CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

There is a growing interest in university-community co-operation in general, as evidenced in the increasing prominence of university-industry partnerships on the agenda of higher education policy-making at both the national and institutional levels (Martin, 2000) and workplace-based learning by university students in particular. Coupled with the very commonly espoused goal of quality assurance in higher education in developing countries, workplace-based learning promises to enlighten academy on the efficacy of existing theory and practice of university learning and teaching.

This chapter provides a survey and a critical analysis of the accessed literature on general and specific issues around the topic and theme of this study, with a view to organising the study and situating it in acknowledged spheres of academic discourse. Such issues have been hinted at in the conceptual framework of this study in the previous chapter, and include university roles, quality in higher education institutions, academic practice and learning processes, community engagement and organisational concerns and learning theory and environments, among many others.

Literature reviews have certain characteristics and intentions and some of these have been highlighted by scholars. For instance, Cooper (2010) developed and documented a taxonomy of literature reviews in the field of research synthesis and meta-analysis that I have considered useful in this and other types of research. Literature reviews, according to Cooper (2010), have the following features: focus, goal, perspective, coverage, organisation and audience. Based on these categorisations, although my literature review in this chapter focuses mainly on practices and applications of industry-based learning, it also addresses methods and findings of similar research elsewhere, and on theory and theories related to the research topic. The goal is mainly the identification of central issues and to integrate what others have done and said, and to rationally critique and evaluate some of the views encountered in my literature search that may not be compatible with certain arguments and lines of thought that I present. The perspective of my literature review is neutral representation of other scholars' viewpoints, while the coverage is basically central and pivotal, in Cooper's (2010) terminology. The organisation is

conceptual, bringing together relevant themes and concepts, and the target audience are the practitioners, policymakers and general scholars.

The literature review that follows below is organised into concepts around industry-based learning as highlighted in the theoretical framework in Chapter 1. It starts by discussing issues related to the university as an organisation before picking on a variety of themes that lay the necessary foundation of knowledge for the study.

2.2 University community engagement functions

Among the university's key functions is outreach and engagement with external organisations and significant others for purposes ranging from public relations to concrete bilateral cooperation and business dealings. The majority of engagements may largely be at the formal level, although others may be informal, such as engagements with residents and the business community in the neighbourhood of the university campus (Zlotkowski, 2005). It is the more formal relationships that this study and this section are concerned about. In the sections that follow below, a discussion of aspects of the university that link to formal engagement with communities is given.

2.2.1 Universities and their Mission

The traditional key functions of a university remain to be those of teaching and learning, research and service. Ngara (1995:31) adds a fourth function that consolidates service, namely that of 'fostering moral values and raising social consciousness'. This function calls on universities to engage in activities that have a bearing on the specific historical and social conditions under which they operate. Kaye (1994:5) notes that universities pursue the goal of inquisitiveness and understanding, and the benefit that the university gives to society and learns from society is not just the external products in the form of graduates, research results and other service to society, but also in the 'maintenance and promotion of a life of individual and social enquiry within the university itself'. The university is therefore a learning community, engaged in organisational learning. In this sense the university is not merely a transformative or transforming institution. It is a driver of human survival and adaptation to an increasingly hostile environment. In support of the views of Ngara (1995) and Kaye (1994) above, I note that where the university is not freely integrated in and accessible to communities around it, as in most developing

countries, traditional ways of life weigh heavily on the lives of people, and the stalling of socio-economic development becomes evident.

As public organisations, universities are not exempt from the temptation to pursue purely self-serving goals such as profit, image and posture building at the expense of public accountability. Fryer (2007) describes the case of the University of British Columbia's move 'from the ivory tower to the community' in which the neighbouring Vancouver's Downtown Eastside community came to benefit through the establishment of a Learning Exchange initiative. Fryer (2007) observes the following:

> While the university can be seen as being at the top of the social ladder and the Downtown Eastside community at the bottom, in fact both are dependent on the state for their survival and are therefore, vulnerable. … Where universities and communities co-create environments where people can engage in acts of caring and thoughtful citizenship ..., the move from the ivory tower to the heart of community has been achieved.

It is worth noting that the social gap between the university and its typical neighbourhood in a contemporary developing country is far greater than that in developed and industrialised countries. Fryer's (2007) example portrays a scenario culminating from many years of social experience and a solution to a long perceived bone of contention, namely the viewing of the university as an ivory tower.

A major focus of the university's mission is the quality and quantity of its graduate output. Universities, perhaps inadvertently, aim to develop learners suitable and adaptable for the rapidly changing world, learners who have the ability to comprehend and generate socially useful knowledge and skills to carry them through the rest of their lives (Wood, 2007). Not only that. University graduates are expected to be versatile and flexible in their approaches to life and work so that they remain on top of any situation that is prone to arise be it through economic or social mishaps. Wood (2007) notes that lifelong learners have the ability to, among other virtues, identify and solve problems, make decisions using critical and creative thinking, work effectively with others as members of teams, groups, organisations and communities, and demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation, as it is listed in the South African list of critical cross-field outcomes (CCFO) which Smith refers to in her work. According to Smith (2006), CCFOs are crucial for the transfer of

competencies from classroom learning environments into the real complex world of work and life in general.

The research culture and output of any university is an important determinant of its potency and visibility, its status, and in recent times, its international ranking. Community service is one other determinant although it is often the least recognised among the three key recognised functions. Increased and sustained collaboration between universities and their communities and reciprocal learning could change the academic process and profile of faculty. Martin (2000) cites the existence of outward-looking academic staff, with experience in both industry and academia, as a factor that could facilitate (or hinder) the development of joint activities. University-industry linkages have a great potential to improve the practice of relevant teaching and research in universities, and in addition, may provoke a number of other unintended effects. Frazer (1994) contends that quality in higher education is achieved when universities are accountable to society, employers, to students and to each other, and the accountability is not merely financial.

In the industrialised world, universities developed out of a need and were a result of social development in their communities. Thus they have always existed to serve the societies in which they are located (Kaye, 1994:10), and they promote a broad, plural, inter-active, dynamic, and fundamentally humane vocation. However, it has been observed elsewhere, that universities in less industrialised countries, being a borrowed concept, tend to be rigid, hierarchic, traditional, and lacking autonomy with respect to their ministries of education, and university research groups tend to be so small as scarcely to be viable (Organisation for Economic Co-operation and Development [OECD], 1984). Further, it is observed that in these circumstances, there is little or no external demand for academic research, since firms make little use of R&D and lack the capacity to absorb its results. Firms which are involved in mass production under licence tend to turn to their foreign licensors for help with any problems which emerge in the production process. Industry is not capable of adequately defining its problems in ways meaningful to scientists and may not even have problems amenable to scientific research. Industry concern is essentially with survival and short-term profit with little willingness to invest in R&D aimed at product improvement when the internal market can be retained without taking such risks. Surprisingly academics are reported not to have sought industrial contacts, preferring only to try to build up

scientific reputations through publication in the international scientific literature (OECD, 1984:24 – 25).

The stark reality of the sentiments raised above manifests in the under-utilisation of the university by industry in less industrialised countries is heightened by the existence of more advanced institutions elsewhere that have the capacity to solve not only their own problems but those of others in developing countries that may not be able to do it for themselves.

2.2.2 University-community Collaboration

Community engagement for academic intentions by any higher education institution, that includes service learning (including reciprocal learning) and collaborative research, has been defined as those initiatives and processes through which the expertise of the higher education institution in areas of teaching and research are applied to address issues relevant to its community" (*University World News*, 2008). This definition is silent about the expertise available in the community, and how 'indigenous' knowledge often serves as the ideal starting point for mutual engagement. In the available literature, academic interactions between universities and communities have been given different labels, some of which are: higher education-community collaboration, university-industry interaction, collaboration, partnerships or engagement. In this study the terms *university-community engagement* or *collaboration* or *partnerships* are used liberally and interchangeably.

A variety of formalised avenues of university-community interaction exist worldwide. Ebong (2004) has identified two levels of relationship between universities and industry experienced in Nigeria, namely the informal (through alumni, faculty consultancies, company scholarships, et cetera), and the formal (through student work experience schemes and staff sabbatical leave schemes). In Ramaley's (2005) 'engaged university', engagement is distinguished from outreach in the following way:

> Institutions that take on the mantle of engagement are committed to direct interaction with external constituencies and communities through mutually beneficial exchange, exploration, and application of knowledge, expertise, resources, and information. These interactions enrich and expand the learning and discovery functions of the academic institutions while also enhancing community capacity.

The work of the engaged institution is responsive to, and respectful of the community with which it engages. A model of engagement (Figure. 2.1) has been developed by the South

African Higher Education Quality Council (HEQC) in which various combinations of activities of the university through teaching, research and service produce five key types of engagement, namely distance education, service learning, professional community service, participatory action research and community-based research. This model is pertinent in the function of providing learning for the community, as well as the learning of the students and the university as a whole from the engagement. My curiosity is aroused regarding activities and outcomes of service learning in its many forms, wondering if the model could not be modified so that the fields of service learning and research overlap to mould a new type of engagement called research-enhanced service learning.

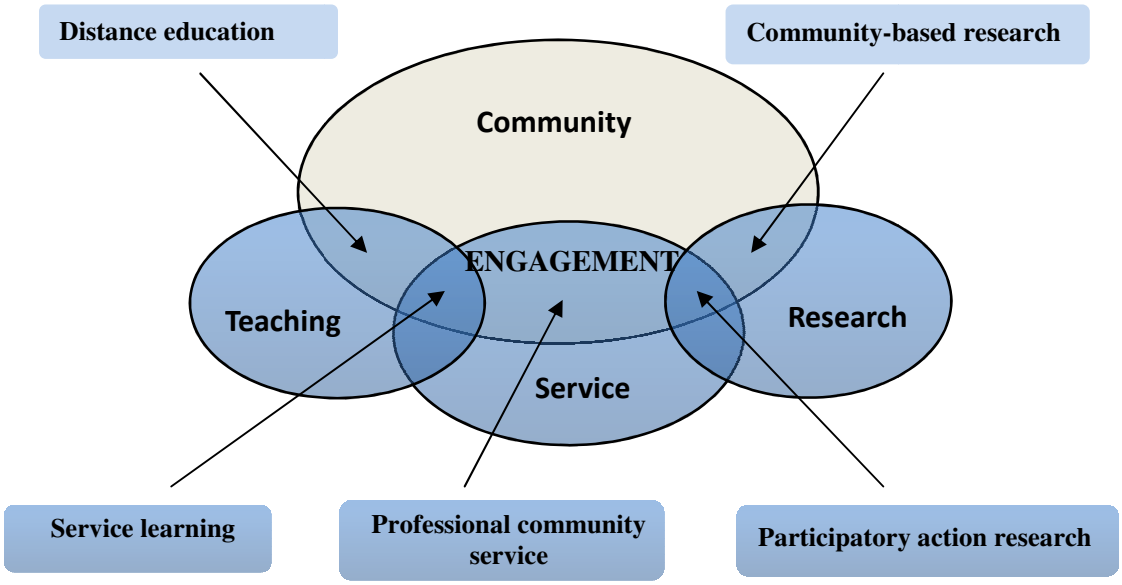

Figure 2.1 Types of community engagement (Source: HEQC, 2006: 13)

In the collaboration between the university and the community other players come in, and one such crucial player is the government. National needs, incorporating the agenda for national development and civilisation, are nowadays defined by the government of the day (Kaye, 1994:5). It is important, therefore, that government creates conditions for the promotion of industrial and economic progress. The university, industry and the government (the triple-helix model) must be prepared to accept new responsibilities that require a sympathetic dialogue within the universities, as much as among university, industry and government (Parra-Sandoval et al., 2010). Ryan (2006) contends that government policy should aim to make universities 'business friendly', and to make small and medium-scale enterprises (SMEs) university-aware; that is, to ensure that SMEs take advantage of whatever scientific work their local universities are doing, and that

universities are active in seeking out SMEs with whom they could do some good in a reciprocal way. This is one of the crucial contentions in the developing countries, where the capacity of government and its institutions is limited and such challenges are left to universities themselves and, in some instances, non-governmental organisations.

