CHAPTER 5: INTERPRETATIONS AND REFLECTIONS

5.1 Introduction

This chapter is designed to put into broader context the findings of this study and to provide insight into the perceived wider implications of the data that has been presented in the previous chapter and in the foundational information in earlier chapters. The chapter is also expected to crystallise issues that may have appeared unrelated in the presentation of data and findings, where such issues have been found to converge or align. In particular, this chapter is presented in themes that integrate the triangulated qualitative and quantitative data from the thematic content categories obtained from interview data (Appendix XV) and the data from the matched questionnaires as presented in the previous chapter. It is the chapter in which the voice of the researcher begins to heighten to fuse with that of the respondents hitherto given more prominence. The integration of themes is shown in Table 5.1 below, and is necessary to help the researcher to reach conclusions informed by data and to make authentic recommendations.

Table 5.1 Integration of themes from Qualitative and Quantitative Data

THEMES (in this chapter)	QUALITATIVE DATA Interviews Thematic Content – App XV Open-ended questionnaire items	QUANTITATIVE DATA (Closed-ended questionnaire items)
Perceptions of quality and best practices	1.Quality issues in academic practices 5. Relevance of programmes and graduates 7. Assessment and supervision 9. The model 13. Student preparation and placement	Factor 1 curriculum coherence Factor 2 Learning Factor 3 Student assessment
Learning and knowledge development	3. Teaching & learning improvement, value-addition, curriculum integration	Factor 2 Learning
Research-enhanced Practices	2. Research and learning 14. Innovation, creativity, entrepreneurship	
Community Engagement and Development	4.Holistic engagement & SMEs 6. Comparison of IA format and competition 8. Mutual conception of IA & communication	
Transformation	12 Transformation, life enrichment	
Goal-directed Action and Critical Thinking	2. Research and learning 11. Challenges	
Building a Legacy: The Future Beckons	10. Benefits 15. Other (miscellaneous) Open comments	

It has been hinted elsewhere in this report that Zimbabwean higher education has expanded phenomenally in the past two decades, and in this expansion, higher education institutions have adopted ways of serving the needs of the local and global communities

as enshrined in relevant proclamations of the nation's visions and developmental plans. One of the ways adopted by universities to transact the business of empowering the growing number of the select cohort of young people to participate in the development of their country is the unanimous use of industry-based learning as a strategy to contextualise university teaching and learning through engagement in workplaces. The trends of events have prompted the research question in this study: *How does integrated industry-based learning enhance quality academic practices and relevance to national needs of Zimbabwe?* In the sections below I attempt to augment and synthesise the undercurrents intimated in the previous chapters with critical and reflective interpretations of key issues raised, beginning with the cross-cutting focus of this research study on quality.

5.2 Perceptions of Quality and Best Practices

When earlier I noted that all universities had a potential for quality and excellence within their own mission and goals as Bouge & Hall (2003) suggest, which could be demonstrated through various indicators, little did I visualise quality and excellence as basically personal and individualised constructs that are shared among like-minded people to varying degrees of success. Many of the respondents displayed quite disparate conceptions of what quality educational practice is in the application of industry-based learning at university level. There were those who were happy to describe the quality of what they were aspiring for, rather than the quality of what they were actually doing or achieving at a particular moment in time. The temptation to dwell on 'what ought to happen' rather than 'what is happening' manifested itself in statements such as, 'Contract research is a big possibility, but … as you are aware, lecturers are overloaded with teaching … the benefits … would be very large … [but] unfortunately it hasn't happened' (#NM02) rather than 'We carried out such and such a research with industry at such and such a time or place'. This drew me back and reminded me of the widely acknowledged gap between theory and practice, for I believe that the best manifestation of quality is in the reality, rather than the idea about that reality. Quality, in my view, has to do with the completeness of missions and goals, relevance and the quest for accountability and transparency, issues that I discuss in greater detail below.

5.2.1 Quality academic practice and holistic human development

It is encouraging that although some respondents acknowledged the insufficiency of their own endeavours and their specific situations regarding the practice of industry-based learning, there was appreciation of quality when all systems, plans and actions alike, were taken holistically and contextually. Indications of a gradual decline in adherence to established quality procedures by lecturers including inadequate preparation of students, uncoordinated placements, poor supervision and assessment, and poor liaison with industry featured prominently in the findings. An awareness of the weaknesses of a system is a promise that these weaknesses may be addressed when normality returns in the broader socio-economic outlook of the country. Suffice to say that there have always existed challenges for the university community, administrators, lecturers and support staff, to pull efforts together, whether there existed economic problems or not.

Furthermore, meta-analysis of participants' views indicates a good number of them displaying 'practical reasoning' directed toward action, i.e. figuring out what to do as contrasted with just figuring out how the facts stand (Mezirow, 2009), an important ingredient for action learning. Take the example of the student who observed that, 'Learning experience … should be coupled with practical industrial visits and seminars so that students may be able to define their interests (strengths) for the [continuation] of their career' (Student # 0016). This shows consciousness of a holistic orientation to teaching and learning requiring students, university administrators and lecturers to be prepared to work on their own holistic awareness, creating learning environments conducive to whole person learning (Taylor: 2009:10). Lecturers in this study appeared to understand diverse contexts in which they performed and were expected to perform, events that eclipsed their performance, and the educational reality as historically enacted by these events. This is true of the hermeneutic approach to education according to Danner (2002).

