

RECONCEPTUALISATION OF COOPERATIVE EDUCATION AT THE TSHWANE UNIVERSITY OF TECHNOLOGY: A CASE STUDY

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ABSTRACT

In universities of technology there is much confusion regarding the concept cooperative education and related terminology. The aim of this article is to offer a conceptual alternative for cooperative education, based on findings from the literature, workshops conducted institutionally and nationally in universities of technology and supported by a PhD study conducted by the first author. The findings suggest an alternative approach towards the conceptual understanding of cooperative education and its associated components. In addition, the proposed conceptual framework provides a directive towards structural development and managing applicable learning types in a university of technology environment with regard to work-integrated learning and service learning.

Keywords: cooperative education, work-integrated learning, experiential learning.

1. INTRODUCTION

There is a need for a fresh perspective and redefinition of cooperative education as a curriculum model (Kerka, 1999; Wilson, Stull & Vinsonhaler, 1996). This is especially true for universities of technology and comprehensive universities in the higher education sector in South Africa. The term cooperative education has traditionally been used in the former technikon sector. There is a great deal of confusion among academic and support staff on the terminology used in universities of technology, such as in-service training, experiential learning, professional practice, apprenticeship, articles, candidature, co-op, field-based learning, internships or interns, project-based learning and school-to-work (Groenewald, 2004:19). Whatever term is used, the practice of cooperative education is about connecting "learning with work" (Kerka, 1999:1). It remains one of the most important teaching and learning strategies in higher education (Engelbrecht, 2003) which aims to enhance learning (Groenewald, 2003:1) by integrating learning with work experience.

Currently, in the new higher education sector (after the 1994 elections and the merging of several higher education institutions), the use and practice of cooperative education has mostly been confined to universities of technology and comprehensive universities. Since the publication of the Higher Education Qualifications Framework (HEQF) in South Africa in 2007, the shift towards work-integrated learning (WIL) has created even greater confusion among academics, who are uncertain as to which term should be used.

The inclusion of service learning, together with WIL, has complicated matters even further. This confusion, which has become evident even globally, is articulated by slogans such as “Cooperative education for the advancement of work-integrated learning”.

In South Africa the merging of the former technikons, Northern Gauteng, North West and Pretoria, resulted in the establishment of the Tshwane University of Technology. This necessitated reconsideration and reconceptualisation of the principles and practices of cooperative education and experiential learning as had been practised at the former three institutions. The practices of the former autonomous institutions (technikons) required some standardisation within the context of one merged institution in order to establish an adapted but cohesive philosophy on cooperative education. A cohesive philosophy would firmly serve as fundamental approach to support the associated practices. After numerous workshops for all relevant stakeholders, consensus was reached within the university on the basic principles, nature and best practice of cooperative education; consequently, standardised policies and procedures steering cooperative education within the merged university were established.

In one way or the other, universities of technology and comprehensive universities have had similar experiences as a result of the mergers. If the previously mentioned higher education institutions did not consider cooperative education as a priority, this very important practice might have become extinct. It is clear that the cooperative education community needs to educate the remaining academic community.

The aim of this article is to share experiences on the outcome of deliberations between academics at institutional level. This case study, which could serve as a directive for other universities of technology and comprehensive universities, was informed by a literature review, postgraduate research and a series of university-based workshops. Finally, a conceptual framework is proposed for the clarification of the concept of cooperative education and its related components and associated terminology.

2. THE LITERATURE

2.1 What is cooperative education?

Engelbrecht (2003:6) describes cooperative education as a structured educational strategy integrating classroom studies with learning through productive work experiences in a field related to a student's academic or career goals. It provides work experiences in integrating theory and practice. Cooperative education is a partnership between students, educational institutions and companies with specific responsibilities for each party. This definition provides the essence of what cooperative education is.

