe

Well if it is implemented effectively all staff members will know what is expected from them, whilst the manager will know what to look for and everyone will be on the same page, and I believe support a culture of quality in the ECDC.

Principle I: Approach mutability

(1) In which circumstances, or environments might the ECDA and its components change, or need to be adapted? Probe

Well I think the structure of ECDA won't change, just if the running business or implication on the operation change, or you can't fulfil your duty towards children (i.e. not an ECDC anymore) or the community. COVID-19 is an example, no-one expected the ECDC to be closed for so long, and now the quality and service delivered inside the school (on premises)

changed dramatically. The ECDC can't offer its core service, thus when the running of the standard business change, ECDA might need to change.

What needs to be considered as part of the design to enable tailoring or changes in future?

Probe **Principle J:** Principles of implementation (conditional)

(1) What advice will be required, for a practitioner in an ECDC when implementing something such as the ECDA? Probe

Advice will be to do the ECDA practically, implement practically, and where all staff are involved in this process. It will be important to create this inclusive to all staff, because the ECDC do not have a very big hierarchy. This will ensure everybody is on the same page, and this will be the best approach.

(2) What tools do you foresee be needed in addition to the ECDA to support implementation and embedment? Probe

The tools needed will be by starting with a *training course*, and a facilitator that knows an ECDC that has either worked in an ECDC, or has experience in this industry. It does not infer experience in the corporate world, but in an ECDC, and know the situations that can change as nothing is set in stone specific to daily activities or daily processes.

The *manual* will be required as reference, enabling people to go back when needed and if you implement.

If implemented, need to *review* and go back to the drawing board and assess with what they struggled, how does it become more time effective or how structure it into their usual schedules to implement ECDA, and obtain *feedback* from the staff that works with the children. It is important to note that it is the children than comes first and nothing else.

11.12.2 Independent approach developer response

Principle A: Explicit concept of the enterprise

(1) Set understanding of how is an ECDC perceived or conceptualized? Probe

The conceptualization is clear and I understand your perception of an enterprise.

(2) Considering Bloom's representation of ECDC, is this sufficient? Probe

It seems to line up with what Hoogervorst says and I definitely agree with that. I would also suggest you have a look at <https://www.holacracy.org/> We used this system at our previous company and in my mind it is the embodiment of becoming a living organism – not

including all the design domains, but maybe their success will strengthen the case to view the enterprise as an organism.

(3) ECDC is explained using Enterprise Engineering theory, is this adequate and sufficient? Probe

Under the “rationale” part of this chapter you state “The conceptualisation of the enterprise has an influence on how an approach author demarcates design domains while it also provides a descriptive representations of the enterprise.” This is the only link I see to EE theory in this chapter, but you don’t expand on how it has helped you define design domains in this chapter. Not sure if this is expected to come through here or only later.

(4) In your words, how would you describe an ECDC? Probe

This is difficult, since I haven’t worked closely with an ECDC. But maybe I can give my generic version of an enterprise which will include enterprises in this space. I like viewing an enterprise as an organism in a larger ecosystem – any organism must perform a certain action in its environment to sustainably remain in that environment, even if this action is to be a parasite. If the function that the organism performs is not necessary in the environment, or there is another organism that performs this function better/more efficient, then it will not survive (this is why start-ups fail). So an ECDC performs a function in the social justice space so that large enterprises/individuals/government do not have to perform this action and thus they give money in the form of grants or charity thus justifying its position in the ecosystem.

Principle B: Explicit phenomenon

(1) Will be confirmed and validated with grounded theory, no specific interview responses required.

I know you are not asking for specific feedback on this chapter yet, but I think getting clarity here will make the conceptualization of what you are trying to achieve much more clear.

I feel like you are hovering between creating an *ECDC* design tool and an *enterprise* design tool *demonstrated at and ECDC*. I think you need to clear this up for yourself to really know how to gather requirements etc. Your explicit phenomenon as you describe it thus far in the doc is not limited to ECDC’s – most non-profits and small businesses struggle with these problems, since they haven’t made the money necessary to invest in adding technology and hiring consultants to make their lives easier.

Personally I would suggest changing your title to “An enterprise capacity development approach demonstrated at an early childhood development centre”, you should easily be able to find literature that indicates common themes of problems.

Principle C: Explicit paradigm of value creation

(1) IF ECDA is developed and implemented, what value will it bring to an ECDC?

Probe

My understanding of what you are trying to achieve is to provide something to the people within an ECDC to help them get clarity on what they need to do in order to add IC into their enterprise, by guiding them through the process of gathering functional requirements and turning them into constructional designs that they can implement

(2) Which factors need to be considered when designing the ECDA in an ECDC context, specific to value creation, i.e. having the desired impact intended? Probe

I think the main problem you will run into here is complexity: if you expect ECD administrators to go through the process on their own without guidance from a consultant or someone in a similar role, you will need to make the process consumable to someone who has not studied in the field of EE. This can be done in providing a user guide or training or similar depending on the complexity/depth you want to go into.