Ayiku (1991) cites the example of product development that starts from the generation of an idea followed by the determination of the technical feasibility and the commitment of resources to the development of the product. He rightly points out that since SMEs in Africa are unwilling and unable to commit funds for elaborate product development, university/research institutions must undertake this function in the national interest, adding ideas such as:

> In view of the low educational background of many African entrepreneurs in the SMI sector, these entrepreneurs can neither assess their own needs nor accurately define their problems. They are even unaware of the business opportunities in the SMI sector. The available economic opportunities must therefore be researched and the results made available to them from time to time.

A model of partnership thus appears lacking between universities and SMEs, one that incorporates self-regulated learning or action learning among the participants and partners. Teare and Prestoungrange (2004:52) write about the Revans University of action learning and attempt to answer the question 'Can work and learning really co-exist?' They point out that, 'people generally engage (and learn) more readily with their peers and from the issues that they confront each day at work'. In essence a deliberate programme of empowerment of SMEs may become part of the mission of a university that prides itself on community engagement of relevance with peers, clients and needy neighbours.

It would appear that the balance of functions of a university academic has an effect on their productivity. A university academic is only partly a researcher, while a full-time consultant may be involved in more research activities, and an industrial researcher will be either fully involved in research or partly so (e.g. in the case of action research within a context of being both researcher and practitioner). Manjarrés-Henríquez, Gutiérrez-Gracia, Carrión-García & Vega-Jurado (2009) have established that university lecturers' scientific productivity was highest only when they had a low engagement in research and development (R&D) contracts with industry, prompting the indication that the positive effect of university-industry relationships (UIR) on a lecturer's scientific production comes fundamentally from the capacity to provide complementary resources (cognitive,

affective, practical competence, values and virtues, technical, and/or financial) for research activities, rather than being fully submerged in the activities of the industry. In contrast, a Bolivian study by Vega-Jurado et al. (2009) on university knowledge production and its transfer to industry has found that there are several barriers to university-industry relationships including institutional support, the generally unfavourable atmosphere in universities and an unsupportive industrial structure. The arguments above, taken together, give the impression that the desirable environment for fruitful research for the benefit of industrial production is an elusive one, and most likely a dynamic one too.

2.2.3 The University as a Learning Organisation

A progressive organisation values the knowledge of individuals as well as that shared between them. The organisation as a perpetual entity staffed by individuals who come and go is constantly undergoing inevitable change. Such change offers opportunities for learning, and consequently an accumulation of wisdom that builds a heritage for generations ahead. A learning organisation promotes and engages in progressive change-sensitive processes such as systematic problem-solving, experimentation with new approaches, learning from the past, learning from the best practices of others, and transferring knowledge (Kermally, 1997).

Defining a learning company as 'an organisation that facilitates the learning of all its members and consciously transforms itself and its context', Peddler et al. (1997) envisage a dream of creating organisations that are capable of changing, developing and transforming themselves in response to the needs and aspirations of people inside and outside them and that enrich and sustain the wider world of which they are part. In the end 'the people in such a company can, through their work, make contributions not just to their organisations but through them to the wider society. In return they receive 'an enhanced sense of personal contribution and meaning' (Peddler et al., 1997:4). One of the defining characteristics of a learning company is 'inter-company learning', one of whose determinants is that 'people from the company go on attachments to our business partners, including suppliers, customers and competitors' (Peddler et al., 1997:31). To Ramaley (2005:178), quoting David Garvin, a learning organisation is one 'skilled at creating , acquiring, interpreting, retaining and transferring knowledge; and at purposefully modifying its behaviour based on new knowledge and insights'.

Briggs (2002:173) writes about the learning-centred institution in which learning is not confined to the student alone, but also to staff who learn about their subject, their support or management function, about student learning, about leadership and strategic direction, and in a symbiotic and organised fashion, the whole organisation collectively and continuously learns how to become more effective as an institution. An organisation such as a university is invariably in a state of change (preferably change for the better). This is an inescapable transformation which McNiff (2000:43) calls the 'ontology of becoming', when she explains:

> Whatever is, is constantly transforming into newer versions of itself. Each new transformation is an entirely new creation which has evolved out of its own history. There are no final outcomes, for any experience in any moment is already in a process of change; any answer is already transforming into new questions.

The implications of outward-looking faculty (Martin, 2000) are reinforced by Henderson et al. (2008) who recommend faculty development and pedagogical improvement achieved through service learning, student research, involving improvement of approaches to facilitating learning, increased collaboration with community partners, recruitment of more service learning faculty, and support for the institutionalisation of service learning.

A learning university is an image or inspiration for a learning society, composed of lifelong learners. Lifelong learning is viewed as holistic and comprehensive. It has to do with the overall development of individuals throughout their life span and in all life's domains, aiming at enhancing the quality of their lives and that of their collectives, and is, therefore, related to the twin educational aims of modernity – individual growth (or learning to be) and collective enlightenment. It is based on a comprehensive and unifying idea of education, which includes learning of all kinds – formal, non-formal and informal – and is, therefore, tied to the idea of a 'learning' or 'educative' society (Wain, 2004:9-10). The above sentiments all provide moments of reflection from the practitioners in our university on whether it is a learning university in the same sense expressed above.

2.2.4 Company and university roles in facilitating business innovation

This section provides a deeper understanding of workplaces and industry so as to better conceptualise industry-based learning. It is also an insight into the sort of benefits that industry can obtain from an engagement with a university. The organisation for Economic Co-operation and Development (OECD) has suggested four ways in which universities

can participate in business and industrial development by infusing researched knowledge and innovation into productive outcomes. These are depicted in Table 2.1 and discussed below.

Table 2.1 University Participation in company development

Form of participation	Major collaboration requirements
Starting new companies	*Research, marketing and management*
Assistance to small, growing companies	*Expertise, technology, marketing, and management of specialisation*
Collaboration with large science-based firms	*International networks, advanced research, reputable universities, equal partnerships*
Assistance to mature industries	*Fight stagnation or decline, active R & D, innovative graduates*

The OECD (1984:60) refers to the following in terms of starting new companies which it regards as the life blood of any industrial system:

> Through them new ideas are brought nearer to the point where their ultimate commercial success can be gauged. … some universities have set up organisations to help both academics and non-academics carry research results much closer to the market place. In this respect, universities act as "incubators" of innovation by assisting innovators to acquire the requisite management and financial skills.

Engagement with small but growing companies is summarised as follows:

> Here, companies are generally in need of a wide range of expertise from technological advice through to marketing knowhow. The problem for firms in this phase of the innovation cycle is that their needs are so specific that it is not always possible for universities to organise their activities to deal effectively with them' (OECD, 1984:61).

In collaboration with large science-based firms, both universities and industry are usually operating at the forefront of research and play a part in an international network of activity. Relations between these types of firms and universities, then, must depend on the excellence of the latter and developing an ethos of 'equal partners' in research (OECD, 1984:62).

Mature industries, large or small, are likely to be the most difficult stage of the industry life cycle within which to foster university-industry relations. Frequently, unable to interest government or to attract high quality graduates, these firms seem to be set on a

path of inevitable decline. Such firms may need more, not less, investment in R&D and require more, not fewer, highly qualified graduates in their workforce (OECD, 1984:62).

Companies, for their part, are encouraged to endeavour to remain effective and competitive to survive in the entrepreneurship jungle. One of the key strategies for this lies in the manner in which the organisations deal with knowledge. Kodama (2007) notes that to establish and maintain competitive advantage, companies need to have a quality assurance process of accessing, sharing, and integrating knowledge in diverse areas such as technology, business processes, and others spread out within and outside the company.

> In an environment of turbulent change and uncertainty, a dynamic strategy-making process in which the corporation goes beyond its own core capability and always deliberately forms new market positions (new products, services, and business models, et cetera.) is an issue of daily importance for managers and practitioners (Kodama, 2007:5).

Further, emphasising the crucial role of knowledge, Kodama (2007:38) calls it the only significant management resource in society, created by strategic communities, and

> "the many types of knowledge and core competencies inside and outside the company, including customers and strategic partners, are then merged and integrated to produce the integrative competencies that become new sources of competitive advantage."

In general, companies achieve spectacular high-performance promise, of growth, gain and sustain value-creating growth through a growth system consisting of three elements: commitment (the will to grow), strategy (managing and executing growth) and capability (building growth-supporting foundations) (Doorley & Donovan, 1999:24). Kodama's (2007) inference on knowledge as a management resource links with Doorley and Donovan's (1999) management of growth in an organisation. Such a link points to the role of staff in both the university and industry as being active partners in the execution of collaborative efforts such as industry-based learning.

2.2.5 University Effectiveness and Relevance in Society

The concern about the local relevance and visibility of Third World universities can be addressed by government through sustained consultancy and systematic progressive delegation of intellectual responsibilities aimed at local development. Such an approach builds mutual trust and subsequent competence on the part of the university to be a trusted partner in conceptualising and addressing national development goals and other emerging challenges. Universities must also be encouraged to develop partnerships with local technology businesses to create meaningful experiences for students and develop a pool of

potential mentors, and to deepen the fundamental role that education has in fostering technopreneurs (Urban & Barreira, 2007:571).

Efforts at promoting university-community collaboration exist at international and regional level. In the 2007/8 period, the Southern African Regional Universities Association (SARUA) reportedly commissioned four research projects, among them a study on University-Industry Interaction and National Systems of Innovation. This study looks at how universities as knowledge generators make their resources available for innovation in firms and industrial sectors to create a critical difference to knowledge intensification and competitiveness in developing countries, providing an understanding of universities' role in facilitating technological upgrading (and technological innovation) in those countries (SARUA, 2008). The opportunity therefore exists for universities to participate and make a difference, in the process underwriting their relevance to society at large.

