CHAPTER 2: LITERATURE REVIEW

Introduction

This chapter seeks to examine what researchers have explored and reported on in the subject of curriculum change in vocational colleges. The review begins by defining technology, and describing the links between technology and society, organizational culture, and the impact that they should have on FET colleges' curricula. It further assesses discrepancies between education and labour needs. The literature is classified in five parts:

1. *Technological and social change*
2. *Technology and Organisational Culture*
3. *Gaps between education and labour*
4. *The technological curriculum and change*

(i) *The socially - centred curriculum and*

(ii) Societal needs

5. The essence of work

Technological and social change

Technology is not divorced from societal influences; in fact society often demands the development of innovations. Society also determines whether innovations will be welcome or not. The relationship between the two is reciprocal:

> Many organisations are not getting the expected returns from the introduction of technology because factors such as organisation structure, existing procedures and systems, design of jobs, skills and attitudes of staff, commitment of staff, and organisational culture were not considered before and during the introduction of new technology.
>
> (Meyer and Botha, 2000:298)

Technology plays a vital role in health care systems, choices of food and the very functioning of our society at large. The New Zealand Ministry of Education (1995) defines technology as:

> A creative, purposeful activity aimed at meeting needs and opportunities through development of products, systems or environments. Knowledge, skills and resources are combined to help solve practical problems. Technological practice takes place within, and is influenced by, social contexts.
>
> (Ministry of Education, 1995:6)

Technology is "the tool that extends human capabilities, the system within which the tools are used, and an approach to the management of the environment"

(Linsensky et al. 1985). Custer (1990:53) sees it as "woven throughout the very fabric of our culture, as an agent for social, economic, and cultural change." Kerka (1994) views technology as a social process, and technology education as a vehicle for creating awareness of its social context and implications.

The above definitions of technology clearly show the direct connections between technology and society. FET Colleges as public institutions are also affected by changes in technology and society. As agents of change, they are expected to equip members of society for advances in the world of work. Whether FET Colleges are effectively preparing students for competence in the workplace is a concern.

Technological change in the workplace and communities is fuelled by South Africa's participation in the global market economy. According to the Government's National Development Skills Strategy (2001), this has placed enormous pressure on the country, since it has to meet new demands. The document states that the radical shifts in the workplace, especially technologically, exacerbate the dearth of skills. Workplaces are expected to meet both social and profit goals. Meyer and Botha (2000) say that techniques and technology are not only used to create new products, but also to cut costs. Furthermore organisations going global should simultaneously be global and local; act small when they are big and vice versa. "Innovation theory argues that the introduction of new technology is driven by commercial and technological imperatives" (McClough and

Clark, 1994). Innovation remains the driving force in the change that is occurring in workplaces:

> Innovation and the ability to reinvent products continuously, and add value to existing designs, are at the heart of the new system. Continuously evolving new car designs, innovative electronic consumer goods and new technological breakthroughs are some of globalisation's most representative symbols.
>
> (Kraak, 1999:34)

Rapid technological changes in societies in general are a feature of modernisation. Change is part of life (Ankiwiectz: undated). Technologies employed in the past are often no longer relevant. In industry, computerized technology has been introduced which replaces old manually operated machinery. According to Mcloughlin and Clark (1994), technological progress requires a simple response from the management, unions and workforce: to automate or to face liquidation. Firms are forced by commercial pressures to adopt technology in order to compete or survive. The lives of people on the other hand, may be greatly improved by technological advancement. "Technological innovation is associated with better life, extended life expectancy, the creation of new industries, new ways of doing business" (Meyer and Botha, 2000:295).

The New Zealand Ministry of Education (1995) contends that technological practices affect our environment, the standard of living and the quality of life. Technology can be viewed as an enemy or a friend, depending on the manner in which it functions in a society. Meyer and Botha (2000) view it as having advantages and detrimental factors. It is appropriate to mention these, without painting too gloomy a picture. One of the

disadvantages associated with new technology is 'jobs disappearing to machines'. Globalisation leads to retrenchments of low - to medium - skilled labour due to the rapid advances in new technologies. On the other hand, technology may improve the psychological well being of employees, as it liberates them from tedious, routine work.

Change, however, is seldom easy, and can be seen as an elusive concept, sometimes met with resistance. "Reasons for not changing is that change is resisted, firms retain existing organisational structures or work, thus leading to sub-optimum benefits from innovation" (Mclough and Clark, 1994). Reasons for resistance could be negative perceptions of technology. Workers may be threatened by the fear that technology could replace them, resulting in lay-offs and job losses. Kraak (1999) points to the process of automation and other technological innovations that have displaced many unskilled and semi-skilled workers, leaving scores of workers unemployed.