5.2.2 Quality as relevance

One pertinent issue in quality discourses is that of relevance. In this study, relevance pertains to plans, activities, programmes and their outcomes. University-industry partnerships by their nature affect the participants (internal relevance) and the wider society (external relevance). Universities in developing countries are icons of both

utility and exclusiveness often linked with alien knowledge generation and management. They regrettably often fall short of applying this and other knowledge to transform their environments towards latent and espoused standards. I view industry-based learning as an opportunity to orient students to solving problems intelligibly in their own backyard, viewing them as challenging and worthy of their attention. Problems of under-development haunt Zimbabwe, a country whose universities effortlessly produce internationally acclaimed scholars and graduates annually while solutions to rampant under-development just over the fence continue to be loaded on charitable and often foreign benevolence.

Relevance of industry-based learning would be a measure of how successfully in the short, medium and long term the country moved towards expanding and diversifying industry and the whole national economy. It would be a measure of the ability to create employment, entrepreneurial and investment opportunities and safeguard livelihoods of the very communities from which both the university and the industry draw their clients, the students and the employees respectively. So when a respondent observes, '… [Our graduates] are still the most preferred by employers both in industry and commerce because of [our] brand', and 'Our graduates are already running … all the major companies in this country …' (#NM01), he is speaking proudly of the relevance and visibility of university graduates in the economically productive sectors of the country. A relevant university programme would also contribute to the expansion and dissemination of technical and 'technopreneurial' knowledge, increasing the efficiency of identifying developmental opportunities. It would also increase career knowledge in schools, and be significantly involved in efforts of sustaining the vibrancy of the nation's technical and vocational education (TVE) system which, in recent times, has been observed to be 'collapsing', leading to the country producing 'educated' personnel who 'lack the experience and technical knowhow required by industry … who are intellectually sharp but are not ready to enter the industrial world' (*Sunday News*, 20 March 2011). This idea is raised by Mazawi (2007) who cites the marginality of vocational programmes and the emerging dominance of academic curricula and semi-academic programmes in colleges and universities of technology offering 'employment-directed training' in Arab countries.

The readiness of graduates to enter the industrial world is a function of their prior learning and experiences, and I presume it is also a consequence of the nature and the rigour of their preparation towards that entrance. The respondents in this study have indicated variously that, although acceptable, some of the processes undertaken in the exercise of the industry-based learning programme under study have been lacking in professionalism and effectiveness. Particular reference is made to student supervision and assessment practices, where comments from students were obtained such as, '… [Lecturers] did not visit me where I was and [I] do not know how they got my supervisor's mark' (Student #0323). Little wonder then that one lecturer would go as far as to propose a written examination for assessing this totally field-based learning experience, an admission that due procedures are flawed, and a teaser for pedagogy.

5.2.3 Quality academic practice in respect to accountability and transparency

University education in developing countries is still largely considered a luxury as governments have been compelled to spend more of their meagre resources on the lower levels of education. In general, higher education systems in developing countries are under great strain and are chronically underfunded although they face escalating demand (International Bank for Reconstruction and Development/World Bank, 2000:10). With depleted resources it is difficult for institutions to venture freely in search of best practices, and to uphold their autonomy. It is easier to share strategies and to rely on watchdog bodies such as the Zimbabwe Council for Higher Education (ZIMCHE) for 'prescriptions' of standards and their subsequent monitoring down the line. As one respondent put it, similar institutions 'need to come together and craft some [common] framework of doing this thing [industry-based learning]' (#OUMC03). The role of industry and government in determining best practices is crucial so that there are no blind spots, and there is less of living 'secret lives' as one respondent (#NL08) noted.

The broad concept of service learning in its various versions is accepted and practised in a number of countries worldwide, and particularly in developed countries it is adapted for all levels of education; primary, secondary and tertiary. In Africa the ideals of Julius Nyerere are documented. His policy on education for self-reliance and his philosophical perspective that 'education places a very personal responsibility upon the educated to ensure the well-being of other community members', are an example of a holistic education that seeks to improve humanity (Hatcher & Erasmus, 2008:53). When one of

the respondents expressed that, 'I would even have wanted high school students to go for attachment' (#OULE08), he was expressing a wish perhaps considered remote in Zimbabwe but one that is commonplace, for example, in the United States of America. And further, those respondents who have pondered about the ideal duration and format of industry-based learning for the university student in Zimbabwe may take a cue from some South Africa academics who are reported to have strengthened their resolve to 'use service learning pedagogy and continuously adapt it to reflect and accommodate uniquely South African contexts and realities (Hatcher & Erasmus, 2008:50). In short, then, the discourse on quality is a very prolonged one. It is as good as the learning itself.

5.3 Learning and Knowledge Development

This study underscores the importance of integrating formalised university classroom learning with informal learning in the real workplaces, both sites meant to provide the learner with a pre-determined repertoire of knowledge and skills to begin a career in similar workplaces. The idea is that learning for life is not confined to one locality and learning equips the learner for change. Perhaps the following statements explain this: 'Learning is all around us', and 'Learning must be equal to or greater than the rate of change' (Teare & Prestoungrange, 2004). These are some of the proclamations attributed to Reg Revans, the brain behind the Revans University of Action Learning created in 2000 in Scotland. Revans is also reported to have identified with wise sayings by other greats, such as, 'That which we learn to do, we learn by doing' by Aristotle. What drives learning in an individual or a group or a community is often not what is known, but the unknown. A society with many real challenges is pushed to learn, because challenges create action and action builds knowledge. Knowledge eventually becomes differentially distributed among society's members as the bulk of learning gets entrusted to certain members of the society that have the capacity to adopt and apply it. Knowledge-driven practice characterises the society that has chosen a progressive path of social development. Knowledge is discovered by innovators, acquired and developed by experts and then bequeathed to all others (the learners and subsequent users) by professionals and professionally developed practitioners.