Principle D: Explicit means (ways) of demarcating and representing design scope

You mention the “highest constructional model of the provisioning system, known as the essence of the system.” What is this?

(1) What part of the ECDC & environment should be in scope for the ECDA? Probe

Again, here I think you need clarity about whether you are creating an approach for a generic enterprise or for an ECDC specifically. If it is specifically for ECDC, then the organization design domain doesn't need to be part of the approach, since I believe that if you create the DEMO construction model for multiple ECDC you will end up with (at least near) identical models. After this the implementation of the organization design domain will differ based on available technology, scale of the operation etc. if this is what you want to achieve I think the efforts will probably be better spent creating a good piece of ECDC software and implementing that to help ECDCs with IC.

On the other hand, if you are developing an approach that can be used at multiple different types of enterprises in this ecosystem you definitely need to start at the environment for functional requirements and use that to determine the functional and constructional needs within the enterprise for the other design domains. So if you are going this route then I agree that the design domains you have in this chapter would give you a comprehensive approach.

Just FYI, I have recently seen the value of first mapping out the construction of the organisation of the environment and then for the enterprise you want to design – this makes it much easier to understand the exact functions that the environment need the enterprise to perform, thus your design efforts should be well aligned with achieving the ultimate goal. This emphasizes the the enterprise as part of something else and not as a loose standing entity.

(2) Confirm, validate and discuss design domains, as well as performance areas in scope.

Probe

- a. Validate the organisational domain as scoped area

I think I did this above. It just needs to be more clear what you are trying to achieve on a high level first.

- b. Discuss any components or aspects that needs to be included

See points under 1

- c. Review, and discuss the performance areas outlined, and confirm completeness and effectiveness of areas

Not sure what performance areas are being referred to here

(3) Validate and or add concerns using Bloom’s ECDC outcomes as foundation. Probe

I understand what is being pointed to when referring to “people, process, structure”, however it feels very high level and vague when it comes down to designing/engineering. I think “people” should be left out of the design, and should be seen as a means of implementation. Technically responsibility is always with a person, however, whether it is a person or a machine executing on an action the design is generally still about the action, not the person. Not sure if I misunderstood this question.

Principle E: Well-demarcated, and well-defended design scope

- (1) Explaining *inside-the-boundary* vs *outside-the-boundary* complexities, clarify where ECDA should be focused?

In this chapter it become more apparent how you view what you are designing, however, I still believe that if this is only for ECDCs then you can make the design scope smaller. You would not need to gather the requirements every time you start with a new ECDC, you should be able to make the set of standard requirements part of your approach. But if you intend to use this in different environments I think the boundaries as described in this chapter are well placed.

- (2) ECDA impacts IC within an ECDC, discuss, verify and validate design domains in scope.

Think I've touched on this enough, but to iterate: if it is only in ECDC I would exclude organization design domain.

- (3) Confirm and validate areas of concern, probe in discussion.

I think your table numbering is mixed up – in the chapter it refers to table 32, but it looks like table 36 is the right one. I don't have enough knowledge to comment on the areas of concern you have identified. What I do not see yet is how you would know which areas of concern you will address within which design domains, but I also don't know if this is the intention.

- (4) Which stakeholder or role-players need to use ECDA in practice? Probe

From what I understand from the environment of who are the day-to-day implementers of early childhood development, I do not know if you would get great results in letting them attempt to go through the process without help. IMO this should be done by a consultant who uses employees/administrators as sources of information and requirements etc.

Principle F: Representations of design scope

- (1) ECDA will evolve the current as-is state to a to-be state. Probe process modelling languages, notations plus standards and alignment to an ECDC environment.

You are using the same modelling languages I used for the first 3 domains, so I think they served me well.

One comment here would be that an ERD does not say anything about technology, so using it for the information technology domain might be a bit misleading. I actually think that the technology part of IT can be grouped together with infrastructure domain.

Just take note that for me the notations were merely used in order to convey the feasibility of the design process. You might need to go into more detail depending on who you will get to develop the actual solution – the notation should actually be understandable/useable to the person who has to implement it.

- (2) Test and validate languages commonly used in Enterprise Engineering, and discuss alignment with the ECD domain.

In this I just used DEMO because of the way in which it declutters the design very quickly and the other notations I used because it was understandable to the people I needed to validate the design against. I don't know if they are the best way to do things, but they have worked well for me.