Acknowledging the fact that we are highly involved in interacting with technology, Sandra (1994) asserts that the role of education should be that of developing capacity for lifelong learning in all disciplines. Citizens should "acquire the knowledge and skills to be both intelligent consumers of technology and also doers of technology" (Puk, 1993:29). People should be well equipped with attitudes and skills of lifelong learning to cope with technological changes. "Technology is not only used, it is lived" (Hunter, 1992:26).

In the light of all these changes, Further Education and Training Colleges have a role to play. One of the issues raised in a study by Kraak on technical colleges in KwaZulu-Natal was the responsiveness of the colleges to the market demands and social needs at local and global levels:

> The FET policy framework is to make institutions such as technical colleges more responsive to their neighbouring environments, especially with regard to the needs of other education and training institutions, industry and the local community.
>
> (Kraak, 1999:203)

The literature points out that the role of FET Colleges should be that of preparing members of the society for the fast - changing environment, so as to enable society to embrace these changes. One way of doing this is through a curriculum that reflects current trends and responds directly to current needs.

Technology and Organisational Culture

FET Colleges should introduce technology in a way that contributes to organisational culture. Meyer and Botha (2000) define organisational culture as generally prevalent and accepted norms and values within the organisation. Robbins (1986) describes organisational culture as that which is used as a vehicle to preserve the identity and maintain control in the organisation. The curriculum should strive to address this notion of organizational culture, so that individuals have a common understanding of technologies within a particular workplace setting.

On the other hand, a challenge that exists for the global manager, according to Parker (1998), is the kind of people to be hired. Global organisations have to make a shift from "we hire those who are like us", and embrace diversity, because they have to use all the resources available to them. According to Parker (1998), organisations should create culture that acknowledges, understands, respects and values difference.

Education is influenced by society, and can therefore be used to preserve and transmit cultures, including organizational cultures. Popkewitz (1983) says that those who have power within the society define its culture. In this way social awareness is created, which is appropriate for the roles, prestigious positions and occupational tasks that exist in society. He further argues that in this manner, patterns of communication and practice are established.

According to Letseka (undated), a system consists of various interdependent sub-systems. Any change in one system causes a change in another. Technology makes life easier, and has transformed the face of the world. According to Ankiwietcz (undated), technology keeps on changing because of man's continuous innovations and inventions: "Innovations often occur in clusters. Having seen one change, people not only imitate, but innovate, adding new features to, and finding new uses for, technological advances". Popkewitz (undated) contends that change in various sectors influences other arenas. These changes tend to tamper with the basic values and social visions that govern daily lives. The function of educational institutions in this case is to prepare the youth for the social, cultural and economic life of society.

Parker (1998) says that technology causes change in organisational cultures, in that innovations occur to improve on original implementations in such a way that implementation becomes more complicated and specialised. “The continuing shift in workplaces from labour to knowledge work in the advanced economies has generated a shift away from physical prowess and toward intellect” (Parker: 1998). Technology has led to enormous changes in the way work is organised and evaluated. Technological changes and their adoption are a recurring issue.

Giddens (1994) states that globalisation has been characterised by the availability of knowledge without respect of time and space, and that this availability of knowledge can lead to the de-traditionalisation of organisational cultures:

Organisational cultures are not stagnant, so technology and the associated curriculum should adapt accordingly. Sandra (1994) suggests that the technological curriculum should address cultural issues, which include respect for the technologies of other cultures, and focus on appropriate technology that is compatible with other values. He further says that ethics - and value - forming convictions, as well as lifestyle choices, should be taught, because of the social, cultural, and environmental impact of the intervention of technology.

Blenkin & Kelly (1992), declare that technological changes can raise moral problems and, in response, moral systems change. Changes that accompany advances in technology

are in fact, cultural changes. According to Blenkin et al. (1992), culture is defined as all aspects of the life of a society, including way of life and beliefs.

The New Zealand Ministry of Education (1995) claims that one of the benefits of technological education can be cultural. It further says that schools should make students aware of the diversity of valid ways in which different groups of people respond to technology and modernization, in order to teach appreciation of the changes that technology brings to people's lives. FET Colleges' role in this case is to establish links with industries, which will give colleges a broader understanding of organisational cultures that exist in workplaces.

Gaps between education and labour

FET Colleges are responsible for shaping the careers of learners and preparing them for the world of work. This ideal is elusive if the FET curriculum does not cater for current trends in the workplace.