5.3.1 Learning and work

University learning seems to be the pinnacle of learning and it is not universally available to the majority of people in any society. Those who possess university education hold a premium as knowledge has long outdone physical capital as the measure of wealth in the modern global economy (International Bank for Reconstruction and Development/World Bank, 2000:9). What the university students learn, and how they learn to satisfy their natural quest for learning becomes a concern for society and its watchdog institutions. A choice to put through students in service learning programmes speaks of the goals of a society seeking to integrate a character of service in learning, work and life. University education in developing African countries may seek to interrogate issues of theory and epistemology such as constructivism, to evaluate the relevance of Western knowledge and education, to find space and legitimacy for indigenous knowledge and to justify the African cause. The underlying purpose in all cases, however, is to secure the survival of African societies through eradicating hunger, disease, poverty and ignorance among many other realities that portray the stark inadequacies of Africa compared to other nations.

A common notion is that young children spend most of their time in school learning as well as playing, and doing little work, while adults spend most of theirs between work and leisure, with less formal learning. There is an element of truth in this. In asking the question, 'Can work and learning really co-exist?' (Teare & Prestoungrange, 2004:52), Reg Revans evokes in certain minds the inter-connectedness of people and their lifestyles in a variety of real life, unassuming situations; people such as workers, customers, learners, visitors, children, et cetera. One of the respondents in this study noted that as young impressionable students go out in society, they become better, responsible citizens, and 'at that point they are still willing to learn and we can still influence them to a certain degree in terms of responsibilities and accountability' (#IND01). The point of the university as a learning community has been raised earlier, and it emphasises the co-existence of work and learning in a subtle way. The learning community, for its part, is a dynamic grouping of co-existing people with overlapping goals and aspirations, who share a substantial amount of public knowledge.

5.3.2 Theory and Practice

Industry-based learning brings into the fore the familiar arguments between theory and practice in knowledge acquisition as well as in academic discourses in general. The theory-practical gap worries educators at all levels of the education system, causing practitioners to ponder over arguments such as 'how to teach is the teacher's choice, how to learn is the student's choice' (Perkins, 2006:45). The implication is that teachers can prescribe ways of teaching they think will make students learn best, giving little thought to whether students actually do learn best in those ways.

The findings of this study indicate that the university students' choices of how to learn depended somewhat on their perception of three factors. The first was curriculum coherence, in which the students perceived continuity and connection between learning experiences carried out in different sites, university campus and industry workplace for example. The second factor was the learning experience itself, in which students judged the conveniences and challenges of doing what they had to do to be said to have learnt, whether through theory or practice. And the third factor was concerned with assessment processes, in which the students questioned the mechanisms of transforming the worth and completeness of their learning experiences into some license to enter the world of work.

Was there a difference in learning effectiveness when the students were in industry compared to when they were on campus? This point was not directly investigated in the study but the perceptions expressed by respondents show that basically there were two different but overlapping learning regimes experienced at the two sites. On campus, students were provided with a culture of strong intellectual advancement accompanied by comparatively less social and professional training. In industry, the same students got strong professional advancement and comparatively less social and intellectual training. The act of exposing students to professionals in industry, who would be their colleagues and bosses a few years later, was like putting role models in front of them to act and practice what the lecturers taught them in theory in campus classes. This confirms that if we want students to act in certain ways, it helps for us and other models to act in that same way (Wolsterstorff, 2002:123).

Was there a difference when students sat in class and absorbed information dished out by a lecturer or read from a text compared to when they went out and engaged in physical work? Moving between learning through theory and through practice assists those struggling students to whom knowledge and skill acquisition is ordinarily an intellectual burden. To assist such students, Perkins (2006) proposes the use of 'pragmatic constructivism', a practice of luring students into learning in ways deeper than those to which they might be disposed, in order to tackle 'troublesome knowledge', such as university curricula.

Can theory be useful without practice? The logical observation from the industry-based learning experience and impact is that the two are sides of the same coin. Campus learning alone for the average student apparently becomes insufficient to equip a lifelong professional with requisite skills to survive the challenges of the workplace in a changing economic environment. Similarly industry-based learning alone would deprive the ultimate worker of the intellectual endowment needed to survive the troublesome and challenging workplace. Advising that theory and practice be recognised separately for their roles in holistic learning, Giroux (2001:21) notes that 'Theory and practice represent a particular alliance, not a unity in which one dissolves into the other'. In essence, we should celebrate the pedagogies that integrate physical real life experiences with contrived intellectual enhancement. As a result, theory and practice, while interconnected at the point of experience, should also be regarded as representing distinct and analytical moments that do not collapse into each other (Giroux, 2001:99). This to me means that the theory-practice gap must remain, because it is a healthy and useful gap, but bridges are required to minimise the gap.