Although the term cooperative education may have originated in the USA, the concept or the idea of an integrated curriculum did not (Carlson, 1999). The policies and procedures for Ontario secondary schools (Ontario Ministry of Education, 2000), refer to cooperative education as a culmination of a series of experiential learning opportunities that include job shadowing, job twinning and work experience and are often an integral part of the curriculum. Such procedures on cooperative education also involves a partnership arrangement between education, industry, students, and business, community organisations, parents, employers and supervisors.

According to Baumgart, Kouzmin, Power and Martin (1994:107) the Canadian Association of Cooperative Education defines cooperative education as a process which formally integrates the student's academic study with work experience in cooperating employer organisations. Terminology on cooperative education shares some commonalities which include the following: it is a structured teaching and learning strategy; it provides progressive experiences in integration of theory with practice; there must be a partnership; and different components are identified in cooperative education. It must be emphasised that cooperative education should not be confused with cooperative learning, which is defined as "a small group of students working together to achieve a common goal" (Groenewald, 2004:4).

A variety of terminology related to and often confused with cooperative education is used both locally and internationally. Some of these terms are in-service training, experiential learning, work-integrated learning and service learning.

Engelbrecht (2003:14) defines in-service training as

... non-formal transfer of knowledge and the acquisition of skills with the objective of producing a more useful employee who may be utilized in a particular practice / profession for broader applications than his/her present knowledge/ experience of a particular occupation permits; also training (for a specific placement) within the organisation, systematically planned and provided by a trainer on the staff internally or by one acting on behalf of the organisation externally.

Garavan and Murphy (2001:282) define experiential learning as "learning that occurs when changes in judgement, feelings, knowledge or skills result, for a particular person from living through an event". Engelbrecht (2003:24) defines work-integrated learning (WIL) as "specific skills acquired through work and directly related to classroom teaching. It may be defined as a form of education that integrates periods of academic study with periods of work experience in positions relating to the learner's studies".

¹ For the purpose of this article experiential learning and work-integrated learning are used interchangeably.

Engel-Hills, Garraway, Jacobs, Volbrecht and Winberg (2009:4) identified four types of work-integrated learning: work-directed theoretical learning (WDTL), problem-based learning (PBL), project-based learning (PjBL) and workplace learning (WPL).

According to the Higher Education Qualifications Committee (South Africa, 2004:24), work-based learning refers to “a component of a learning programme that focuses on the application of theory in an authentic work based context”. Both Groenewald (2007:97) and Brennan and Little (1996) describe three strands of work-based learning: learning with work, learning and work and learning through work.

Service learning is applied learning which is directed at specific community needs and is integrated into the curriculum and learning programme. It could be credit-bearing and assessed and may take place in a work environment (CHE, 2006:24). A number of commonalities between the described terminology have been identified which include transfer of knowledge, behavioural change, monitoring, assessment, reflection of learning of students, integration of learning with work experience and being a credit-bearing component of the curriculum.

The commonalities identified in the terminology described above were used as a basis to reconceptualise the concept of cooperative education. A brief review of the theories of learning relating to cooperative education is provided in the following section.

2.2 Theories of learning

Van Gyn and Grove-White (2004:27) hold the view that cooperative education practitioners need to have theory to guide the practice in working with students to enhance learning. According to Eames and Cates (2004:37), the theories allow the explication of what a student should learn in the curriculum in the classroom and the workplace. They emphasise that a sound theoretical basis can assist the cooperative education practitioner in justifying the inclusion of work placement components in the learning programme.

2.2.1 The theories of learning

Piaget's cognitive development theory

Piaget (1952a, 1952b), who formulated a comprehensive theory about how thinking develops, believed that the human infant is born with both the need and the ability to adapt to the environment. Piaget describes how intelligence is shaped by experience and believes that intelligence arises as a product of the interaction between the person and his environment.