Intra-country initiatives on promoting community engagement vary. South Africa has moved many steps ahead of other Southern African countries in institutionalising community engagement in its higher education quality assurance system, says MacGregor (2008), who further notes that the imperative for increased community engagement is driven not only by the demands for accountability and the moral obligations that flow from a public role. South African universities are, according to MacGregor (2008):

> under continual pressure to tackle the huge socio-economic challenges of the developing world, as institutions that receive a large share of scarce public resources and whose students increasingly come from communities that are in dire need of support.

One benefit resulting from sustained university-community partnerships is that academic staff members (and students) fulfil theirs and the university's role of community engagement by doing intellectual business with and for the community in a reciprocal way – emphasising the importance of learning with and from the community. While most professional development initiatives strive to combine theory with practice, the introduction of service learning as part of the higher education curriculum provides students and faculty with experiential learning of a different kind – allowing for a learner-centred approach and promoting constructivist learning. One instance of constructivist learning makes reference to Vygotsky's zone of proximal development (ZPD), where something one can do 'today' with the help of someone else (often someone more

experienced), is something one can do on one's own 'tomorrow' (Cowan, 1998:54). This suggests that universities attempt to develop a socially responsive orientation to their learning programmes in different fields of specialisation and across disciplines, and that they are seeking to meet the challenges that derive from the application of knowledge and skills in poor communities (Perold, 1998). In their study Feldman et al. (2006) found that students' community-based learning experiences had an impact on the quality of their end-of-semester research papers, recommending that research on the impact of community-based learning should take into account the contemporary university's emerging paradigm of engaged learning and research, which calls for a redefinition of the nature of partnerships and the reciprocity benefited between partners.

Concerned about the challenges militating against successful community engagement by faculty, Bloomgarden and O'Meara (2007) investigated the extent of integration of community service into the mainstream roles of university academics, that is, teaching, research and community engagement that should promote scholarship of teaching, research scholarship, and scholarship of engagement. They identified three levels of integration, namely integrated, if only, and non-integrated. Some participants in the study reported that community engagement served their growth as scholars simply by exposing them to underrepresented communities, thus enhancing cross-cultural understanding as a result. This would appear to be a very simplistic outcome. Faculty who integrated community service in their practice ought to have entrenched it into the curricular activities and processes that would make a sigificant impact on the quality of their graduates.

Another major challenge to university-community collaboration emanates from the fact that universities are largely autonomous and rely on the expertise and innovativeness of their staff for maintaining a competitive edge over their kith and kin. Comparability and bench-marking are achieved by staff mobility between institutions. Kecskes (2006:6) argues that existing partnerships in American universities tended to be of a contested nature regarding what purpose they attained, and what quality they achieved. They also looked differently, that is, universities not only carried out different engagements but perceived their engagements differently. The engagements sometimes had negative outcomes, e.g. an institution proceeding to carry out a certain capital project within the community without informing the local residents about its (well-meant) intentions on the

project, and then receiving protracted resistance leading to the subsequent abandonment of the project. Kecskes (2006) here overlooks the trailblazing concept in which new, and often unpopular, ideas are forced down on reluctant participants for the sole purpose of bringing awareness and gaining entry.

Requirements for the success of university-community partnerships include, among others, an informed leadership, a shared vision among partners, an entrepreneurial approach (which includes innovation), mutual benefit (reciprocity), and availability and accessibility of parties to one another (Carriere, 2006:4). Apart from the types of partnership described in this study, universities in developing countries are urged to develop customised partnerships with one another. Such inter-university partnerships are hailed by Abramson, Bird and Stennett (1996) who see them as a means by which institutions do together what they cannot do separately, and where collaboration is regarded as better, and less expensive, than competition. Reporting on a successful partnership project between her university (Northeastern University) in the USA and its community, Spurlock (2004:174) says,

> We are contributing to the urban community and at the same time drawing on its rich resources to enhance the education of our students and the academic work of our faculty. We look to a future of university-community partnership enriched by mutual empowerment and transformation.

Table 2.2 The Array of Higher Education Benefits (Source: Chambers, 2005)

	Public	**Private**
Economic	• Increased tax revenues • Greater productivity • Increased consumption • Increased workforce flexibility • Decreased reliance on government financial support	• Higher salaries and benefits • Employment • Higher savings levels • Improved working conditions • Personal/professional mobility
Social	• Reduced crime rates • Increased charitable giving/community service • Increased quality of civic life • Social cohesion/appreciation of diversity • Improved ability to adapt to and use technology	• Improved health/life expectancy • Improved quality of life for offspring • Better consumer decision making • Increased personal status • More hobbies, leisure activities

These sentiments emphasise the focus on the university's relevance to various sections of society. Chambers (2005) provides an array of the benefits of higher education sourced

from the Institute for Higher Education Policy in the United States of America. The simplistic matrix is reproduced in Table 2.2. On one dimension are the economic and social benefits, while on the other there are the public and private benefits, producing four sections.

The public-economic section addresses taxes, productivity, consumption, workforce flexibility and reliance on government. The public-social section concerns benefits under crime rates, charity, quality of civil life, social cohesion and adaptation to technology. The private-economic section addresses benefits in salary levels, employment rates, savings levels, working conditions and professional mobility. Lastly the private-social section addresses benefits in health and longevity, survival rate of offspring, consumer decision-making, personal status and well-being. The importance of these benefits is that they spell out the relevance of higher education in the lives of communities and individuals. As universities increase their enrolments, the impact is a better society in one or more of the benefits outlined above.

2.3 University service learning

Learning in informal environments and in workplaces is not a preserve for universities and higher education institutions (HEIs) alone. The structuring of learning activities around available resources and knowledge centres found in the community occurs in primary and secondary schools in many countries and localities within countries. The arrangements are, however, often of a piece-meal or short-term or ad hoc nature. Before discussing the literature review of off-campus learning as it applies to university models, we unpack the various competing definitions and the terminology used around the broad arena of university service learning.

2.3.1 Contested definitions of university service learning

There appear to be several related terms, both in the literature and in colloquial discourses, pertaining to the processes of students going out to places of work and real life to extend or validate their classroom learning. This is partly due to the various formats and requirements of the learning process and of the institutions concerned. The discussions in the sub-sections below attempt to compare and contrast the terms that share meanings.

2.3.1.1 Industry-based learning and workplace-based learning

For purposes of this study, industry-based learning (IBL) is a pedagogy supported by a contractual agreement between the university and the body of industries within a country (or locality). The agreement is often sanctioned by government through appropriate legislation and administered through appropriate vehicles, such as the Zimbabwe Manpower Development Fund. The learner is expected to gain specified knowledge and experience from a company/organisation deemed suitable to provide such knowledge and experience. Often, then, many small or medium-sized companies are deemed inadequate to provide the requisite learning. IBL is sandwiched between the normal university study stages in any number of configurations and takes various durations to complete.

IBL appears to focus on 'industry', that is, sites of production of goods. However, some students in the subject areas such as accounting, banking, insurance, library science and others, do not deal with production. In essence the term 'industry' is not adequate for these and the better term is workplace; the whole process is better termed workplace-based learning (WBL). Workplace-based competence has a new place alongside the more traditional academic knowledge (Forsyth, Laxton, Moran, Van der Werf, Banks & Taylor, 2008). In the IBL set up, the student is the needy partner. The student is obliged to gain the needed experience as part of his/her course requirements and assessment. The company may not necessarily need the particular student, thus there is little or no community service assumption.

2.3.1.2 Service learning

A broad array of arrangements that fit the description of service learning exists. The underlying principle is that students are doing a service to the community, and while doing so they gain some learning. The emphasis is on the service to the community and the discussions below attempt an elaboration of this broad concept.

2.3.1.2.1 Understanding Service learning

Berman (2006) defines service learning as a bi-focal concept in which in-context learning connects specific educational goals with meaningful community service. Service learning projects thus include a dual focus: the goals of academic learning and the goals of authentic volunteer projects. Students master applicable learning outcomes, strengthening their capabilities as they develop empathy, personal ethics and the habit of helping their

communities as implied in their attitudes and virtues. Doing service learning helps students understand their connectedness to and importance in their communities as they experience the role of service provider (rather than recipient) (Berman (2006:XXI). As students do service learning projects, Berman (2006) observes, they not only experience learning, but they go on to experience a commitment to doing meaningful and authentic work. In the process they experience a sense of empowerment and joy in doing service that needs to be done, and a sense of community that results in providing help to others.

On the administration of service learning by institutions, Berman (2006) describes the procedure as follows,

> At the beginning of the project, the teacher (sic) identifies the educational goals of the service learning project and content concepts, processes, and skills that help students reach those goals. Also the teacher (sic) discusses those goals, concepts, and skills with the students and structures the service learning project to ensure their safety. Teachers (sic) verify that adequate supervision is always available, and they make arrangements for students to be transported or escorted to and from the service site. (p. XXV).

Service learning is also defined as a course-based, credit-bearing educational experience in which students participate in an organised service activity that meets identified community needs and reflect on the service activity in such a way as to master applicable learning outcomes, a broader appreciation of the discipline, and an enhanced sense of civic responsibility (Bringle, Games, Foos, Osgood & Osborne, 2005). One would think that apart from mastering learning outcomes, students get involved in experiences that link course objectives, the content and the learning outcomes. Such an integrated approach is reminiscent of problem-based learning, discussed in a later section below.

An avid proponent of service learning, Jacoby (2003:3), defines it as:

> … a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development.

Reflection and reciprocity thus become the key concepts of service learning. Learners continually reflect on what community needs they are expected to address and these guide their excursion away from the lecture halls of their university. And while doing so, calculated benefits accrue to both the community and the learners concerned.

Bellner and Pomery (2005) initially describe service learning as a powerful yet challenging method of teaching. I would rather describe it as a strategy for facilitating learning. It is credited for its potential to transform learners, deepen their understanding as well as to promote the professional learning of academic staff, bring community and campus into closer partnerships and provide additional assets to meet community needs. In Bellner and Pomery's (2005) later description, service learning is viewed as a programme, philosophy and a pedagogy whose multiple facets of learning, coupled with the differing ways in which different people understand knowledge, higher education, and society may go a long way to explain why it is a topic worth exploring.

It remains to be critically determined whether or not in doing service learning students go out with the mindset of 'helping out' or providing a service as they learn. It is to be ascertained to what extent the community is 'in need' of the service, and whether it accepts students because they are a lesser economic burden than employed workers to the company. Pompa (2005:189) dissociates service learning from the notion of charity, arguing that it involves a critique of social systems, challenging participants to analyse what they experience, while aspiring to take action and bring about change. He notes the following:

> Transformative events radically shift how we see things. The lens through which we previously had viewed reality is irrevocably altered. It is not just about looking at particular issues from another angle; often, an experience of this kind completely changes the perspective from which one now sees all of life. Thus, service learning provides both an incubator for and impetus toward social change." (L. Pompa, 2005:189)

The questions that demand answers might be: Is service learning suitable to some study disciplines and not others? Is service learning suitable for instance for social sciences and humanities, while workplace-based learning is suitable for science and technology disciplines? It is very likely that companies and universities have developed mutually beneficial engagements over time, since one-sided relationships would be difficult to sustain in the long term.