5.3.3 Higher learning and creativity

Does industry-based learning appear to stimulate, promote or enhance creativity and innovativeness in students and their lecturers? This might be a good question for a separate research study. Some of the respondents were optimistic. According to one, industry-based learning promotes the skill of 'trail blazing the path of problem-solving' (#NM01), and in general students, lecturers and industry supervisors agreed that students had and used the opportunity to contribute new ideas to improve their organisations of attachment. Creativity and innovativeness are inborn human traits that

are facilitated by learning and experience, and industry-based learning affords huge opportunities for both. Coupled with transformative learning, service learning inspires people to explore, inquire and analyse (Pompa, 2005:191), thus nurturing creativity and innovativeness.

In a Finnish study on university student reflections on their off-campus work practice, Valo (2000:173) concluded that students in his study did not differ much from the highly educated persons already in working life. He reports that 'Professionals in industrial societies tend to emphasise autonomy and disposition as well as interesting and demanding work-tasks, while people who have not attended higher education put stronger emphasis on income, status, job security and reduced workload'.

5.3.3 Experiential learning

Whether contrived or fortuitous, the encounter between the student in the decisive stage of his/her life with the workplace brings hope of a future approached with confidence. Industrial attachment reduces the anxiety and uncertainty which occurs when someone experiences something for the first time, such as the factory. For NUST graduates, the factory has already become something familiar to them. They have acclimatised to factory life, and 'It's a place they know' (# NM02). Moreover, in the current state of affairs, the IA compensates for the brain drain affecting the availability of qualified and experienced lecturers. By interacting with industry supervisors and being exposed to industrial processes, the student is making up for instances when at university he has to while away time, being lectured by constrained lecturers or less experienced and qualified teaching assistants. Industrial attachment is like a familiarisation or preparatory trip to a place one is interested to spend time at. When students return to campus for their final year to report, reflect, and review their experiences, they are using different lenses to view the efficacy of their learning and the knowledge they construct and share with colleagues, peers and superiors.

5.3.4 Fit-for-purpose strategy

One respondent reminded us that NUST, as the second national university in the country, was allowed to adopt IA programmes so as to produce graduates that meet the needs of industry, leaving the University of Zimbabwe to retain its emphasis on basic science or basic research (#NM03). The path that the newer Zimbabwe universities have

taken, of collectively adopting one model of instruction in the name of industrial attachment, signals a realisation of the country's industrialisation dream. Zimbabwe industry basically requires a hands-on workforce and management rather than a basic research orientated leadership because industry and business are largely a foreign investment, deriving advanced knowledge, research and systems from parent companies in developed countries. With the recent formation of the Zimbabwe Council for Higher Education (ZIMCHE) and consolidation of relations between the council, the Ministry of Higher and Tertiary Education and the universities themselves, it is hoped that consensus will be reached on how all the universities, new and old, will streamline their visions and missions in view of both autonomy and service to the nation.

Meanwhile it is important how individuals and structures within the universities view their own practice, so that they can inform or evaluate decisions made by regulatory bodies on their behalf. Have they, for instance, internalised the key policies and programmes undertaken in their institution? Do they articulate their experiences well? Do different practitioners agree and share sentiments, within and between universities? The perception of participants of existing quality practices associated with workplace-based learning programmes underscores their trust in effective university-industry partnerships. Continuous interrogation and review will enhance quality management at universities by finding out and articulating what should be developed according to Bowden and Marton (1998), presumably consistently effective, locally relevant and responsive graduates.

5.4 Research-enhanced Practices

Possessing the skills of investigation, exploration, inquiry, problem-identification, problem-definition, and problem-solving, among others, confers the possessor with numerous capabilities with which to engage meaningfully and intelligently his/her mysterious environment, seeking truth and evidence to back that truth. In higher education academic practitioners respect evidence-based practice (Taber, 2007) and action research promotes collection of evidence on the immediate experiences of practitioners to understand and effect change in professional practice. Quality practices attract the attention of peers and invite supporters and competitors, while change improves the same quality practices to maintain competitive advantage and relevance.

Action research thus is anchored in its relevance to the situation and the participants and contributes to long-term societal development.

5.4.1 Academic research

Research always carries many ethical connotations, whether it is applied or purely academic research. It can be a volatile intellectual activity that needs to be purposeful, situational and user-specific; it may claim to be useful to society but is also subject to misuse, even abuse because only a few people can fully comprehend it particularly when it is still unfolding. Thus it is imperative to spell out local and imported agendas for research, their possible effects and outcomes thereof.

I am interested in the cyclic aura of research-driven learning and learning-focused research within the broader realm of holistic learning. Although, to many an educator, it is easier and perhaps more desirable to become a lecturer than to be a researcher, university lecturers are courteously but cautiously invited to become both, for good reason. Theirs is a vocation of influence and power that safeguards the heritage of a nation in terms of unifying the people, the material world at their disposal, and knowledge. The respondents in this study were generally sceptical about their own research capabilities, let alone their engagement, expressing the wish to do more than they were doing at the time. They would say, '… research is a big possibility, but … lecturers are overloaded with teaching to move in that direction' (#NM02). If local research is not undertaken, what drives the teaching and the knowledge that is shared with students? Is this a legitimation of alien agendas and imported values brewed from researches carried out far afield? And if great amounts and many years of teaching and learning experiences are allowed to pass by without being subjected to systematic investigation, manipulation, analysis, synthesis and evaluation, is this not a waste of opportunity for growth?