What is not clear from this chapter is how you intend to bring across human skills and know-how... Would be interested to understand

Principle G: Approach form and function

- (1) Considering the ECDA, present and discuss all aspects of the methodology with the end-user, discussing and probing the following key aspects for completeness:
 - a. Describe all aspects of the ECDA to the end-user
 - b. Explain, and discuss the focus of each phase of the ECDA
 - c. Present, and discuss the ECDA methodology, and solicit feedback and inputs
 - d. Explain and demonstrate how the ECDA will be used, in terms of documentation as well as methodology

I think what would make this chapter and section 5.2 much clearer is if the reader can see examples somewhere to understand exactly *how* these steps will happen. In theory it looks like it makes sense, but it is difficult to make it tangible without seeing an example.

Where I also think you need some clarification is how the user will go through the design proses between design domains. When I went through this process there was a strong dependency in knowing the construction of one domain before really being able to design

the next. Design is always iterative, but there needs to be a logical flow, otherwise you are collecting requirements for a lot of domains at the same time and trying to design them at the same time.

Maybe just one note that might just be something to look at from a theoretical pov: I don't think it is really possible to *design* a function, a function is just something requested by a user or using system, it is the *what* and you cannot design a *what* you can only change it to a different *what*. *How* on the other hand can be designed, thus construction is designing *how* the function is implemented. I remember getting stuck on this too and can't remember if I changed it back in my dissertation. If the function of the system changes it just means that the needs/construction of the using system changed IMO.

- (2) What elements will be important as part of the *packaging* and *presentation* of the ECDA, specific to an ECDC? Probe

See above comment

- (3) What roles are envisaged to use the ECDA within an ECDC? Probe

I don't think I know the environment well enough to comment

- (4) Discuss and probe and changes or modifications needed to ECDA, and probe.

See previous comments

Principle H: Justificatory knowledge

- (1) Provide an explanation on why the ECDA is developed? Probe
- (2) Why would you think the ECDA can work, if designed and implemented effectively? Probe

Principle I: Approach mutability

- (1) In which circumstances, or environments might the ECDA and its components change, or need to be adapted? Probe

What needs to be considered as part of the design to enable tailoring or changes in future? Probe

I think I have made the point well enough previously about the approach not being focused on a sector, but just being demonstrated in one. So having the sector as mutability doesn't

really make sense to me. A different sector just means different requirements, but the process won't change.

Principle J: Principles of implementation (conditional)

- (1) What advice will be required, for a practitioner in an ECDC when implementing something such as the ECDA? Probe

As mentioned previously, which ever tools you provide the practitioner should provide guidance in how to move between design domains.

- (2) What tools do you foresee be needed in addition to the ECDA to support implementation and embedment? Probe

User manual with examples will help a lot.

11.13 ECDC Daily Reports



Baby Daily Report
Baba Daaglikse Verslag

Name: _____ **Age:** _____

Date: _____ **Week:** _____

EVENT	Monday		Tuesday		Wednesday		Thursday		Friday	
Bottles / Bottels										
Liquids / Vloeistowwe										
Nappy / Doeke	W	D	W	D	W	D	W	D	W	D
Breakfast / Ontbyt										
Morning snack/ Oggend happie										
Lunch / Middagete										
Afternoon Snack/ Middag Happy										
Sleeping / Slaap	*		*		*		*		*	
	*		*		*		*		*	
	*		*		*		*		*	
Temperature / Tempratuur										
Other / Ander										

Date: _____ **Week:** _____

EVENT	Monday		Tuesday		Wednesday		Thursday		Friday	
Bottles / Bottels										
Liquids / Vloeistowwe										
Nappy / Doeke	W	D	W	D	W	D	W	D	W	D
Breakfast / Ontbyt										
Morning snack/ Oggend happie										
Lunch / Middagete										
Afternoon Snack/ Middag Happy										
Sleeping / Slaap	*		*		*		*		*	
	*		*		*		*		*	
	*		*		*		*		*	
Temperature / Tempratuur										
Other / Ander										

Date: 8-12 Feb Week: 5

EVENT	Monday	Tuesday	Wednesday	Thursday	Friday
Bottles / Bottels	11:30 refuse 13:00 all	11:30 all	11:30 all 15:00-all	11:30 all 15:00-all	11:30 all 15:00-10am
Liquids / Vloeistowwe					
Nappy / Doeke	W ✓ D ✓	W ✓ D ✓	W ✓ D ✓	W ✓ D ✓	W ✓ D ✓
Breakfast / Ontbyt	all	all	all	all	all
Morning snack / Oggend happie	all	all	all	all	all
Lunch / Middagete	all	all	all	all	all
Afternoon Snack / Middag Happy	all	all	all	all	all
Sleeping / Slaap	*refuse *11:45-12:45 *	*refuse *11:45-13:20 *	*refuse *11:45-13:00 *	*refuse *11:50-13:35 *	*refuse *11:45-14:00 *
Temperature / Tempratuur	7:30 36.6 14:00 36.2	7:40 36.6 14:00 36.4	7:25 36.3 14:00 36.2	7:30 36.7 14:00 36.5	7:45 36.4 14:00 36.3
Other / Ander	15:10-36.4	14:40-36.6	15:30-36.9	15:35-36.4	15:30-36.6