2.3.1.2.2 Benefits of Service Learning for Students

Although the importance of service learning is implied in the definitions above, authors have proffered a number of benefits separately. Berman (2006) appreciates what he sees as student learning expanded, together with development of life skills and the service ethic.

He further discloses that brain research says that this kind of in-context learning is deep and is long remembered, observing that students who do service learning projects demonstrate the increased self-confidence and self-esteem that result from responsible, ethical, independent action. Doing legitimate service projects in the community helps students feel useful. Berman (2006:XXVI) adds that service learning lets students have the experience of being needed, becoming more willing risk takers, opening themselves to new experiences and people. They also become more effective leaders, communicators and teammates. Service learning projects help students develop an awareness and acceptance of others from different ethnic, national, or economic backgrounds. Students become more empathetic and less judgmental, accepting their own internal locus of control and are less likely to blame others or make excuses for shortcomings. They discover that mistakes lead to growth and learning and they grow through their experiences. Other benefits to students observed by Berman (2006:XXVI) are outlined in the self-explanatory Table 2.3 below, reconstituted to show the categories of benefit.

Table 2.3 Benefits of service learning to students (Source: Berman, 2006)

Category	Benefit
General	Effective learning Increased achievement Brainstorming and problem-solving
Cognitive	Reflection leading to deeper understanding and more genuine transfer of learning Remembering hat has been learned better and longer
Affective	Motivation to learn through engagement in decision-making Increased belief in self Positive attitude towards learning
Social	Develop a social consciousness and a social conscience Awareness of community problems Develop a responsibility to help solve problems Appreciating cooperation and teamwork
Physical	Developing resilience, health and competency Developing real world skills

Another angle reinforcing the experiential nature of service learning is presented by Butin (2005) who sees service learning as a self-consuming pedagogy, a postmodern practice, providing a liberating stance for him. He states the following:

> It doesn't ask me to make my students into civic minded citizens, it doesn't ask me to solve the social justice issues facing me locally and globally, and it doesn't force me to combat (or embrace) globalisation. These may of course occur as by-products of service learning experience. But I cannot expect it; much less should I attempt to force it. What instead I can and should do is look carefully at the practices in my own shop – the enactment of service

> learning experiences – and figure out how it works. This is, it seems to me, more than enough to ask for. (Butin, 2005:103)

2.3.1.2.3 Academic Service Learning (ASL)

The University of Pretoria has adopted a version of the term for many of its programmes, probably derived from Bringle, Games, Foos, Osgood and Osborne (2005). Here academic service learning (ASL) is defined as an experiential educational approach involving curriculum-based, credit-bearing learning activities and Figure 2.2 illustrates the two-pronged conceptualisation of the process.

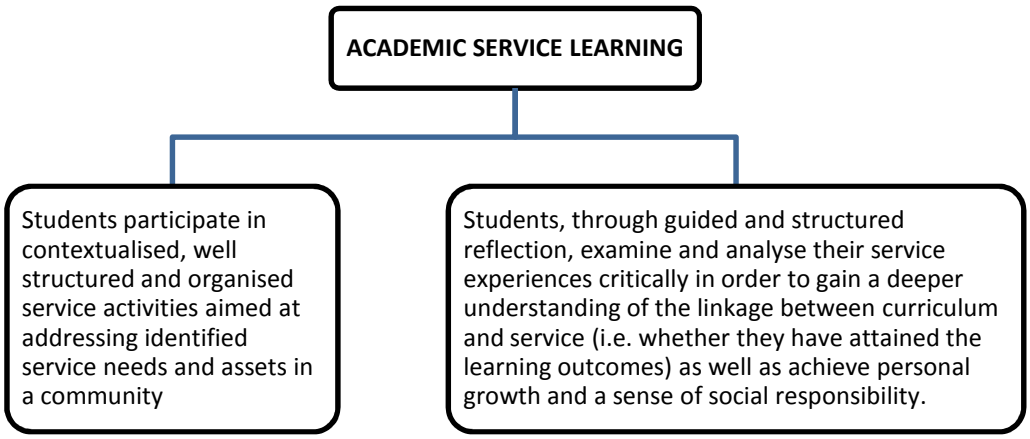

Figure 2.2: A conception of Academic Service Learning (University of Pretoria)

On one angle, the idea of service to the community is duly implied, on the other, it is the link to the curriculum and the attainment of requisite learning outcomes that appears to drive the engagement.

2.3.1.3 Experiential learning

This is an umbrella term for all learning that takes place through real life experiences whether in a formal situation in an institution or under informal circumstances, although the former is more applicable. Venkatesh, Small and Marsden (2003) write about active learning or 'learning-in-community' in which learners take classroom learning out into the local community and apply it to real problems faced by real organisational clients. In this description the interplay between the classroom and the real world outside the classroom is emphasised. Classroom activities are meant to organise learning into manageable and integrated parts, to achieve completeness in the learning domains, while learning in the community brings out the relevance of mastered competences and also qualifies the reality. Dennison and Kirk (1990) point out that experiential learning or learning by doing

is also referred to as action learning, humanistic learning, and holistic learning, all for the reason that they provide shared experiences and foster a learning community where tutors and learners alike exchange roles.

I would like to add to the above array of synonyms by including the concept of *authentic learning* as described by Bonnet (1997). Authentic learning enables the student to relate what is being learnt to his/her own existence, to acknowledge personal responsibility for how he/she lives his/her own life, and to achieve a degree of authorship of his/her understanding. It is the depth of personal significance attached to learning, evoking a rich subjective response, personal perspective and meaning, interpreting material in the context of one's own concerns. Consequently, as Bonnet (1997:150) puts it, authentic learning is:

> … not merely dealing with purely intellectual or cognitive capacities but broad ways of relating to the world, which include attitudes, dispositions and emotions. We are dealing, not with sets of neutral procedures or processes, but with highly value-laden stances to life.

2.3.1.4 Problem-based learning

Problem-based learning is yet another pedagogical innovation to learning that has been developed and used widely in the teaching of practically-orientated disciplines such as medical studies where use is made of academic hospitals. Instead of following pre-planned and sequenced teaching formats, problem-based learning is essentially guided by real life and real time discipline-related problems that arise in environments which serve both learning and real life situations. Problems that arise in these environments are fully exploited to provide desired learning outcomes for learners. This process might be similar to the concept of apprenticeship except that the latter is often a one-to-one association between learner and mentor while the former is a one-to-many or many-to-many.

One of many lessons in Michael Fullan's *New Paradigm of Change* (Fullan, 1993) is that problems are our friends, and are inevitable, but the good news is that one cannot learn adequately or be successful without them. Problems are endemic in many serious change efforts, both within the effort itself and via unplanned intrusions. Problems are necessary for learning, but not without a capacity for enquiry to learn the right lessons (Fullan, 1993:25-6).

2.3.1.5 Internship

While workplace-based learning and service learning apply to a student who is enrolled in an institution who would normally or traditionally learn all subjects through theory or a contrived situation, internship refers to someone who has completed the theoretical part of his or her studies in an institution and is in a workplace to do the practical component, both parts contributing to the full qualification under consideration. However, it is one of my concerns that theory and practice are separated and not an integrated whole which would promote constructivist and authentic learning.

2.3.2 Cooperative Education

Cooperative education is one of a number of programmes developed by universities that capitalise on the learning taking place in workplace contexts (Garrick, 2000:242). It is exemplified in undergraduate sandwich courses where students spend extended periods of time in work placement intended to provide them with experience in particular forms of work that may be practised after graduation. In these instances the link between the university curriculum and the learning that occurs in the workplace is critical but often unclear (Garrick, 2000:242). This concern follows the realisation that workplace assignments and duties rarely follow a plan or programme that ensures systematic coverage of desired learning outcomes. Moreover, students in different workplaces undergo different learning experiences. In South Africa the practice is common, and in a study carried out to evaluate the programme by Wessels and Jacobsz (2010), industry supervisors and heads of higher education institutions applauded this learning strategy they considered beneficial to both industrial and educational environments.

There exist many models of cooperative education featuring various forms of experiential learning activities. The ‘articulation programme’ is one such model characterised by a partnership between institutions (secondary school to tertiary level) and involves the coordination of curricula across two or more of these institutions formalised by ‘articulated agreements’ Cantor (1995: 201). The benefit is a sharing of resources for workplace education and professional development, and a greater recognition of the advantages conferred by cooperation between educational institutions at several levels. The philosophical basis is a structured plan for education in preparation for life and work, beginning as early in the learner’s journey as possible. Cooperative education may be confused with cooperative learning.

2.3.3 Cooperative Learning

Cooperative learning or learning in groups emphasises the socialising effects of engaging others in developing an independent learner's holistic growth. Du Toit (2008) identifies three types of learning group: base, formal and informal. These three groups occur in classrooms and learning spaces, providing each learner with academic and personal support in their learning journeys. According to Leonard (2002) cooperative learning is characterised by four elements: positive interdependence, individual accountability, group interaction and social skills. Du Toit (2008) reorganises these into five, namely, positive independence, face-to-face promotive interaction, individual accountability or personal responsibility, collaborative skills and group processing. There is a perceived link between group processing skills and learning strategies in adults. Scott's (2006) findings with bilingual church leaders-in-training in Mozambique concur with the view by Copley in Du Toit (2008) that holistic learning strategies that emphasise contexts, relationships, whole persons, and whole brain learning enhance the quality of adult learning in cooperative learning environments.

Both cooperative education and cooperative learning have a place in industry-based learning. If the university does not insist on its students going to various workplaces for their industry-based learning, some of them might be led to follow the route of cooperative education that may not lead to clear outcomes comparable from one company to the next. Cooperative learning would allow students to move into companies in groups so that they carry out common and complementary tasks that may lead them to produce shared outcomes such as joint projects and reports. In such activities they learn to appreciate one another's skills, valuing them rather than competing or plagiarising one other.

2.4 Learning theories and principles aligned to service learning

The available literature discusses some of the popular theories of teaching and learning in the general sense and the literature is dominated by learning for young children and adolescents. A few sources address the aspects that apply specifically to the university or to higher education. Some aspects can be applied across all types and levels of learners, as well as specific purposes of learning, and the discussions that follow below attempt to bridge the gap and contextualise the theories and principles applicable to university environments.

2.4.1 Learning Theories and Principles

The dominant theories of learning presented in the literature include behaviourism, cognitivism, constructivism and humanism (Leonard, 2002). Although this assumption might be contested, these theories are useful because they open our minds to many possibilities and ways of seeing the process of learning. Learning initiatives and processes are often based on our knowledge of learning theories (Mergel, 1998). While behaviourism and cognitivism are both objective in nature and both support the practice of analysing a task and breaking it down into manageable chunks, establishing statements of intention and measuring performance based on those, constructivism promotes a more open-ended learning experience where the methods and results of learning are not easily measured and may not be the same for each student. Cognitivism shares some similarities with constructivism such as the analogy of comparing the processes of the human mind to those in a computer (Mergel, 1998).