5.4.2 Need for Action Research

A young modern university that specialises in science and technology, and commercial and community development disciplines needs to consider broadening its research portfolio to embrace more than the traditional positivist and quantitative regimes of inquiry. Action research involves evaluation of practitioners' on-going practices and experiences, and tends to stimulate participants to introspect, wondering: What drives

our actions? What are we not doing right? Who is the researcher? What is the motive? The research-literate university community can intelligibly analyse and critique research processes that affect them. Thus the whole research becomes a personalised and sensitive exercise where ethical considerations take high priority. The complementarity among regimes of research effort increases usable knowledge, producing a knowledge-intensive society. The reported recent arrival of the Emerging Global Model (EGM) university concept, a sub-set of 'research universities', has brought universities 'characterised by an intensity of research that far exceeds past experience, as well as world-wide competition for students, faculty, staff, and funding' (Mohrman, Ma & Baker, 2007). EGM universities are also said to brook faculty that become members of 'team-orientated, cross-disciplinary, and international partnerships, with research directed more often than before toward real-world problems' (Mohrman, Ma & Baker, 2007:147).

5.5 Community engagement and development for quality enhancement

Respondents in this study have hinted at the importance of three realities pertinent to engagement that enhance social cohesion, the three C's, namely community, context, and cooperation. The importance of belonging was implied in a number of responses given. On establishing working relationships between the university and its hosting neighbourhood, Heyneman, Kraince, Lesko and Bastedo (2007:71) say the following:

> Building social cohesion requires a commitment to forging linkages with the wider community. A university that is engaged in the community demonstrates to the public that everyone can benefit from higher education and that the university cares about the health of its surrounding community. Ultimately, this helps facilitate integration and goodwill between "town and gown".

Communities are the bedrock of engagement in social development and they hold sway in the ultimate determination of destinies for their members. The communities have a cultural, social, economic and historical background that defines the context in which operations of an institution such as a university are immersed.

A developing university in a developing country seeking world-class status is engulfed in the milieu of communities, organisations and other universities in various stages of development both locally and abroad. These exert push and pull forces that keep the university in a buoyant position (See Figure. 5.1), sometimes maintaining a momentary state of dynamic equilibrium when the aims of the dominant stakeholders are satisfied.

Underdeveloped or impoverished communities and organisations in the neighbourhood of a university aspiring for world-class status tend to exert *pull-down* forces exemplified by instances of disputes, theft, vandalism, and a cultural gap. But the university can turn these forces around into *pull-up* forces if it engages the communities and works to improve them through active participation, resources sharing and knowledge-seeding. Conversely, vibrant, knowledge-seeking and self-motivated communities may present *push-up* forces to a university that enthusiastically takes up their challenges through research and innovation. And still, the university may unwittingly inflict *push-down* forces on its neighbouring communities by marginalising locals, denying them employment, contracts and tenders, and imposing undue restrictions on local student recruitments.
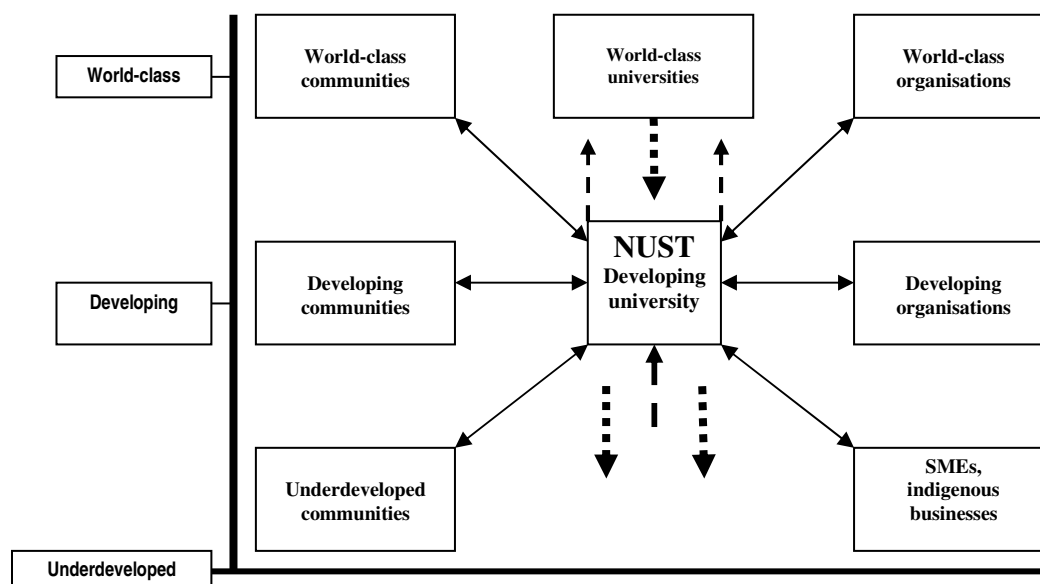

Figure 5.1 NUST and world-class status: push and pull forces at work

The scenario described above can occur to a lesser or greater extent between the university and its world-class associates above it. When a university uplifts its neighbouring communities, it increases its own chances of ascendency, because in so doing it will not fail to be noticed by its peers and other significant opinion holders. Community engagement is a manifestation of social cohesion which is facilitated in a university by a proactive leadership that, according to Heyneman et al. (2007:64), explains and defends the role of higher education, and promotes public debate on sensitive issues and engagement with international scholarly communities. Such a

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leadership works with faculty to develop curricula that reflect social problems, employs empirical research on social issues, attracts students and faculty who are broadly representative of the wider population, establishes linkages with the wider community, fosters academic freedom, institutional autonomy, publicly available standards of student and faculty conduct, a transparent process of adjudication for misconduct, and attract multiple sources of finance aside from government and fixed donors.