Date: 15-19 Feb Week: 6

EVENT	Monday	Tuesday	Wednesday	Thursday	Friday
Bottles / Bottels	11:30 all	11:30 all	11:30 all	11:30 all	11:30 all
Liquids / Vloeistowwe			15:00 all	15:00 all	
Nappy / Doeke	W ✓ D ✓	W ✓ D ✓	W ✓ D ✓	W ✓ D ✓	W ✓ D ✓
Breakfast / Ontbyt	all	all	all	all	all
Morning snack / Oggend happie	all	all	all	all	all
Lunch / Middagete	half	all	3 Bites	all	half
Afternoon Snack / Middag Happy	all	all	all	all	all
Sleeping / Slaap	*refuse *11:45-13:40 *	*refuse *11:50-13:40 *	*8:15-8:40 *11:45-13:15 *	*8:25-8:40 *11:50-13:30 *	* 8:15-8:40 refuse *11:45-14:05 *
Temperature / Tempratuur	7:36 36.3 14:00 36.2	7:25 36.2 14:00 36.6	7:30 36.2 14:00 36.4	7:45 35.4 14:00 36.6	7:35 36.3 14:00 36.4
Other / Ander	15:10-36.4	15:10-36.4	15:30-36.5	15:30-36.4	15:30 36.2

11.14 Structured skill development report

Baby Evaluation Report

Name: _____ Age: _____

Weight: _____ Length: _____



4 - Skill excelled	3 - Skill is achieved	2 - Skill needs improvement	1 - Skill not yet achieved
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1. Physical Development		
Position	Description of motor skills	Evaluation mark
Gross Motor	I can sit up from a lying position on my own	
	I can crawl forward	
	I can stand up from a sitting position on my own	
	I can stand steadily on my own	
	I can balance on one leg momentarily	
	I can run with good balance	
	I can walk well	
	I can jump with both feet together while holding on to something	
	I can walk on tiptoes	
	I can walk up and down stairs while holding onto something	
	I can march and stamp my feet	
	I can squat down and pick up a toy	
	I can push and pull toys while walking	
	I am beginning to climb with confidence	
	I like to bounce, rock and swing	
Fine Motor	I can throw and kick a ball	
	I can catch a large ball	
	I can roll a ball	
	I can manipulate small objects between my finger and thumb	
	I can hold a crayon using my whole hand	
	I can scribble	
	I can turn the pages of a book	
	I can pour water from one container to another	
	I can thread big beads on a thick string	
	I can screw and unscrew the lid of a jar	
I can roll, squeeze, mould and shape playdough with ease		
I can stack at least four blocks		
I enjoy finger painting and using a paintbrush		
I can cross my midline		
2. Perceptual Development		
Sense	Description of skills	Evaluation mark
Visual	I know my symbol	
	I can show my age using my fingers	

	I can sort objects into groups according to colour and shape	
	I can place the correct shapes into a simple shape-sorter (circle and square)	
	I can complete a knob puzzle with assistance	
	I can identify at least two items in a picture by pointing	
	I can identify at least one item in a picture by naming	
	I am learning to understand spatial relationship	
Auditory	I can respond to my own name	
	I react to loud noises	
	I can localize a sound source	
	I can accurately follow a 1 step command without gestures	
	I am able to listen and concentrate on a task for short periods	
	I am able to copy a simple clapping rhythm	
	I enjoy playing with musical instruments	
	I enjoy listening to nursery rhymes and songs	
Language	I like to join in with singing and dancing, and use words and actions	
	I can babble with intonation and emphasis	
	I can pronounce some words and sound clearly	
	I am starting to combine 2 words to form sentences	
	I have a vocabulary of at least 20 words	
	I can imitate sounds	
	I can express my wants and needs so that I am understood	
	I am curious	
I can use personal and possessive pronouns (yours, mine, etc)		
I am starting to predict cause and effect and to understand that my actions have consequences (e.g. dropping a toy from a height makes a sound)		
3. Social Development		
Description of Skills		Evaluation mark
I can play in a purposeful way		
I am developing an age-appropriate sense of humour		
I show interest in other children and my environment		
I seek reactions from others with my actions (e.g. pulling funny faces)		
I use sound and actions to communicate		
I like to show affection		
I can wave goodbye		
I can relate well to all caregivers		
4. Emotional Development		
Description of Skills		Evaluation mark
I can separate willingly from mom and dad		
I am happy at school		
I am able to adjust to new situations and change in routine		
I am easily reassured when something upsets me		
I can seek help from my Teacher when needed		