Eames and Cates (2004:40) mention three processes described by Piaget, namely (1) the development of logical thinking, consisting of assimilation, which refers to the integration of external elements into the student's internal structures; (2) accommodation, which refers to the student's adjustment in his or her internal structures and transformations in thinking and equilibrium; and (3) the set of processes that maintains cognitive organisation during the student's changes in thinking. In cooperative education, equilibrium is the area that is the most significantly affected. The simultaneous development of reasoning strategies for both education and work enables students to maintain the organisation of their cognitive structure more easily and explains why a cooperative education student makes the transition to work immediately upon graduation whereas the non-cooperative education student undergoes an adjustment period. The adjustment of the student's internal structure and subsequent change in thinking creates a state of disequilibrium, which explains the problems companies describe in students with no cooperative education experience. Therefore cooperative education students experience less disequilibrium compared to non-cooperative education students during their transition (Cates & Jones, 1999:19; Eames & Cates, 2004:40).

Gagne's conditions of learning

According to Gagne (1970:1), human skills, appreciations, reasoning, hopes, aspirations, attitudes, and values are dependent for their development on events known as learning. The events that students will experience will determine what they will learn and what kind of people they will become. Through the cooperative education experience students develop a sense of what information will be most useful to them for their future and career path and devote more attention to that information. Cooperative education students who are exposed to the realities of the field for which they are preparing may have a greater sense of purpose for classroom learning to guide the entire learning process (Eames & Cates, 2004:41).

Atkinson's model of achievement motivation

According to Atkinson (1974:29), when an individual undertakes an activity and succeeds, there is an increase in the expectancy of success on doing the same or similar tasks, and when the person fails, the expectancy of success of that or similar tasks decreases. The cognitive change produced by success or failure consequently also produces a change in the incentive values of future success or failure. The cooperative education process is a typical series of successes or failures that build upon one another. From the first résumé to the final job offer upon graduation, most students build upon previous successes or learn from previous failures (Eames & Cates, 2004:41).

The social learning theory of Albert Bandura

Bandura's social learning theory focuses on learning that occurs within a social context. According to Bandura (1977:16), experiential and physiological influences interact in subtle ways to determine behaviour, which is formed through the integration of many constituents' activities of differing origin. Eames and Cates (2004:42) also point out that "cooperative education students experience social learning as they observe the behaviours and consequences of those behaviours in their colleagues in the workplace". Students learn not only from their own successes and failures but also from other successes or failures (Eames & Cates, 2004:42; Cates & Jones, 1999:19).

Kolb's experiential learning model

Johnston, Angerilli and Gajdamaschko (2004:157) as well as Cates and Jones (1999:19) mention that Kolb's theory of learning is one of the most relevant theories of informing cooperative learning. The advocates of experiential learning relied heavily on the work of Kolb, which describes experiential learning as "a process whereby knowledge is created through the transformation of experience" (Maudsley & Strivens, 2000:538). Kolb (1984:38) defines learning as "a process whereby knowledge is created through the transformation of experience". This model is particularly useful in explaining how learning can be integrated between the classroom and the workplace (Eames & Cates, 2004:43). According to Johnston et al. (2004:159), within this model, learning is continuous during the learning experience and is directed by the student's needs and goals with periods of reflection and observation.

Groenewald (2007:94) contends that the study of the theory of learning would be incomplete without mention of the neurobiological approach, which relates to electrical and chemical events in the body, which in turn relate to the functioning of the brain and nervous system in terms of learning.

2.3 Why cooperative education?

According to Engelbrecht (2003:2), the cooperative education principle is well established. Cates and Jones (1999:23) point out that Charles Kettering, a former Vice-President of General Motors Corporation, postulated that "co-op education is the education of the future. It doesn't dwell on reporting the learning of the past."

A cooperative education programme is multifunctional in that it yields many and differing benefits for the various role players, namely students, educational institutions and industry.

Garavan and Murphy (2001:282) maintain that companies seek to recruit individuals who are capable of more than a simple response to change. They prefer adaptive, adaptable and transformative employees who will aid the organisation in the maintenance, development and transformation of the organisation, while anticipating change. Higher education institutions need to address this need and produce suitable graduates who have a realistic expectation of the workplace (Garavan & Murphy, 2001:282). The role of higher education institutions is to provide such graduates through the practice of cooperative education by preparing students for experiential learning and the workplace.