The characteristics of lecturers within an institution are said to be important in decision-making processes and in influencing change in the communities. Vessuri (2008:119) notes that scientists generally have difficulty communicating across plural perspectives, conditioned as they are by a specialised and rather dogmatic scientific orientation. However, artists and humanities specialists tend to trivialise technical depth and complexity in preference to opinions and relationships. In this light a project carried out in a community may be viewed in terms of its social impact rather than its technical feasibility. Vessuri notes further that in weaker countries with inadequate capacities and basic infrastructure, higher education, science and technology have not significantly reduced social and economic disparities but rather increased social and economic differentials between the knowledgeable and the ignorant within communities.

The success of achieving all of the above rests on the approachability and marketability of the university. Throughout its history the university has been seen to have woven a closely-knit network of relationships with other institutions and groups in society, creating the so-called 'university-surroundings relationship', but it has also been noted that the university 'has interests and objectives that are not common with organisations such as the government, industry, NGOs, communities and, in general, the sector outside the institution' (Parra-Sandoval, Carmona and Gonzalez, 2010:62).

5.6 Transformation

Indications of personal and behavioural transformation were brought up by respondents in this study. Coming back from attachment, students were seen by their lecturers as having improved in a number of observable and desirable ways, including their command of language. 'They come back very fluent in English, thinking in English. They come back … much more [global-minded] … it's very fair to say they are all terribly motivated as a result of that industrial attachment' (#NL12). And since language

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is an aspect of culture, there is an implication of transformation on the broader aspect of culture of participants deriving from the participation.

5.6.1 Cultural transformation

Mills and Gale (2010:75) allude to the phenomenon of the 'cultural capital' as the behaviours, competencies, values, knowledges and attitudes of students that get shaped and then transmitted through generations, and whose accumulation requires an investment of resources, mainly time. One of the respondents argued that,

> They [students] are raised in your own African tradition. They are not expected to come up with ideas. They are not expected to talk to [old] adults. They are not expected to invent things ... But after they've been with us … they come back … they are thinking of solutions now, ideas and solutions in [ways] that they never were before (#NL12).

5.6.2 Social transformation

Closely linked to cultural transformation is social transformation that addresses relationships, livelihoods, power perceptions and practices, incorporating leadership development in social spaces and workplaces. Some of these are shaped by the technological advances that have replaced much of the traditional forms of work with machines and automation. The rapid transition from pre-industrial to industrial society requires the active development of people to take part in the new form of life for survival, principally dominated by paid work. In the Southern African context, people development is thought of around the positioning of 'ubuntu', a cherished version of humanism, and a philosophy of teamwork and collaboration that has the power to reshape our workplaces, our relationships and our personal lives (Lundin & Nelson, 2010).

5.6.3 Industrial transformation

Can we speak of an industrial transformation? Would this be a modern version of the industrial revolution? Countries such as Zimbabwe are unlikely to experience an industrial revolution of the same magnitude and significance as the historical European experience of the eighteenth century. However, an industrial transformation may be the vehicle to lift Zimbabwe up from the predicament of being an industrially or economically marginalised country. Students and lecturers stand to become the agents of that transformation rather than the reproduction of retrogressive whole or part cultures of yesteryear.

Industry-based learning assists African students (and their lecturers) with the ability to merge two sub-cultures, both relatively alien to their mainstream culture, and very little-known by the generations before them. These are the university sub-culture (the preparatory culture), and the industry sub-culture (the destination culture). Through these they hope to steer their country via small revolutions of knowledge leading to progressive awareness of industry in the world of technology, mechanisation, mass production and consumerism, all in a bid to survive and compete with well-endowed counterparts. And if the industry-based learning model selected by universities in Zimbabwe is a national vision (stated or implied), or indeed one of the small revolutions for combating the unavailability and inadequacies of equipment, laboratories, workshops and other resources on campuses, as observed by some respondents, it remains to be seen if this type of learning will yield results enviable to other counterparts in Africa and the rest of the developing world in the near or remote future. However, it is interesting that Parra-Sandoval et al. (2010:33) report the following:

> Our theoretical and methodological journey led us to the conviction that the search for one universal model for Latin America (and the South of the planet) was a useless effort, because the complexity and celerity with which the higher education systems in these regions configure and reconfigure, following concepts and orientations that may even be contradictory, impede realising the dream of an ideal model worthy of being reproduced.

Be that as it may, the industry-based learning pedagogy in itself is set to educate emerging third world societies to move slowly towards industrial awareness. This is captured in the respondents' comments,

> … [Students] actually help our society to be more enlightened about what is happening within our industry, because these are the ambassadors who will go back home and say, 'Such and such an industry is operating like this', and the nation knows which industry to support, which industry has got problems, without really having to know about the shares, how they operate at the exchange, in the stock exchange' (#NL09).