I can play independently	
5. Independent Care	
Description of Skills	Evaluation mark
I can eat a variety of foods and have a healthy appetite	
I am able to sit at the table for the duration of the meal	
I can feed myself finger-foods	
I am attempting to use a spoon rather than eat with my hands	
I can drink from a cup	
I can remove an article of clothing	
I can cooperate more when being dressed	
I can indicate my discomfort when my nappy needs to be changed	
I can help tidy up after activities	

I can name and/or identify the following colours;	
Red	
Yellow	
Blue	
Green	

I can name and/or identify the following shapes;	
Circle	
Square	
Triangle	
Rectangle	

My outdoor play preferences are;	
Sandpit	
Bikes	
Slide	
Swings	
Climbing / Jungle Gym	

My indoor play preferences are;	
Building blocks	
Toys / animals / dolls / cars	
Play dough	
Pencils, crayons and paints	
Books and puzzles	

General comment

Teacher

MRBH Owner

Date

11.15 ECDA demonstration

11.15.1 ICT domain requirements and specifications

In support of the demonstration of ECDA

Define ICT functions that needs to be addressed through the ICT design domain redesign

Participants: The ECDC Director / administrator

Participants need to identify the functions (utility or capability) that the ICT design domain should address considering the organisational design domain transactions. The function will typically convert an input to an output and will be relayed through an example.

Question 1: Is the ECDC current usage of ICT effective and sufficient? Probe.

Response 1: Yes, I believe our ICT is effective and sufficient. We effectively make use of social media, WhatsApp and weekly newsletters etc. I do however believe there is room for improvement.

Response 2: Yes, to an extent, but there is always room for improvement.

Question 2: What can be improved from an ICT perspective? Probe.

Response 1: A suggestion for improvement is to have a centralized platform for all communication including newsletters, evaluation reports, daily reports, weekly planning, complaints etc. like an app specifically designed for an ECD Centre.

Response 2: More technological devices could be made available to the teachers at school, E.g., laptops/tablets, projectors, and cameras. A centralized server could also contribute to a more efficient working environment. Staff could receive training on how to utilise their existing technological platforms more effectively.

Question 3: What are your requirements when considering the use of ICT at the ECDC?
Probe

Response 1: A tablet could be issued to each classroom as well as reception, perhaps mounted on a stand that is fixed and not movable to enable the teachers to access, retrieve and feed data to the app.

Response 2: From the point of view of the administrator, a more advanced computer is a definite requirement.

Question 4: What function(s) must the ICT design domain operationalise, considering the following transactions: (Probe)

For each say (Yes or No), and reason.

- Transaction group 1 [TK01]: Child arrival (reception)
 - e.g. For the transaction kind *child reception*, do you need information technology to support this operation? Is it sufficient to use WhatsApp to communicate arrival at the gate to the child receiver”? Probe

Yes, could be used for the daily Covid screening and class register. App could send a message to each parent notifying them of time of arrival, departure.

- Transaction group 2 [TK02 – TK09]: Child caregiving (during the day)
 - Step 2.1: Educational
 - e.g. Is a quarterly printed progress report the most optimal use of information technology? Probe

Response 1: Yes the app could be used to do weekly planning, from where the daily educational activities are generated. The teacher can then provide daily feedback and assessment on each activity and milestone. A monthly/quarterly evaluation report can then be generated for each child based on the assessments and feedback provided on the app.

Response 2: No, ICT can be used more optimally than that.

- Step 2.2: Skill-development
 - e.g. For skill-development and insight to the education program, is information technology an answer to share greater insights and updates pertaining to developmental progress real-time? Probe

Response 1: Yes, real time is maybe not realistic but from the app a daily report could be generated for the parents end then send at the end of the day to the parents via the app.

Response 2: Yes. ICT is useful in this regard; however, it is very time-consuming and not entirely realistic.

- Transaction group 3 [TK10]: Medication administering

- e.g. For medication administering, do you need an information technology system or even approval workflow for approval purposes, or is the medicine book and WhatsApp sufficient? Probe

Response 1: Yes, the app could have a functionality for daily medicine administration and management. The parents should be able to list the medicine and instructions daily

Response 2: Unknown. This function has not been explored. (In my opinion though, the medicine book and What's App is sufficient for our current student body.)

- Transaction group 4 [TK11 – TK12]: Go-home preparation & child collection
 - e.g. Making use of information technology and real-time update to inform parents when the child leaves the facility and whom collected the child via an automated sms or email? Probe

Response 1: Yes, The app could be used to complete the home time Covid screening and collection time. A message could then be sent to each parent to notify them of the collection time.

Response 2: No. It is not always possible to log this information in real time, Meaning, additional ICT platforms did not improve the current procedure.