Changes in the workplace, especially in employment criteria, have occurred because of globalisation and market competition. Malan (1999) states that it is unfortunate that industrial and technological development that has changed the nature of work has not been proportional to curriculum changes. The curriculum should be aligned to changes that occur in the workplace to improve employment opportunities of graduates.

One of the factors exacerbating the problem of joblessness may be the gap that exists between the curriculum and skills required in the workplace. The gaps are also the legacy of *apartheid* policies, which marginalized black people. According to a study carried out in 1994, in technical colleges in Kwa- Zulu Natal (now called FET colleges), black learners studied without sponsorship from industry. This was not the case before 1994, when the majority were white learners. White learners at technical colleges had sponsorship from industry to study in the technical or engineering fields. The Human Resource Development Strategy (HRDS) document of the government (2001) maintains that when the technical colleges were de-racialised in 1994, sponsoring companies also withdrew their funding. The placement of graduate technical college learners also decreased dramatically.

The gaps that exist between industry and the colleges surely discredit both parties. Globalisation has had a huge impact on work and management. The new skills sought in the workplace have forced workers to consider sharpening their current skills and seeking new ones. The notion of lifelong learning, which is congruent with globalization, exposes the inadequacies of the FET colleges. According to the Human Resource Development Strategy (2001), in the FET colleges "the adult participation rate was about 1.13% in 1998, and the technical colleges do not cater for lifelong learning". FET colleges do not equip learners with problem-solving abilities and 'learning power'. Kraak (1999) defines this as the ability to deepen and widen skills independently in the post - school years.

Colleges are not informed of the latest changes in the needs of the workplace, and industry is not receiving the correct supply of human resources needed. Kraak (1999) suggests that links between education and industry should be established to properly manage transitions from educational institution to the workplace. He says that the current labour market is dysfunctional. He cites three points:

- There is a total mismatch between college outputs and skills needs of the economy,
- Employers do not employ graduates from colleges and
- College certificates do not add value to learners' school qualification.

Some of the reasons for the inadequacies of colleges can be linked to the lack of interaction between educational institutions and the world of work, and also the transition and decline in apprenticeships in the labour market. Ankiwietcz, (undated) and Malan (1999) concur that there is a mismatch between positions in the workplace and the skills of people who apply for them. It seems that FET colleges fail to equip learners with relevant skills.

A disparity exists between the expectations of education and industry. The college curriculum is supposed to be responsive to the needs of the workplace, and keep abreast of change. If the situation is not changed, learners will pay a heavy price. They will continue to pay very high fees for qualifications that will be of little value in the end.

The technology curriculum and change

Changes in society necessitate changes in curriculum. Rapid technological advances should be reflected in the curriculum, thus making it relevant to life. According to the Institution of Professional Engineers in New Zealand (IPENZ) the technology curriculum should seek to

> Enable students to achieve technological literacy through the development of technological knowledge and understanding, technological capability, understanding and awareness of the relationship between technology and society
>
> (Ministry of Education, 1995:8)

The technology curriculum must respond to the needs of society as influenced by rapidly changing technology. Blenkin & Kelly (1992:22) state: " a democratic curriculum in Dewey's sense must be open to the continuous evolution of knowledge and values, it must alert pupils to that continuous evolution. It is therefore education's primary task to be true to life."

According to Cornbleth (1990), there are two views of the curriculum that contend for dominance. The first is a technocratic curriculum, which is viewed as a tangible product and totally divorced from environmental influences, and the second is the critical curriculum, which takes into account socio-economic and political factors.

The technocratic curriculum is essentially prescriptive. It prescribes the way teaching should take place, step by step, and what should be taught and how and when. The curriculum designers are not intimately involved in the workplace, and yet determine

what is relevant, and what knowledge should be acquired. Teachers are not seen as partners, but as tools for implementation. This type of curriculum does not respond to the needs of society, and emphatically does not yield critical thinkers. This type of approach tends to ignore the realities in the technological world, and has no grasp of the current state of affairs in workplaces. In his study, Gewer (2004) states that the nature of the curriculum at FET colleges is restrictive, and channels colleges to focus on output without developing cognitive skills associated with new workplace demands

The critical view, on the other hand, sees curriculum as an ongoing, social activity shaped by contextual influences, and not as a tangible product. The interactions are between teachers, learners and the environment. Values and culture remain central to the curriculum. The curriculum is seen as knowledge made available to learners, and it is constructed and reconstructed in situated practice. The critical view acknowledges the influence that technological changes have on the curriculum.

The critical view of the curriculum is the approach that I feel should be adopted by FET colleges. In the light of the changes taking place in society, all FET stakeholders should contribute to the construction of the curriculum. This could consist of representatives from industry, lecturers and curriculum developers. This type of approach to curriculum might see resuscitated interest among College graduates, and a good profile and reputation for FET Colleges.