A final quip on transformation is from Reg Revans who is quoted saying, 'Those unable to change themselves cannot change what goes on around them' (Teare & Prestongrange, 2004:39). It might be prudent for Zimbabwean university graduates to explore their own change capabilities and agendas. Issues of mass unemployment and misemployment, human resource wastage, brain drain and unequal wealth distribution have the potential of being addressed through the deliberate experimentation with small and medium scale enterprises (SMEs) as suggested often in the literature and in public debates. With proper planning, management of available resources, education and professional development can produce change in individuals and in what goes on

around them. The best laid plans are those aligned to well-formulated goals and purposes for action, a point we now turn to in the next section.

5.7 Goal-directed Action and Critical Thinking

The relationship between the university and its surrounding communities, discussed above, and the pressure exercised by market conditions derived from the globalisation process, challenge the university to delineate its space carefully and determine its road map in a jungle. The demand for the university to integrate itself actively in the sustainable development process in underdeveloped countries generates a set of internal and external factors that subject the institution to tensions characteristic of the epochal change experienced by humanity (Parra-Sandoval et al., 2010:15). To enjoy long periods of relevance and acceptability, an institution has to have a mechanism of goal-direction sustained by critical thinking.

5.7.1 Setting and nurturing goals

One of the goals the university and its internal players have to determine is the type of institution it wants to be known as among the many versions that have existed and others that have emerged through the ages. There have been calls for research universities, entrepreneurial universities, innovation universities, developmental universities, socialist universities, including emerging global model universities (Mohrman, Ma & Baker, 2007). The underlying factor among all types is whether they prioritise knowledge production, knowledge reproduction or recycling.

The noble dream of establishing the first national university of science and technology in the country which, in its teaching would 'combine sound theoretical training with a strong applied orientation' (Williams, 1989) has had a ripple effect on the national thinking and conscience regarding the general direction of university education in the country. Following up on this initiative, the Science and Technology Policy has been proclaimed, with its objective to 'promote national scientific and technological self-reliance' (Republic of Zimbabwe, 2004). Further evidence of goal-directed action in the university sector has been seen in the resuscitation of the National Manpower Advisory Council (NAMACO), composed of industry, commerce and the public sector, and which advises government on the country's training needs and relevant training

programmes, to ensure that curricula in institutions are 'aligned to the needs of industry' (Zimbabwe, 2008).

One of the respondents noted that NUST had chosen a path of incorporating industrial attachment which; after a few years of its implementation, '… it seems obvious that it's more popular, at least in case of Zimbabwe's needs, where other universities … have begun to implement [it] as part of their degree programmes' (#NM03). The popularity of the industry-based learning programme, presumably derived from observed and proven successes, gives hope that the goals set in the beginning have achieved practical credence.

5.7.2 Critical theory and critical thinking

A comparison is given that, like the fish that has trouble understanding the very sea surrounding it, we have trouble identifying the influence of our culture on our own behaviours and ideas because we are so immersed in it and are part of it, "… until an experience with a different culture shows us that things might be other than the way we've always known them to be (Hinchey, 2010:13). Being critical is central to paradigm change, and an organisation that creates an environment for frank critical inputs is the better. Critical theory offers us an alternative perspective to use in analysing our own experiences, as the fish would get an entirely new perspective of the sea if it were able to consider it from the beach. The usefulness of critical theory in our practice is that 'it helps open our minds to possibilities we once found unimaginable' (Hinchey, 2010:13).

One respondent engaged in critical thinking when analysing the role and treatment of industrial attachment students compared to apprentices in industry. He complained that the government and industry do not consider university students on attachment to be of more benefit or to be equally important as the apprentices. He adds,

> In most companies the apprentices have better privileges, remuneration and are treated as people who have been permanently employed. Isn't there something that can be done so that the government and industry can see the value in the [university] student even before completion of their degrees? (#0281).

Using the usual paradigm that university students must be treated in the same manner or better, this student did not appreciate the different foci of two separately conceived programmes. However, he raised a question that is critical of the top policy that

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determines vocational education and experiential learning. In essence the student could be asking whether the two methods of developing qualified personnel are significantly different since their graduates pass through the same place and experience. In the end one ponders whether the comparison will not continue into the rest of the working life of the graduates.

5.7.3 Acting decisively

Competitiveness is a virtue for any organisation seeking visibility and world-class status. Goal-directed action works for the good if it is accompanied by decisive action in guarding jealously programmes of innovation such as industry-based learning, which respondents are happy to describe as 'a brilliant invention, [which] gives students practice in the real world, [where] they contribute to the company by being honest, sober, smart, hard-working and motivated' (#NL12). Guarding a valued innovation requires committing resources and mobilising partners towards a common cause. Competitive and competing universities taking up industry-based learning within the country afford opportunities for sharing of experiences and knowledge development. Banking on past successes may be retrogressive. Observations such as, '… insofar as Zimbabwe is concerned in particular, NUST is quite ahead … It is a leader in that area [of industrial attachment]' (#NM01) are very encouraging but they need to be supported by appropriate action.

The overwhelming approval accorded to the industrial attachment programme by the respondent means that it must be given the chance to continue and take its place among initiatives to develop human resources to the full. However, many cautions and reservations have been expressed that need to be addressed. Areas that the respondents repeatedly cautioned about as needing decisive action include proper orientation of students prior to going out, effectiveness and authenticity of supervision and assessment, frequency, duration and timing of visits, relevance of experience to degree programme, development of research, et cetera. Specific concerns have been raised about what appears to be very simple aspects that could be solved at department level such as, 'I feel the assessment forms are now outdated. They need to be reviewed in relation to new technology and environmental changes' (Lecturer #1021).