1.1. Elicit constructional design requirements and principles

Participants: The ECDC director and administrator

Participants need to identify constructional requirements and principles for the ICT design domain in the form of a checklist.

Question 1: What are important prescriptors (requirements / principles) that will guide how its design must proceed? Select the *five most important* non-functional requirements (NFR) from the below list that needs to be considered as part of the ICT design domain construct. A glossary will be compiled to explain and define each NFR, and where needed responses will be probed.

Response 1:

Accessibility		Extensibility		Quality	
Audit and Control		Failure management		Recovery	
Availability		Legal and licensing issues		Reliability	X
Backup		Interoperability		Resilience	
Capacity: Current and forecast		Maintainability		Resource constraints	
		Modifiability		Response time	
Certification		Open source		Robustness	
Compatibility compliance	X	Operability		Scalability	
Configuration management		Patent-infringement-avoidability		Security	X
Dependency on other parties		Performance / response time		Software, tools, standards	
Documentation		Platform compatibility		Stability	X
Disaster recovery		Price		Safety	
Efficiency	X	Privacy		Supportability	
Effectiveness		Portability		Testability	
Escrow				Usability	

Response 2:

Accessibility	x	Extensibility		Quality	
Audit and Control		Failure management		Recovery	
Availability		Legal and licensing issues		Reliability	
Backup		Interoperability		Resilience	
Capacity: Current and forecast		Maintainability		Resource constraints	
		Modifiability	x	Response time	
Certification		Open source		Robustness	
Compatibility compliance		Operability		Scalability	
Configuration management		Patent-infringement-avoidability		Security	
Dependency on other parties		Performance / response time		Software, tools, standards	
Documentation		Platform compatibility		Stability	
Disaster recovery		Price		Safety	
Efficiency	x	Privacy		Supportability	
Effectiveness		Portability		Testability	x
Escrow				Usability	x

Source: Leffingwell, D.: Agile software requirements: Lean requirements practices for teams, programs, and the enterprise. Addison-Wesley, New Jersey (2011)

11.15.2 Test the effectiveness, completeness and applicability of the ICT design construction

Participants: The ECDC director and administrator

Question 1: Does the ICT design domain redesign meet its intended outcomes? Probe

Response 1: No, The app is not specifically designed for our ECD Centre and therefore lacks compatibility. It is real-time focused which is not practical and efficient. Our need is more for a daily/Monthly/quarterly update.

Response 2: Currently, no. However, it does have the potential to significantly improve institutional capacity, if it was implemented across the board, with the appropriate number of devices and time available. Currently it is too time-consuming and does not add enough

value to the ECDC's operations, as it is not yet able to replace other processes and procedures

Question 2: Will the proposed ICT design construct have a positive impact on the quality of services delivered? Probe

Response 1: Yes but only if redesigned to be less admin intensive and to meet our specific ECD needs.

Response 2: Currently, no. However, if the devices and time were available to update information on the app in real-time, then definitely, as it has a lot to offer and the potential to replace several platforms and processes.

Question 3: Is the ICT design construct feasible within the context of the ECDC? Probe

Response 1: No it is currently too admin intensive and inefficient. It takes too many resources to maintain.

Response 2: No. Not enough time or devices are readily available, and not all staff members possess an equal capacity for operating ICT platforms efficiently.

Question 4: What can or should be changed to improve the proposed design domain construct? Probe

Response 1: It should be simplified to provide feedback and assessment daily instead of in real-time to reduce the admin intensity.

Response 2: Adding a new ICT element to your regular daily routine should add value, reduce paperwork, and alleviate workload, by replacing other, manual procedures (E.g. Daily reports) and ICT platforms (E.g. What's app and Facebook). The *HiMama* app is well thought-out and comprehensive, maybe too much so. It could be simplified to reduce time-consumption and work-generation.

11.15.3 Shortlisted software overview

Software A: Deployment, Support & Features

Support	✓ 24/7 (Live rep)	✓ Chat
Deployment	✓ Cloud, SaaS, Web-based	
Training	✓ In Person ✓ Live Online	✓ Webinars ✓ Documentation

✕ API	✓ Contact Management	✓ K-12
✕ Accounting	✕ Customizable Branding	✕ Performance Metrics
✕ Activity Dashboard	✕ Customizable Forms	✓ Progress Reports
✕ Activity Tracking	✕ Customizable Reports	✕ Progress Tracking
✓ Applications Management	✕ Customizable Templates	✕ Records Management
✓ Assessment Management	✕ Data Import/Export	✕ Recruitment Management
✓ Attendance Management	✓ Document Management	✕ Registration Management
✓ Attendance Tracking	✕ Document Storage	✕ Reminders
✕ Automated Scheduling	✕ Electronic Payments	✕ Reporting & Statistics
✓ Billing & Invoicing	✓ Email Management	✕ Role-Based Permissions
✓ CRM	✓ Enrollments/Onboarding	✓ Scoring
✕ Calendar Management	✓ Evaluation Management	✕ Self Service Portal
✓ Candidate Management	✕ Event Calendar	✕ Student Management
✓ Class Scheduling	✓ Fee Management	✕ Student Portal
✕ Client Portal	✓ Financial Aid Management	✕ Third Party Integrations
✓ Colleges / Universities	✓ Financial Management	✓ Workflow Management
✓ Communication Management	✓ Forms Management	