The growing knowledge of learning styles has opened up ways in which educators view and interact with their learners. Martin and Potter (1998) write from their earlier observations that ‘an individual’s learning style is the way that person begins to process, internalize and concentrate on new material’. Each person learns in a unique way. There are similarities, of course, but ‘every person has a learning style – it is as individual as a finger-print’.

It has later been established, however, that learning styles are not as restrictive or as fixed as ‘fingerprints’. Learners have a potential to develop and adapt with age, expanding their learning style repertoire, a phenomenon termed, ‘learning style flexibility’ based on the work of Herrmann as cited in Du Toit (2008:37).

Martin and Potter (1998) also note that Howard Gardner's theory of multiple intelligences stresses the importance of not viewing intelligence as a uni-dimensional construct, like the ‘general-factor’, but rather as a series of independent intelligences, namely: verbal/linguistic, logical/mathematical, visual/spatial intelligence, bodily/kinaesthetic, musical/rhythmic, interpersonal, intrapersonal, and naturalistic. Some authors have confined the arguments on intelligence to cognitive aspects only. Understanding that the brain is a complex adaptive system, is social, and uniquely organised, and that learning is developmental, assists us to locate our learning experiences in view of prevailing learning

theory, and leads to creating new theory. Kornhaber, Fierros and Veenama (2004) underscore the uniqueness of brain organisation, adaptability and output in more ways than just the cognitive dimension. The influence of emotions on thinking (and perhaps vice versa) has pointed to a link between mental (IQ) and emotional (EQ) intelligence. Jennings and Caulfield (2005) note that tension, anxiety, and fear override the great thinking brain in all of us. Increasingly researchers have written on the impact of emotion and how it short-circuits thinking.

Reporting on adult multiple intelligence (AMI) theory, Viens and Kallenbach (2005) found out that learning activities that drew on multiple intelligence (MI) theory and its central tenets were characteristically authentic, were typically relevant and meaningful to students, and MI-informed classrooms became increasingly less lecturer-centred and more student-directed with time. These findings concur with the epistemology and underpinning assumptions of constructivism discussed earlier. The concept of multiple intelligences discussed above connects to a related construct: students' thinking and learning styles, discussed in a later section below.

2.4.2 Constructivist Learning

The literature on the connection between learning in adults and the epistemology of constructivism is limited. As an epistemological theory about knowledge, constructivism helps practitioners to derive implications for learning rather than prescribe a specific approach to learning (Geelan, 2006:51).

Geelan (2006) proposes several different brands of constructivism - six according to him, namely: personal, radical, social, social constructionist, critical and contextual. Realising the inter-relationships and overlaps, Geelan (2006:62) provides a four-quadrant scheme to organise the six forms of constructivism (Figure 2.3) according to their proponents.

More study and writing are awaited on the relationships between constructivism and the learning of older students and adults. Peddler et al. (1997:59) note that the non-positivist definition of learning as unhampered participation in a meaningful situation shows the shift from 'seeing learning as an individual phenomenon to seeing it as something that happens in people in relationship with others; from the individual making isolated sense in

a concrete world to the person immersed in a collective social process of sense making and meaning creation'.

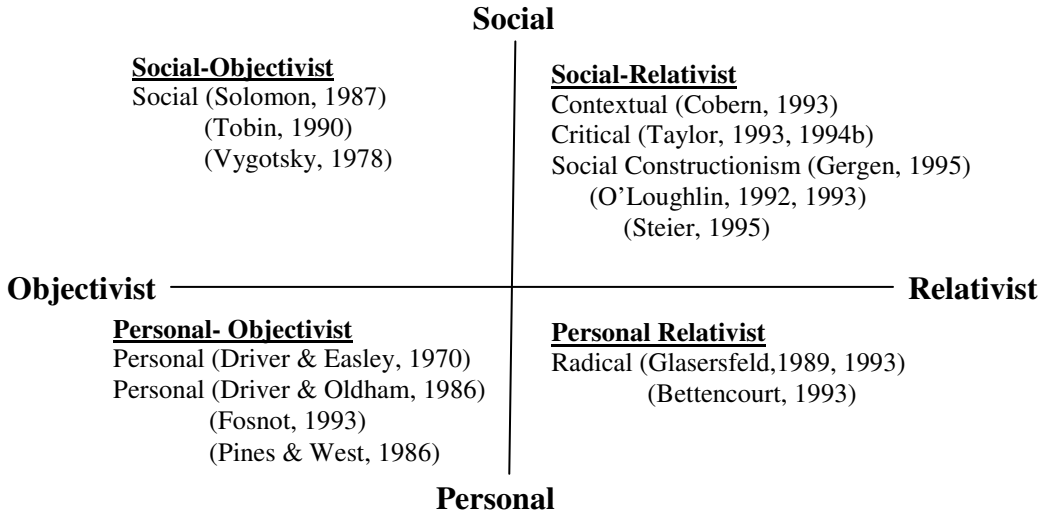

Figure 2.3 Organising many forms of constructivism
(Adapted from D. Geelan, 2006)

Conceptual and theoretical gaps, in my view, exist in the literature with regards to tenets of constructivist epistemology. As hinted above, scant explanation is given or implied on the mechanism of knowledge construction in knowledgeable and experienced adults. Of greater significance is the paucity of investigations and writings on the link between knowledge construction and the existence of natural physical phenomena, for which manipulation, rather than construction, would seem more appropriate. Moreover, the argument between knowledge construction and knowledge acquisition (the learner as an empty vessel analogy) particularly in the learning of psychomotor skills requires clearer articulation and authentication.

2.4.3 Hermeneutic Circle of Curriculum Theory and Practice

The relationship between learning and curriculum theory and practice emerges as the best to inform our action in and outside formal learning situations. Danner (2002:194) has observed that understanding and interpreting happen in a circular pattern. It goes back and forth from what is known to what is new; the new insight enlightens the pre-existing knowledge, and this in turn helps understand the new better – and so on. Curricula must therefore be planned and delivered to facilitate both the 'understanding' and the 'interpreting' portion of action learning. Sohnge and Van Niekerk (2005:171) allude to the notion that interpretation of text (i.e. curriculum) consists of five acts constituting the

'hermeneutic arch'. These acts are understanding, explanation, comprehension, appropriation and world projection. They are descriptive of interpretation because if either the lecturer or student fails to come to self-understanding eventually education becomes a failed practice.

Self-understanding includes knowing and interrogating not only what one knows and should know, but how that knowing can be regulated and be best utilised for survival. This in recent years has necessitated a redefinition of curriculum from 'subject-bound content' to curriculum as 'learning experiences'. And as Skilbeck (1984) writes, this re-definitional move did shift curriculum away from 'something articulated, definite and pre-planned' towards the nature of experience and the process of experiencing. Implementing an 'experiential' curriculum at university is highly possible and recommended, as observed by Masebe (2007:26) whose study on utilising meta-evaluation for reviewing a university curriculum programme consolidates views on practitioner self-understanding.

2.4.4 Outcomes-based Education

One of the most noticeable pronouncements in the South African education systems in recent times is the outcomes-based education (OBE) philosophy. A programme of comparable prominence in Zimbabwe has been the *education with production* (EwP) programme of the post-independence period. OBE lays the ground for educational transformation in South Africa (Department of Education (DoE), South Africa, 2003) and supports 'seamless learning', i.e. learning in both formal and informal contexts. Policies propose that students can move between formal education settings and workplaces, and credits and qualifications can be obtained and transferred from one situation to another. However, in practice little evidence of this is to be found (DoE South Africa, 2003). In OBE the (learning) institution is less relevant to the performance of specified outcomes than the socialisation, culture, diversity and freedom of expression in that institution. Learning processes are contextual and are aimed at the mastery of clearly specified outcomes. OBE has links with recent changes and restructuring in the global economy where competitive value-laden production has replaced in importance the production of primary goods in international trade. This requires facets of holistic learning such as creative thinking and problem-solving skills in settings where teamwork is important. It also underscores the redefinition of the lecturer's role as a facilitator of learning.

Smith (2006:44) alludes to the conviction that critical cross-field outcomes (CCFOs) are life competencies and abilities that people require to become active, responsible and successful members of society, and as such should be developed during learning processes so that learners are able to deploy them when achieving work-related outcomes. Desirable universal outcomes of university-industry collaboration are expressed by Kruss (2005:197) who writes:

> … if institutions are to contribute to a national system of innovation, it is essential that they all raise their research capacity and levels of productivity. And it is desirable that all develop the institutional capacity to harness the potential for innovation inherent in their research. Network and collaboration forms of partnerships are critical vehicles and the scale on which they exist will need to increase dramatically. However, institutions have to contribute to innovation in a differentiated manner that draws on their historical strengths and focus. The creation of new comprehensive universities adds to these complexities, as the new institutions define their mission and the balance between teaching, research and outreach.

2.4.5 Self-directed and Self-regulated Learning

Involvement in and control of one's own actions is a key determinant of the outcomes of learning described above. Historically schools and other educational institutions tend to decide for the students both the learning outcomes and the processes of learning, leaving the students powerless and sometimes frustrated. Straka (1997:1) states that self-directed learning describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies and evaluating their own mastery of the learning tasks. He also informs that the product of such learning is the ability to make autonomous decisions about goals and processes of learning, as well as to adapt to given teaching-learning environments.

Boud (2006:24), who gives self-directed learning the alternative name of 'negotiated learning' links it with student projects common in education and the health sciences where it provides a way of managing curriculum. It has also been used as a frame for work placements and practical activities in which there is typically less direct lecturer control over what is to be learned than in conventional coursework.

On the other hand, self-regulated learning refers to the deliberate planning and monitoring of the cognitive, psychomotor and affective processes that are involved in the successful

completion of academic tasks (Kerlin, 1992). In essence, students at almost any age are capable of taking charge of at least some of their own learning, like babies seem to do when they play with their crib mobiles. Self-regulated students are always becoming flexible and proficient in organising what they themselves have planned and what has been planned for them by others, including their lecturers.

While the success of self-regulated learning may be doubted when dealing with young children, it is quite suitable for adults at higher levels of learning. In many cases especially in the university context, self-regulated learning can be elevated to action research through which new knowledge becomes documented and disseminated. Adult learners have influence on both their cognition and other capabilities and the learning environment in which they operate. Through action research adult learners contribute to the body of knowledge within a specific field of study.

Some counter arguments suggest that in natural settings and given the choice, both adults and children invariably engage in self-regulated learning (SRL) for a good number of their engagements. They choose where to go, who to listen to, what to concern themselves with and much more. However, some of these free choices lead to situations where they have to be controlled and regulated by others. For example, when someone has chosen to undertake professional development in a particular career, they later have to abide by the dictates of that professional development and this entails being regulated by those in charge and other participants. It could be argued that in choosing to be controlled by another person one has still exercised self-direction. Du Toit (2008:62) alludes to the metacognitive learning approach, a process of thinking and learning about one's own learning, leading to the ability to pilot and regulate that learning and its output and the effect it has on the learner. Metacognition, in my view, enables students to be self-sufficient in the skills of understanding, monitoring and evaluating their own thought processes.