The support of partners is suggested by the student respondent who said, 'Industry should also support NUST by donating [laboratory and workshop] equipment so that the university does not only provide theoretical education but also practical education (#0314). Another student did not have the knowledge about how the university interacted with industry, pointing out that,

> NUST should be well represented in all [national] forums like the Tripartite Negotiating Forum (TNF) and also there should be an Industrial Liaison office for IA, unlike the present situation where students look for work themselves' (#0281).

The effort to make students fully knowledgeable about their industrial experience may just be a matter of one or two relevant authorities making a critical decision. Decisions made today shape the future, and good practices sustained provide a legacy for future generations.

5.8 Building a Legacy: The Future Beckons

Universities in developing countries debate the need for expanding their scientific, technological and innovative potential and the urgency of taking care of conditions that prolong inequality and poverty (Parra-Sandoval, 2010). This perhaps serves as their moral purpose. For a university of science and technology, the challenge is great of annually producing highly acclaimed graduates who fail to make an impact to change the industrial capacity and outlook of their country, but can easily walk to any other country and get employed. Walking the paces of industrial attachment promises to leave a feeling of concern for, and an attachment to, the deprived communities in at least some of the graduates, who will want to learn more about local problems and feel they have a responsibility to leave a mark on the landscape for the benefit of those still to come.

5.8.1 Learning for life

The importance of learning and its contribution to knowledge development has been discussed in section 5.3 above. An additional aspect of concern here relates to learning for change and learning in order to leave a legacy of the importance of learning to others. It also speaks about learning from change and changing from learning. 'The only way to cope with a changing world is to keep learning' (Dixon, 1998 in Teare & Prestoungrange, 2004:40). Industry and commerce are still a new culture or sub-culture to the majority of African learners, and moving successfully to embrace that culture

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demands a change of paradigm right from childhood through formal schooling into adulthood. The role of the lecturer is to practise what Newell (2010) calls culturally responsive teaching which uses cultural knowledge, prior experiences and performance styles of students to make learning more appropriate and effective to them.

5.8.2 Passing the baton

An interesting and encouraging revelation by one Faculty of Commerce lecturer was that,

> Most of [our graduates] are trying by all means to set up some technical colleges in the rural areas, to be able to train the less privileged so that they can at least go up in the same field one day' (#NL09).

The truth and authenticity of this claim would need some verifying through accepted protocols, but it is a thought that describes the idea of academic philanthropy.

5.9 Conclusion

This chapter has brought together into one perspective many wide-ranging and all-encompassing issues pertaining to the objectives, the research questions, the methodology and the presented findings of the study. A few aspects in the findings that had not been given due analysis and interpretation in the previous chapter have been raised here. A predominantly qualitative study has the potential to produce in-depth questions and ideas that qualify the significance of results and findings. This chapter has been an attempt to synthesise the views of various participants with the author's reflections and interpretations. The blending and/or discordant voices of the author on one hand, and of the respondents on the other, with the hidden backing of the literature, add to the excitement of the discourse on the topic under discussion.

On the spotlight in this whole study is the perception of quality practice and outcomes by those directly engaged in the use of industry-based learning as a pedagogic approach, that is students, lecturers and university management staff, the so-called insiders. To assist them has been the inclusion of the perceptions of strategic partners, industry supervisors, the so-called inside-outsiders, and competitors and collaborators from other universities, the outsiders in this case. The synergised perceptions of quality thus mobilised are anticipated to be invincible to the lay sceptic as a first step towards aspiring for expert and world-class articulation of quality.

One difficult preoccupation is to think and act holistically. Stages and activities in life are easily described in piecemeal manner, and judgements derived from such descriptions often fail to produce sustainable outcomes. The discussion on holistic human development reminds practitioners of creating historical and contextual links between plans, actions and evaluations of these in order to realise big goals. The admission that participants are individuals with personalised, temporary and limited contributions to big phenomena is a step towards holistic wisdom. Part of the pursuit of holistic wisdom is the admission that quality can hardly be divorced from relevance. Industry-based learning gets perceived as a qualitative undertaking by those who can vouch for its short, medium and long term relevance. Enthusiastic industry-based learning promoters and practitioners have a duty to be truly accountable and transparent particularly towards their local communities and their country.

Discussing learning and knowledge development in this chapter is relevant to maximise intellectual capital development as a priority in modern institutions of higher learning. Knowledge built from the mix between classroom learning and work is considered more superior to other knowledge, and we should strive to have work and learning co-exist. This would be our contribution to defining the best-fitting interpretation of the theory-practice divide which would address our peculiar social concerns and answer our specific personal questions. No doubt the practice of academic research and the adoption of action research stand to enhance outcomes as experienced in leading countries and institutions that employ these. Community engagement is an energy consuming process in which the university experiences push and pull forces that put to the test its determination to stay in the race for world-class status.

The desired outcome of quality undertakings in developmental setups is transformation, whose direction in the context of industry-based learning intervention discussed in this study could be cultural, social or industrial. The primacy of critical thinking and goal-directed action ensures the building of a lasting legacy of societal improvement, the undisputed quest for humanity. In the next and final chapter the key stages of the overall research study are summarised, conclusions are drawn and recommendations for future action are made in the light of new and prior knowledge.