Software B: Deployment, Support & Features

Support	✓ Email/Help Desk ✓ FAQs/Forum	✓ Knowledge Base ✓ Phone Support	✓ Chat
Deployment	✓ Cloud, SaaS, Web-based ✓ Mac (Desktop)	✓ Windows (Desktop) ✓ Android (Mobile)	✓ iPhone (Mobile) ✓ iPad (Mobile)
Training	✓ In Person ✓ Live Online	✓ Webinars ✓ Documentation	✓ Videos

✓ ACH Payment Processing	✓ Data Security	✓ Parent Portal
✕ API	✓ Document Storage	✓ Payment Processing
✓ Activity Dashboard	✓ Electronic Payments	✓ Real Time Monitoring
✕ Activity Tracking	✕ Electronic Signature	✓ Real Time Reporting
✓ Alerts/Notifications	✓ Email Management	✓ Real-time Updates
✓ Attendance Management	✓ Employee Management	✓ Records Management
✓ Attendance Tracking	✕ Enrollments/Onboarding	✓ Registration Management
✓ Billing & Invoicing	✓ Event Calendar	✓ Reminders
✓ Calendar Management	✓ Immunisation & Allergy Tracking	✕ Reporting & Statistics
✕ Class Scheduling	✓ Invoice Management	✓ Role-Based Permissions
✓ Client Portal	✓ Live Chat	✓ Self Check-in/Check-out
✓ Communications Management	✕ Mailing List Management	✕ Self Service Portal
✓ Contact Database	✓ Meal / Nutrition Management	✓ Student Management
✓ Credit Card Processing	✓ Member Database	✓ Summary Reports
✓ Customer Accounts	✓ Milestone Tracking	✓ Video Support
✕ Customizable Reports	✓ Mobile Alerts	✕ Wait List Management
✓ Daily Reports	✓ Multi-Location	

11.15.4 Measure quality of caregiving before and after trial

The quality indices described provides a holistic view on quality within the ECDC as perceived by the ECDC Director, caregivers and parents.

An approach to embed enterprise capacity at an early childhood development centre

The objective of this study is to improve quality of services delivered through the development of an enterprise capacity development approach (ECDA) for an Early Childhood Development Centre (ECDC). The use of interviews and a questionnaire will be used to solicit information from respondents/informants of this study.

1. Measure quality of ECD services

The quality indices described provides a holistic view on quality within the ECDC as perceived by the ECDC Director, caregivers and parents. Each element, and sub element of the survey will be explained as part of the survey design phase.

Survey Instructions: Rate the quality of each of the following items in terms of how well **Technology** supports the various criteria. For any response noted as "Not Acceptable" and "Acceptable with adaptations" fields will be created for a detailed explanation.

Element	Sub Element	Not Acceptable	Acceptable with adaptations	Acceptable
Organisation (MRBH Baby House)	Professional orientation of ECDC			
	Reputation of the ECDC			
Child Assessments	Ability to do screening and identification of special child needs			
	Facilitate assessments in support of learning			
Family partnerships	Family communications			
	Family support and involvement			
Marketing and public relations	External communications			
	Community outreach			
Technology	Availability of technology resources			
	Use of Technology at MRBH			
Parents	Satisfaction with centre			
	Perception of support given			

Survey 1 (Parents): Rate the quality of each of the following items (Source: Program Administration Scale), in terms of how well the *ICT design domain* supports the various elements and probe responses. For any response noted as “Not Acceptable” and “Acceptable with adaptations” fields will be created for a detailed explanation.