Related to self-regulated learning is the concept of flexible learning. Garrick (2000:240) observes that one of the innovations sweeping through higher education institutions and workplaces is the promotion of 'flexible' approaches to learning. This innovation includes both a drive to prepare students for the workplace and a recognition that 'valid' learning occurs in the workplace itself. Work-based learning has become a critical dimension of

'flexible' learning, cultivating divergent thinking and doing among students. It is important to note that work-based learning emerges from the demands of work rather than from predetermined academic content. Flexible learning promotes rapid growth in intellectual capital, the 'hot currency' concept sweeping contemporary higher education discourse that emphasises knowledge creation and management. Flexible learning is a form of outcomes-based learning combined with problem-based learning where students are guided as they decide what to learn, where, when and how, during contact hours or online. Implementing flexible learning in many current learning situations poses a challenge to both the student and the lecturer because it requires a shift in beliefs and in learning styles and styles of facilitating learning. It also requires a huge overhaul of processes from early childhood right up to higher education. Wilkie (2004:83) affirms that in a facilitative learning environment, the lecturer adopts one or more of the roles of liberating supporter, directive conventionalist, nurturing socialiser, and pragmatic enabler.

Self-regulated learning is principally initiated and managed by the student and may be quite informal in nature, such as in learning a language (Telford, 1995). Winne, Jamieson-Nod and Muis (2002) present a conceptual model in which SRL is a form of cognition that depends on long-term memory, is an expression of agency, and can be analysed as either metacognitive monitoring or metacognitive control. The apparent implication in the literature is that self-regulated learning is, in itself, a sufficient solution to learning challenges for all subject disciplines and for all learning outcomes. Considering one example of extreme learning environments, the military academies, one would be led to believe otherwise. The awareness of best opportunities for both self-regulation and obedience to an instructor provides a more holistic approach to viewing younger learners.

2.4.6 Thinking and Learning Styles

Studies have shown that people possess and display different styles of thinking and learning. Both thinking and learning have been linked with intelligence. The work of Herrmann has been cited as one of the leading studies in the field of brain-based learning styles, building on previous research on left and right brain theory (Du Toit, De Boer & Steyn, 2007:37). The Herrmann whole brain model and the Herrmann Brain Dominance Instrument (HBDI) are now widely used. Acknowledging Herrmann's four-quadrant model, Lumsdaine and Binks (2007:34) reiterate that whole-brain thinking is the ideal. They note that despite the four distinct 'ways of knowing' depicted by Herrmann's model,

> … only five per cent of people have a single strong dominance; 58 per cent have a double dominance, 34 per cent have a triple dominance, and only three per cent equally strong dominances in all four quadrances. Each person represents a unique coalition of thinking preferences. Imagine having a team of players inside your brain. You send out specialists for specific tasks: you send out one, two or maybe even three star players more often than the others, but to function well, the whole team is needed.

Recent breakthroughs in neuroscience (the study of the human nervous system, the brain, and the biological basis of consciousness, perception, memory, and learning) are reshaping the understanding of learning and taking it to a new level. The nervous system and the brain are the physical foundation of the human learning process. Neuroscience links our observations about cognitive behaviour with the actual physical processes in the brain that support such behaviour. This is the thesis of the *neural learning* theory, still 'young' and undergoing rapid, albeit controversial development. Jennings and Caulfield (2005) allude to the fact that learners have a great learning potential (brain capacity) which never gets exploited fully, '…like race cars gunning their engines at the starting gate – but the flag never falls'.

Stein (2005) gives a description of the connections between the brain and learning, including such concepts as brain plasticity, hemispheric specialisation, et cetera. He surmises that given appropriate brain stimulation, an individual can learn anything well enough. He writes:

> Structural changes in the brain continue in response to experience throughout life, though at a diminishing rate after puberty. What this implies, therefore, is that education really does not matter a great deal, because it actually helps to determine the structure of the pupil's brain. Each thing a child learns does indeed alter his brain a little bit. Therefore we should worry even more about the 1 in 5 people who reach adulthood and say that they gained little or nothing from their education. We should think hard about this indictment of modern education. Why do current educational practices serve so many people so poorly? (p. 39).

Studies and discourses have gone on for decades now on the *right brain* versus *left brain* theory that suggests that the two sides (hemispheres) of the brain control two different "modes" of thinking. Some individuals might appear to display one of these modes of thinking more than the other. Others, however, are whole-brained and equally adept at both modes. In general, education institutions tend to favour left- rather than right-brain modes of thinking. 'Whole-brain' students give equal weight to the arts, creativity, and the skills of imagination and synthesis. There is clearly a role for curriculum development, implementation and evaluation in creating and nurturing whole-brained individuals.

Learning styles have been discussed thoroughly in recent literature, and I am not going to discuss them in depth here. Illeris (2005) describes four types of learning: cumulative, assimilative, accommodative, and transformative. Kolb's experiential learning cycle (Du Toit, De Boer & Steyn, 2008) maps out four stages through which we go if we learn in a natural way: feeling, watching, thinking and doing. Kolb's other four-type learning style model includes the following styles: accommodator, diverger, converger and assimilator.

2.4.7 Competence-based Education and Training

Another pertinent learning strategy in higher education involves competence-based education and training (CBET). Community-engagement in the process of learning renders itself amenable to CBET. Seen as an alternative to institution-based vocational education where development of cognitive and practical competences is emphasised, CBET gives the learner credit for the competent performance of a task in a work setting following an assessment procedure in the workplace. The claimed virtues of CBET, says Winch (2000), are that it focuses on what workers (and trainees) need to do in the workplace and not superfluous extras, and gives workers credit for what they already know without having to go through a further, unnecessary period of professional development. According to Hyland (1994) CBET is closely associated with national vocational qualifications frameworks (NVQs), whose model is based on and informed by behaviourist learning theory.

It has been described earlier how universities in less industrialised countries tend to be rigid, hierarchic, traditional, and lacking autonomy in sufficiently engaging industry particularly in R and D processes. This is of concern in the light of many engagements that are possible that can improve the learning of university students in various disciplines. Bowden and Marton (1998: 100-101) note that competency-based education seeks to address concerns over the workplace relevance of much of the content of formal educational programmes that often emphasise theoretical or 'book knowledge' at the expense of knowledge application to perform practical tasks and to fulfil workplace roles, adding, "under competency-based approaches, the design of curricula to make them more relevant to workplace requirements normally begins with an analysis and identification of workplace 'competencies' which are then organised into a set of 'competency standards' for an occupation". A major concern with competence-based education is that it is of limited scope and is suitable only for specialised manual competences such as those for

technicians or artisans. A person with such a qualification is very efficient at technical work, but is often narrow-minded, with little or no theoretical backing to his/her astute manual skills.

2.5 Quality implications of university service-learning

Certain measures taken as innovation in education emanate from a desire to achieve competitiveness and success in mission. The introduction of a pedagogy such as service-learning appears to be driven by a desire for better achievement and for effectiveness, and this disguises the inherent quest for quality. To gain insights into the extent of appreciation of quality by participants in an educational undertaking, a good starting point is the assessment of students' various attributes to gauge their fitness for the tasks and responsibilities laid out before then under the pretext of learning.

2.5.1 Student Assessment in Experiential Learning

Learning and teaching are inevitably linked with assessment. Learner-centred and self-directed learning environments are the natural precursors to participative learning. Current assessment practices (continuous and summative) do not assess adequately the life-supporting qualities of students such as independent and critical thinking, creativity, practical knowledge and competences, et cetera. In many instances lecturers utilise unilateral intellectual authority over students. Participative assessment involves forms of assessment where the lecturer/facilitator seeks to involve and share the responsibility for assessment with learners directly (Hodgson, 2006:34). Student-centred learning approaches are more compatible with participative assessment. Is there room for participative assessment in university learning and with the use of industry-based learning? Except for the assessment of written reports on the experiences of students during industry-based learning, the assessment of physical engagement at the workplace is often subject to criticism since the working environments of companies differ considerably, and the students are scattered in different companies where it is inconceivable to think of uniformity and comparability.

Hodgson (2006:34) says that participative assessment approaches are an important potential tool to be used by universities if they produce intellectually confident graduates able to take responsibility for their personal development of knowledge, practical competences, attitudes, values and virtues. But can learners be trusted to create or agree to

create assessment practices that are impartial and neutral, seeing that the learners are fundamentally very diverse among themselves in both learning and assessment capabilities? In the final analysis, the competence of the learners in determining the what, how and when of their assessment is as much a point of contention as is the imposition of the same by so-called knowledgeable and experienced lecturers.

Development of appropriate tools and techniques for the assessment of student experiential learning in industry-based learning has often included appointing a supervisor at the workplace to assist the institution-based lecturer and assessor. The challenge is in the comparative standards and capabilities of workplace supervisors, which are often difficult to regulate. Purposes, formats and procedures of student assessment at university have been debated and researched widely. When advocating a significant change in university academic processes such as university-community engagement, assessment of students (and of staff) becomes an issue of concern. O'Toole (2007) identifies five assessment strategies (Figure 2.4) suitable for experiential learning at the workplace.

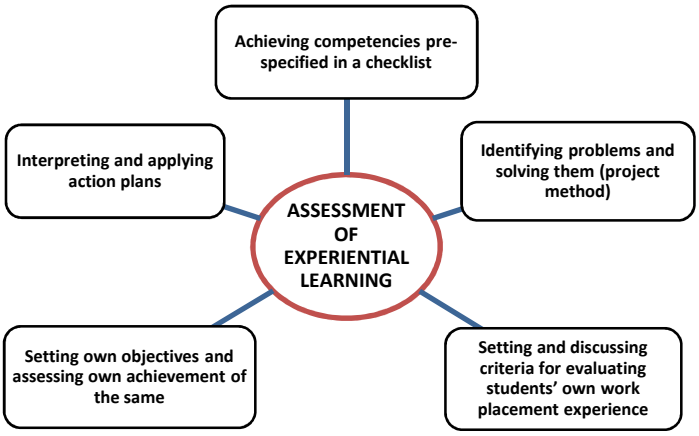

Figure 2.4: Assessment strategies for experiential learning (Source: O'Toole, 2007)

The strategies above address mainly the higher levels of the hierarchies of learning objectives (Bloom, 1956; Marzano & Kendall, 2007) or learning outcomes as used in outcomes-based education. They implicitly incorporate assessment of knowledge constructed by students based on their own concrete tasks and problem-based learning rather than spoon-fed knowledge and skills acquisition.

In advocating for increased research on assessing for both the quality and quantity of social change derived from what they call 'community service learning' endeavours, Cooks and Scharrer (2006:53) recommend 'social' methods of assessment that correct the notion that learning may happen in social contexts while assessment does not. They recommend a description of assessment in these circumstances as "…the evaluation of the effectiveness of social contexts in community service learning for rearranging what we have always known…". Thus some assessment of the social environment in which the student is a participant ought to accompany the assessment of the student, more so since environments in work places and in real world situations are all unique. To compare two students' assessments, one coming from a rich background, and the other from an impoverished one, would require some careful consideration, an issue hinging on quality assessment and management, discussed below.