(i) The socially centred curriculum

The society-centred curriculum serves the interests and needs of society (Longstreet & Shane, 1993). It is characterised by the direct relationship between the curriculum and social, political and economic development. Society-centred curricula acknowledge that education is an important vehicle to bring about desired changes in society. When a new social order is to be formed, schools are looked upon to bring about that change. One of the strengths of the society-centred curriculum is that it engages learners in critical analysis of contemporary issues in society. The educational institution can help to prepare the learner to become a social being, responsible citizen and a planner of social reality. Yannis, Liagouras and Protogerou (2003) shed light by proposing that in order to meet new requirements, most technical universities in advanced countries have to modify their curricula, and thus adapt to the new demands of the economy. The purpose of education is to bring about desired outcomes:

> Education that prepares for life is one that prepares definitely and adequately for specific activities. However numerous and diverse they may be for any social class, they can be discovered. This requires that one go out into the world of affairs and discovers the particulars of which these affairs consist. These will show the abilities, attitudes, habits, appreciations and forms of knowledge that men need. These will be the objectives of the curriculum.
>
> (Reid and Walker 1975:241)

Curriculum developers should, therefore, first attempt to find out the needs of their societies so that they can respond to the demands. The education system should work closely with communities and workplaces. The curriculum should seek to equip and empower the learner to become a contributing citizen in the economy of the country.

According to the FET Act of 1998 on quality assurance, one of the functions of the director- general is to promote quality assurance. The quality assurance in project management involves "the processes required to ensure that the project will satisfy the needs for which it was launched" (Oosthuizen, 1995:131). Quality management also refers to the strict adherence to the scope as laid by the client, and in the case of FET colleges, the client is the community.

(ii) Societal needs

Communities to be served by FET Colleges still encounter fierce challenges, as most communities are disadvantaged and poor, due to the effects of the *apartheid* system. The fourteenth indicator in the HRD Strategy of the government (2001) quotes Abedian, a Standard Bank economist, who states:

> Structural changes have implications for policy makers, business and organized labour. The process implies that higher skilled labour is required in "new" as well as "old" economy activities. The current disparity between what the economy needs and the skills that labour possesses means that the level of human capital is forming a ceiling to economic development. Because creating jobs for unskilled people has become harder, more training and education are required to lift the level of skills.
>
> (Department of Labour 2001:36)

High levels of unemployment exist in South Africa not only because there are few jobs, but also because many people are not employable, due to their lack of the skills needed by the work place. According to the National Skills Development Strategy, Department of Labour (2001) the government has endorsed a National Skills Development Plan to alleviate poverty and empower citizens with skills. The NSDP's main aim is to combat

inequalities persisting from the *apartheid* era, to meet the challenges of social development, and to cope better with the consequences of poverty. Skills empowerment is aimed at assisting people into jobs or sustainable livelihoods.

According to the Human Resource Development Strategy, Department of Labour (2001) the education system must develop citizens who will be enabled to engage in decisions affecting investment and work, and execute decisions in the workplace regarding productivity and organisation. It should also transform workers from a low skills base into highly skilled lifelong learners. The problem that the government has identified is that labour is characterised by education and training systems that are not positively responding to changing needs (Department of Labour, 2001).

Technology curricula can be used to work towards achieving societal needs. The Institution of Professional Engineers in New Zealand (1995) holds that learners can become creative and innovative in fabricating ideas which can be translated into novel outcomes. Skills, knowledge and competencies are gained which equip learners to contribute to social and economic development.

The essence of work

The FET colleges have a role to play in improving the lives of people, provided they restructure or re-design their curricula. When learners embark on learning endeavour, they do so with an envisaged future in mind, namely, independence, securing a well-

paying job, and being able to afford a desirable life-style. If college graduates are not equipped with relevant skills for the workplace, employers will not give them a chance to demonstrate their abilities. The FET College will be guilty of hampering the ambitions of its learners. The HRDS, Department of Labour (2001), states that limited capabilities of people are often a restricting factor in the attainment of socio-economic development. These FET college graduates will add to the list of the unemployed.

Conclusion

The literature reviewed above shows that there should be a link between education and the workplace. Without this link education results in frustration for those who acquire knowledge and skills, but are unable to meet the needs of the workplace. The core issue is that the curriculum should bridge the gap between skills training and the needs of industry and commerce. The literature reviewed here has demonstrated that technology permeates culture and society. It has also been highlighted that the technology curriculum should not be stagnant, but rather constructed and reconstructed as times change.