Trial results (Before)

Software B Trial – 24 May to 04 Jun

Child	Parent Name	Consent	Organisation		Assessments		Partnerships		Marketing & PR		Technology		Parents	
			Orientation	Reputation	Screening	Assessment	Comms.	Support	External	Outreach	Availability	Usage	Satisfaction	Perception
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	AWA	Acceptable	Acceptable	Acceptable	Acceptable
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	AWA	Acceptable	Acceptable	Acceptable	Acceptable
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Not invited to participate due to prolonged absence.														
		Y	Acceptable	Acceptable	Acceptable	Acceptable	AWA	Acceptable	AWA	AWA	Acceptable	AWA	Acceptable	Acceptable
No reply														
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
No reply														
Not invited to participate due to prolonged absence.														
		Y												
No reply														
		Y	Acceptable	Acceptable	AWA	Acceptable	AWA	AWA	Acceptable	Acceptable	AWA	AWA	Acceptable	Acceptable
		Y	Acceptable	Acceptable	AWA	Acceptable	AWA	AWA	Acceptable	Acceptable	AWA	AWA	Acceptable	Acceptable
Not invited to participate due to prolonged absence.														
		Y	Not Accept.	AWA	AWA	AWA	Acceptable	Acceptable	AWA	AWA	AWA	AWA	AWA	Acceptable
		Y	Not Accept.	Not Accept.	Not Accept.	Not Accept.	Acceptable	Acceptable	AWA	AWA	AWA	AWA	Acceptable	Acceptable
		Y	Acceptable	Acceptable	AWA	AWA	Acceptable	Acceptable	Acceptable	Acceptable	AWA	AWA	Acceptable	Acceptable
		Y	AWA	Acceptable	Acceptable	AWA	Acceptable	Acceptable	Acceptable	AWA	Not Accept.	Not Accept.	Acceptable	Acceptable
No reply														
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
No reply														
		Y	Acceptable	Acceptable	Acceptable	Acceptable	AWA	AWA	Acceptable	Acceptable	-	-	AWA	AWA
		Y	Acceptable	Acceptable	Acceptable	Acceptable	AWA	AWA	Acceptable	Acceptable	-	-	AWA	AWA

Trial results (After)

Software B Trial – 14 May to 04 Jun

Child	Parent Name	Consent	Organisation		Child Assessments		Family Partnerships		Marketing & PR		Technology		Parents	
			Orientation	Reputation	Screening	Assessment	Comma.	Support	External	Outreach	Availability	Usage	Satisfaction	Perception
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	AWA	Acceptable	Acceptable	Acceptable
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
		Y												
		Y												
Not invited to participate due to prolonged absence.														
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
No reply														
		Y												
No reply														
		Y												
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Not invited to participate due to prolonged absence.														
		Y												
		Y												
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
		Y	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	AWA	Acceptable	AWA	Acceptable	Acceptable	Acceptable	Acceptable
		Y												
No reply														
		Y												
		Y												

Measure quality of ECD services

The quality indices described provides a holistic view on quality within the ECDC as perceived by the ECDC Director, caregivers and parents. Each element, and sub element of the survey will be explained as part of the survey design phase.

Participants: ECDC Director and administrator

Survey 1: Rate the quality of each of the following items (Source: Program Administration Scale), in terms of how well the *ICT design domain* supports the various elements and probe responses. For any response noted as “Not Acceptable” and “Acceptable with adaptations” fields will be created for a detailed explanation.

Response 1:

Element	Sub Element	Not Acceptable	Acceptable with adaptions	Acceptable
Centre Operations	Facilities Management	X		
	Risk Management	X		
	Internal Communications	X		
Child Assessments	Ability to do screening and identification of special needs			X
	Facilitate assessment in support of learning			X
Program Planning and evaluation	Program evaluation			X
Family partnerships	Family communications			X
	Family support and involvement			X
Marketing and public relations	External communications			X
	Community outreach			X
Technology	Technology resources			X
	Use of Technology			X

Response 2:

Element	Sub Element	Not Acceptable	Acceptable with adaptations	Acceptable
Centre Operations	Facilities Management	x		
	Risk Management	x		
	Internal Communications	x		
Child Assessments	Ability to do screening and identification of special needs			x
	Facilitate assessment in support of learning			x
Program Planning and evaluation	Program evaluation			x
Family partnerships	Family communications			x
	Family support and involvement			x
Marketing and public relations	External communications			x
	Community outreach			x
Technology	Technology resources			x
	Use of Technology			x

Survey 2: Rate the quality of each of the following items (Source: Bloom 1991), in terms of how well the *ICT design domain* supports the various elements and probe responses. For any response noted as “Not Acceptable” and “Acceptable with adaptations” fields will be created for a detailed explanation.

Response 1:

Element	Sub Element	Not Acceptable	Acceptable with adaption	Acceptable
Organization	Internal efficiency	X		
	Reputation of ECDC			X
	Professional orientation			X
Children	Social competence			X
	Cognitive competence			X
	Overall health			X
Parents	Satisfaction with centre			X
	Perception of support given			X

Response 2:

Element	Sub Element	Not Acceptable	Acceptable with adaption	Acceptable
Organization	Internal efficiency	x		
	Reputation of ECDC			x
	Professional orientation			x
Children	Social competence			x
	Cognitive competence			x
	Overall health			x
Parents	Satisfaction with centre			x
	Perception of support given			x