2.5.2 Quality Management in University Education

Universities ascribe to the importance of quality and standards of excellence both within themselves and in comparison to other systems around them. Bouge and Hall (2003:9) observe that quality in college and university education has been viewed in terms of excellence as reputation, resources, outcomes and content, adding that the most excellent institutions are those that have the greatest impact, add the most value on the student's knowledge and personal development and on the faculty members' scholarly and pedagogical ability and productivity. The definition of Bouge and Hall (2003:9) of quality in higher education institutions crystallised from many perspectives found in the literature states that, "Quality is conformance to mission specification and goal achievement – within publicly accepted standards of accountability and integrity." This definition indeed observes diversity of institutional purposes, requires operational expression of mission and goals, focuses on purpose, encourages public disclosure of mission, goals and results and contains an ethical test, according to its proponents (Bouge & Hall, 2003:14). On the other hand, Biggs (2003) quoting Harvey and Green defines quality in terms of value for money, fit for the espoused purpose, and as transforming.

Approaches to quality assurance and quality enhancement in university-community partnerships vary, and the approach that characterises a particular partnership is largely determined by the university concerned (Hilborne, 1996:63). Every university has a

potential for excellence within its own mission (Bouge & Hall, 2003:7). Commitment to quality can be encouraged by the adoption of rigorously tested processes of validation, of monitoring and of periodic review (Stennett & Ward, 1996:130). Quality higher education in the modern world encompasses innovativeness and entrepreneurship, and in the case of a university, an ability to attract industry through action learning that mirrors business imperatives and promotes change (Teare & Prestoungrange, 2004:16). Innovative universities in the current knowledge era are those that contribute to the social good through the production, acquisition and application of knowledge, capable of securing and advancing high-level research capacity to ensure both the continuation of self-initiated, open-ended intellectual inquiry and the sustained application of research activities to technological improvement and social development (Kruss, 2005:190).

In industry, quality is linked to productivity. The question is whether productivity and its measurement in education are as reliable as in industry. Walberg (2006:104) describes what he calls the 'productivity predicament' in education, noting that unlike other sectors of the American economy, and despite increased spending and numerous education reforms, schools become less efficient over time, failing to diminish the poverty gap between poor and middle-class students, and recording higher dropout rates (particularly among minority groups). Yecke (2003:1) also laments the 'rising tide of mediocrity in America's schools where increasing opinion at one time was that school practices tended to work against gifted and talented learners particularly in the middle school level. In short, high costs and new policies were not being translated into significant improvement in both quality and quantity in American education. A greater cause for concern therefore exists for developing countries where funding problems prevail. In the case of universities in developing countries productivity is bound to be measured in terms of the qualitative impact of graduate and research outputs in society over time, rather than the numbers of graduates passing through the institutions (Hiborne, 1996).

In analysing entrepreneurship in educational institutions, writers have tended to emphasise the tangibles such as infrastructure, advanced telecommunications and sound legal systems, while neglecting the intangibles such as novel ideas, role models, informal forums and executive leadership (Urban & Barreira, 2007:579). Ultimately it is human capital that ensures and maintains the shift towards an entrepreneurial culture. Calling for partnerships that enhance local competitiveness for small-, medium- and micro-scale

enterprises (SMMEs), Kruss (2005:198) says institutions should strategically harness innovation potential at multiple levels and in differentiated ways within their own zones of 'proximal development'. This must be more applicable to developing country universities.

There are various terms that apply to the notion of quality in organisations. These include quality assurance, quality control, quality enhancement, quality feasibility, quality management, total quality management, et cetera. Some of these are described below. Bowden and Marton (1998) make a point about the use of some of the terminology on quality and effectiveness in education as compared to other business organisations. They note that the idea of quality control is not easily applied to learning in universities because quality assurance norms for evaluating teaching and courses are complex. Using the notions of product, manufacturer, supplier, and customer are the common parlance of TQM systems outside educational contexts, which do not readily translate into university functions, even though attempts are made to use them in higher education. It is therefore argued 'that a fundamental aspect of quality management at universities is the process of finding out what we want to produce, that we cannot take the product as given' (Bowden & Marton, 1998:217). It is interesting to analyse what industry-based learning programmes want to produce.

Boud et al. (2006:4) note that sustainable development of organisations demands that management balances the needs and ambitions of key stakeholders: customers, investors and personnel.

> Management's efforts to achieve this must address not only static efficiency and effectiveness, such as productivity, profitability and competitiveness, but also dynamic efficiency and effectiveness, such as learning, competence development, creativity and innovation. While faced with growing complexity and unpredictability, many current management strategies and methods, such as lean production, lead to increased intensity in the workplace and decreased opportunities for learning and development and thus adverse long-term consequences.

Biggs (2003:263) writes about the 'reflective institution', asking the question, "Can institutions reflect on what they are doing?" He goes on to espouse two forms of quality assurance: retrospective and prospective. He describes 'retrospective' quality assurance, which is about value for money, as that which looks back to what has already been done, making summative judgement against external standards. Such a focus, says Biggs, has a managerial rather than an academic agenda, prioritising accountability, using top-down

and bureaucratic procedures in an adversarial rather than collegial climate. In retrospective quality assurance, quality indicators are used. On the other hand, 'prospective' quality assurance is concerned with assuring that teaching and learning fit the purpose of the institution now, with commitments to upgrade and improve teaching in the future by requiring that procedures are in place that lead to quality enhancement (QE). Quality enhancement 'is concerned not with quantifying aspects of the system, but with reviewing how well the whole institution works in achieving its mission, and how it may be improved, which is not to say that there may not be external imperatives to meet' (Biggs, 2003:268). The institution must operate from an espoused theory of teaching, and try to match practice to the theory. In short, prospective quality assurance (or quality enhancement) is concerned with fitness for purpose and with transforming, designed to meet the institution's own standards developed internally, looking at the present and the future educational priorities, a bottom-up collegial and supportive climate, open qualitative and formative descriptors of best practice.

2.5.3 Quality Indicators (and benchmarks) in Higher Education

Around the early nineties the quest for definition and utilisation of quality indicators received much attention in Europe. For example, Cave, Hanney & Kogan (1991) proposed three categories of indicators, namely effectiveness, efficiency and economy, all centred on input, process, output and context. Among the indicators that Cave et al. (1991) found, were those relating to teaching such as degree results, value-addition, employment on graduation, and those related to research such as research output, incomes, and reputational rankings. Dochy, Segers and Wijnen (1990:143) have also listed several indicators under the three functions of higher education, namely education (teaching and learning), research and services. Sizer (1990:9) has produced a list of 16 indicators in general use in universities, among them employability of graduates, research studentships awarded by particular bodies and records of publications. It is worth reiterating that for industrialised Europe with a low unemployment rate, it is understandable to talk only of 'employability of graduates'. For developing countries, retention and relevance to local needs would be an added feature.

Bunting and Cloete (2004) have noted that indicators can be used as an instrument for stimulating the exchange of good experience and new ways of thinking about policy approaches. This ensures that universities, though autonomous and working to achieve

individual excellence, cannot dispense with positioning themselves against one another. Moreover, success of service learning includes reciprocity, collaboration, needs assessments, alignment of service and learning goals, student placements, student orientation, role clarification, reflection and logistics (HEQC, 2006: 18-19). Bogue and Hall (2003:5) highlight the following six conventions and assumptions held about quality in higher education institutions (HEIs) shown in Table 2.4 below:

Table 2.4 Six Assumptions about Quality in HEIs

Feature	Assumption
Financial	Only high cost colleges have quality
Institution Size	Only large and comprehensive colleges have quality
Admission procedures	Only highly selective colleges have quality
Status	Only nationally recognised colleges have quality
Prevalence	Only a few colleges have quality
Resources	Only colleges with impressive resources have quality

Bogue and Hall (2003:6) quickly dismiss these assumptions and pose the question: Are quality and excellence in limited supply? They add that "any campus without quality in its mission has no reason to exist" and "… each college or university has the potential for excellence within its own mission" (p. 7). The element of competition and competitiveness needs to be factored in into the arguments above. While institutions of learning may exist due to popular demand or social pressures, it must be monitored how they compete with peers for seeking quality delivery and self-improvement in regard to the overall goals of university education. This way, no institution will be forgiven for remaining stagnant in all its functions over extended periods of its existence.

In the analysis of the rationale and reliability of using quality indicators, Bogue and Hall (2003:243) conclude that no single indicator or measurement of quality can stand without some criticism or scrutiny. It will be rare to find an indicator or evidence of quality that may not be assaulted for some philosophical or technical frailty. In the words of Bogue and Hall (2003):

> Outcome measures may not tell us about the value-added contribution of the collegiate climate. Student opinions and satisfaction indices do not tell whether students have learned anything. Students can be happy and ignorant. Reputation and ranking studies are sometimes

> viewed as 'quantified gossip' and often do not furnish useful information for improving programs and policies. Accreditation can be an exercise in professional back-scratching, a cost-and-time burden serving only the interests of various professions and disciplines. Licensure examinations can be subject to the changing interests and standards of a profession and the profession's own self-interests. Academic program reviews can become paper producing burdens and busywork for administrators needing occupation. Alumni opinions can mellow and modify with time.

The fallacy regarding indicators leads Bogue and Hall (2003) to suggest the need for multiple indicators for this conceptual challenge and for other reasons as well, because individual and institutional performances are too complex and too precious to be captured in a single point of evidence. Likening it to a physician who at best uses not a single indicator of our physical or emotional condition to ascertain our state of health, Bogue and Hall (2003:243) call for diagnosis and prescription built on analysis, evaluation and interpretation of multiple indicators. Bowden and Marton (1998) outline the qualities of universities that affect the quality or excellence of their service of which the following three stand out: helping students develop an interest in lifelong learning or focusing students' attention on their first job on graduation, having a strong or weak research profile, having strong connections with business and industry, or not.

Further, Bowden and Marton (1998) note that the 'quality movement' has not always been happily embraced at universities. Most academics feel that more things are being added to their already heavy workload of teaching, research and administration. However, in my view, a further pertinent point is that the 'quality' being referred to is the quality of what one is doing, or rather the quality of what one is achieving; the quality of the learning brought about and of the research carried out. So, in this way, improving 'quality' is simply doing better what you are doing and have to do anyway.

In a nutshell, the diverse conceptions and views discussed above about the facts and myths of quality spell out the organisation's road map towards its desired actions and learning. The university's unique definition and understanding of quality will undoubtedly affect its attempts at achieving that quality. The various quality indicators cited above and that have been shared by scholars in the literature serve as a guide to what a university seeking its niche in the competitive playing field can select and adopt. A young university such as NUST stands to benefit by selecting appropriately those aspects that will enhance its business and its image into the future as it matures. Learning with and from others

becomes crucial, and in the next section I explore more elaborately the concept of learning.

2.5.4 Quality through knowledge and its application

Applauding the emergence of knowledge and learning as major organisational assets, and suggesting that 'work equals learning', Marquardt (2002: 14) says,

> Increasingly, work and learning are becoming the same thing. Because the new global economy is based on knowledge work and innovation, there is a convergence between work and learning. While you perform knowledge work, you learn. And you must learn minute by minute if you are to perform knowledge work effectively.

Knowledge work is the occupation of people who create, manage and disseminate knowledge. Marquardt (2002:11) goes on to reiterate that knowledge has become more important for organisations than financial resources, market position, technology, or any other company asset. As the organisation's main resource, the company's traditions, culture, technology, operations, systems and procedures depend on it. It is necessary to increase employees' abilities to develop and implement improvements, thereby providing quality service to clients and consumers. Knowledge is required for updating products and services, changing systems and structures, and communicating solutions to problems. Development and pursuit of knowledge is required of all individual members in a modern company, and 'the job of the leader is to create an environment that allows workers to increase knowledge and act on it' (Marquardt, 2002:11).

Progressively brainpower is becoming a company's most valuable asset, which creates a competitive edge in the marketplace, according to Marquardt (2002). "We are challenged to find and use it. [Brainpower] has never before been so important for business. Every company depends increasingly on knowledge; patents, process, management skills, technologies, information about customers and suppliers, and old-fashioned experience…. The location of the new economy is not in technology, but in the human mind" (Marquardt, 2002). In developing countries, physical labour and material assets are still regarded highly as the wealth of choice. This is because material and infrastructural development have not reached the levels that are seen in industrialised countries. Less knowledge has been transformed into visible physical structures and thus it is difficult to advance that scarce knowledge further. The ideal gift to such nations would be rapid socio-economic transformation within a reasonable period to allow for the matched growth of both physical and intellectual capital. The role of universities through their research

outputs, outreach activities and graduates is to create and disseminate appropriate knowledge that promotes rapid socio-economic transformation.

But to generate relevant knowledge for use by wider society the university has to handle its own internal knowledge skilfully. This is the knowledge about its own goals, processes, structures and the inherent limitations. This study partly aims at expanding the university's knowledge about industry-based learning in order to inform present and future plans and decisions pertaining to the application of the pedagogy. Through research sub-questions such as (a)(ii): *What contributions are perceived to be attributable to industry-based learning in knowledge growth and holistic economic development of the country?,* this study seeks to bridge knowledge gaps found in the literature about how internal knowledge within the university informs broader knowledge applicable to wider society. In this way, the study has the potential of being a tool for reflection and self-correction, and an encouragement towards transformative learning discussed below.

2.5.5 Transformative Learning

In creating a transformational philosophy and rationale, Spady and Schwahn (2010:48) ask educators to expand their empowering learning communities' knowledge bases (so that their paradigms shift), adding, "As you consider the exciting possibility of moving from an educentric to a transformational approach to educational change, keep going back to what you really know and keep expanding your understanding of what it means to learn, educate, and live in the age of empowerment.

Transformative and transformational learning is directed at accepting change and maintaining it. In providing students the opportunity to interact with the world through guided hands-on experience, and then reflect upon it, we are encouraging them to become agents of change, ready to meet the challenges of an increasingly complex world. In this approach participants are engaged on many levels, increasing the likelihood of deep, lasting learning – through a blend of theory and practice in a real world setting – that can have far-reaching implications (Pompa, 2005:168). The pedagogies of industry-based learning and service learning provide for transformative learning, and as Pompa (2005) says,

> … have the power to turn things inside-out and upside-down for those engaged in it. It provokes one to think differently about the world, and consider one's relationship to the world in a new way. This approach to learning captures and communicates a dynamism that

> inspires everyone involved to explore, inquire, and analyse. It is transformative education at its best' (Pompa, 2005:191).

Ferrer et al. (2010:80) observe three basic elements of learning (or three types of pedagogical emphasis) which are outlined in Figure 2.5 below:

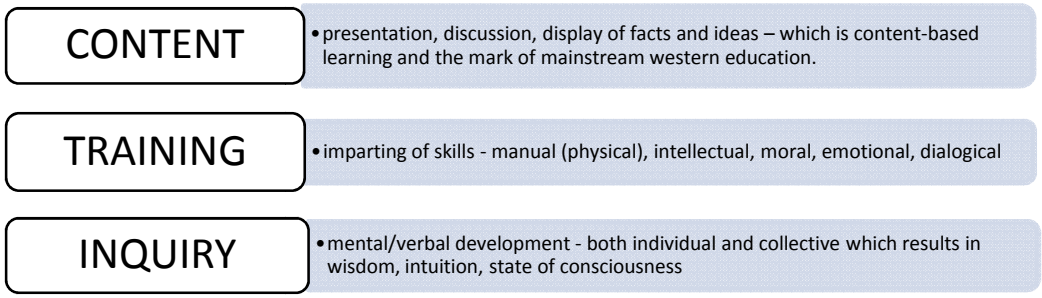

Figure 2.5 Three elements of Learning (Source: Ferrer et al., 2010)

All three elements shown above are not mutually exclusive, and are important in varying degrees to students at different levels of development. Ferrer et al. (2010) believe that as students move from lower school to college, and from college to university, from undergraduate to graduate education, and from master's to doctoral levels, there needs to be a gradual but increasing shift of emphasis from an educational praxis that is based mainly on content/professional development (arguably more appropriate for children and young adults requiring epistemic foundations) to one based mainly on inquiry/professional development (more appropriate for adults who aspire to contribute new knowledge or practical service to the world). Ferrer, Romero and Albareda (2010:93). provide basic features of integral transformative education:

> Integral education fosters the cocreative participation of all human dimensions in the learning and inquiry processes. A genuine process of integral learning cannot be directed exclusively by the mind but needs to emerge from the collaborative epistemic participation of all human dimensions: body, instincts, heart, mind and consciousness. All human dimensions need to be actively encouraged to participate creatively at all appropriate stages of the inquiry and learning process.

Ferrer et al. (2010) lament the idea that most Western education focuses almost exclusively on the development of the rational mind and its intellectual powers, with a

little attention given to the maturation of other dimensions of the person. As a result most individuals in our culture reach their adulthood with a somewhat mature mental functioning but with poorly or irregularly developed somatic, vital, emotional, aesthetic, intuitive and spiritual intelligence, according to Howard Gardner. This is an extreme mind-centred way of life and learning, which means that products of the mind dominate a person's life and learning. Ferrer et al. (2010) suggest that what is needed, then, is to create spaces in which these human dimensions can achieve epistematic competence according to their own developmental principles and dynamics rather than those the mind thinks are most adequate. Only when the body, instincts, sexuality and heart are allowed to mature autonomously will they become equal partners with the mind and be capable of creative participation in cocreating a truly integral process of inquiry and learning.

Trani and Holsworth (2010:1) posit that higher education is in the midst of a major transformation that is fundamentally redefining the relationship of colleges and universities to the broader community. This transformation is occurring at every level of higher education, from community colleges to comprehensive undergraduate schools, to research-based intensive doctoral universities. And it is becoming an increasingly global phenomenon as universities around the world seek to redefine themselves in ways that will enable them to become significant actors in the modern, knowledge-based economy.

Desirable transformation transcends all levels of operation from individuals through organisations to countries and continents. Trani and Holsworth (2010:184) report on their transformational analysis of requirements for the indispensable university for the current knowledge economy. They note that key among the lessons in the analysis is the positive input on economic development when governments consciously seek to foster capacities for high-level skills (human capital) and problem-solving research (intellectual capital), and align those capacities with national economic strategy objectives. While the nearly 6 percent growth rates in much of the sub-Saharan Africa from 2000 through 2008 have been encouraging, the World Bank report posits that higher education institutions in Africa will need to transform themselves into a different type of educational enterprise – a 21st century version of the African 'development university' – in order for the region to be competitive within the new rules imposed by a global knowledge economy.

2.6 Conclusion

The broad array of ideas and viewpoints discussed in this chapter has provided support for the theme of industry-based learning in as far as the objectives and the scope of this study are concerned. A close understanding of the theoretical and practical issues around workplace-based learning and quality assurance has aided the appropriate emphasis in higher education discourses, particularly in local developing country settings. The literature surveyed has aided the refining of the research questions and the design of the study, and has pointed to the ways of analysing the data collected.

It is noted that, in general, all the literature sourced and surveyed supported the principle of industry-based learning in its various formats and versions. None of the sources found were critical of the pedagogy and calling for its suspension or scrapping in the agenda of preparing human resource needs for contemporary economies, not the least for developing countries. Interest in and publishing on university-community engagements for learning have existed for over a few decades but have become more common and focussed in the past decade. In particular, the rise of new technologies and methods of production has precipitated the need to put students on work placements in complex situations where they get exposure to certain processes to aid their learning about those processes. The mandate of the university as a key player in shaping occupational contexts of modern societies was portrayed as the function that brought the university and industry together in facilitating business innovation to start new companies, assisting small and growing companies, collaborating with large established firms, and assisting mature industries. Much of the literature dwelt on large established companies and less on small and medium scale enterprises.

The accessed literature has been scant on detailing the methodologies used and usable in carrying out inquiry on aspects of service learning or workplace-based learning. Qualitative and quantitative methods seem to have been the choices, as none of the studies used mixed methods approaches in this area of study. The presentation of workplace-based learning as a pedagogy with contested conceptualisations and formats captured the variations in ascribing standards to learning as viewed from different contexts, such as developed and developing countries, resourced and under-resourced environments, and geographical disparities, among others. The literature fell short of stating that developing

country universities needed a special programme to address higher learning which differed from that which has brought success in industrialised country contexts.

On the theories and principles of learning that apply to industry-based learning, there is much generalisation in the literature which applies mainly to school and college set-ups, with less focussing on the university. Classical theories such as behaviourism, cognitivism, humanism and constructivism hold the debates that attempt unravel how the acquisition and management of knowledge and skills occurs and can be best exploited. To qualify traditional learning theories, research and experiences in other related principles such as outcomes-based education, thinking and learning styles, flexible models and competency-based learning and training are applied to the higher education cause.

Central to this study is the identification and description of a sustainable quality drive in delivering university education using one particular pedagogy, industry-based learning. Early writers have been benevolent in publishing works on determinants of quality such as the indicators and benchmarks used in higher education in accounting for the often huge expenditure and investment in this sector. The more modern literature emphasises the importance of higher education in knowledge development and management, and justifies any rational expenditure or investment in the field as this becomes the vehicle for social growth and transformation to address pressing global concerns.

The identifiable gaps in the literature expressed above, and also earlier in section 2.4.2, contribute to the motivation for this study. In the next chapter, the principles, procedures and techniques of the quantitative-qualitative case study and the need for action research in the area under study are presented and reflected upon. The strengths and the justifications of the mixed methods approach are discussed, as well as the challenges and the constraints encountered in the key stages of the research process.