According to the World Association for Cooperative Education, cooperative education allows students to experience the connection between education and work and may result in increased interest in class work. Furthermore, it aids in the development of the students' cognitive skills, self-confidence and personal and work-related knowledge (Garavan & Murphy, 2001:282).

Cooperative education affords a pathway for dialogue between education and industry and gives companies the opportunity to inform the educational institutions of the skills and knowledge that future graduates ought to possess, thus providing industry with more suitable potential employees and aiding the educational institution to remain at the forefront of innovation and creativity (Garavan & Murphy, 2001:282). The methodology that was used in the research on which this article is based is described below.

3. METHODOLOGY

The research was informed by numerous workshops conducted with the purpose of reconceptualising and by the compilation of a policy, strategy and managerial structure for cooperative education. The research was conducted by the task team leader for cooperative education during the merger process, and was supported by the first author's doctoral study.

3.1 Literature survey

A literature survey was conducted that covered literature published both locally and internationally in order to identify the scope and range of the problem and to conceptualise and formulate a new framework for cooperative education for the Tshwane University of Technology. The literature survey as briefly alluded to in this article provided support in terms of the research conducted. The literature also informed management and implementation strategies that can be followed in cooperative education within this unique merged university context.

² More than 20 workshops were conducted.

3.2 Institutional workshops conducted

A newly established task team was appointed during the merger process (2003 to 2004) for the Tshwane University of Technology. It consisted of a task team leader and two members each from the Technikon Northern Gauteng, the Technikon North West and the Technikon Pretoria. The task team was tasked with developing and compiling a policy, a strategy and a managerial structure for approval and implementation in the university. This required the reconceptualisation of cooperative education in the university. A series of workshops were conducted under the leadership of the task team leader appointed by the DVC Academic. In the development of the policy all task team members needed to reach consensus on the standardisation of the concept of cooperative education and related terminology to be used institutionally. Similarly, consensus needed to be reached on the process followed, the procedures, as well as the functions, roles and responsibilities of the three main role players (employers, students and academic staff). It was also necessary to reach consensus on the position of cooperative education in the university.

A survey conducted on academic heads of department and employer supervisory staff in industry indicated overwhelming support for the practice of cooperative education in universities (Wessels, 2007). The main challenge in terms of re-conceptualisation and structural development was to reach consensus amongst academic and support staff in the university. The task team attempted to be as inclusive as possible to ensure buy-in from all staff members of the university. Workshops were conducted in each faculty to offer an opportunity for academic and support staff to present inputs and reach consensus on information proposed before submission to Senate for approval.

External facilitators were mainly used where possible to facilitate workshops to ensure the neutrality of decision making.

4. FINDINGS

4.1 Policy and strategy development on cooperative education

A policy on cooperative education was compiled after numerous workshops were conducted in the university. The draft policy compiled by the task team was then presented and circulated to academic staff in all faculties. The policy stated the position of the university on cooperative education and identified a number of components (see Figure 2) of cooperative education, which mainly included experiential learning and liaison (see Figure 1). Experiential learning, described as learning by doing, makes provision for different types of learning, which include work-integrated learning, service learning and the workplace component of learnerships. In liaison, on the other hand, it distinguishes between partnerships, advisory committees and guest lectures.

The policy made provision for defining the relevant terminology. The definitions were formulated and chosen to provide a directive to academics relating to cooperative education for standardisation purposes and included rules to adhere to.

In addition to the compilation of a policy on cooperative education which describes definitions, rules and guidelines, a strategy was designed to describe the functions, procedures, roles and responsibilities, service provision and reporting mechanisms by all relevant role players in the directorate and faculties. It included a management structure for the Tshwane University of Technology consisting of a centralised/decentralised model, which made provision for both institutional and faculty cooperative education (Figure 3).

The policy, strategy and management structure was presented at national level to cooperative education forums for critique, benchmarking and input purposes. The policy and strategy documents were then approved for implementation by the senate of the university. The policy framework for cooperative education for the Tshwane University of Technology is depicted graphically in Figure 1 below.

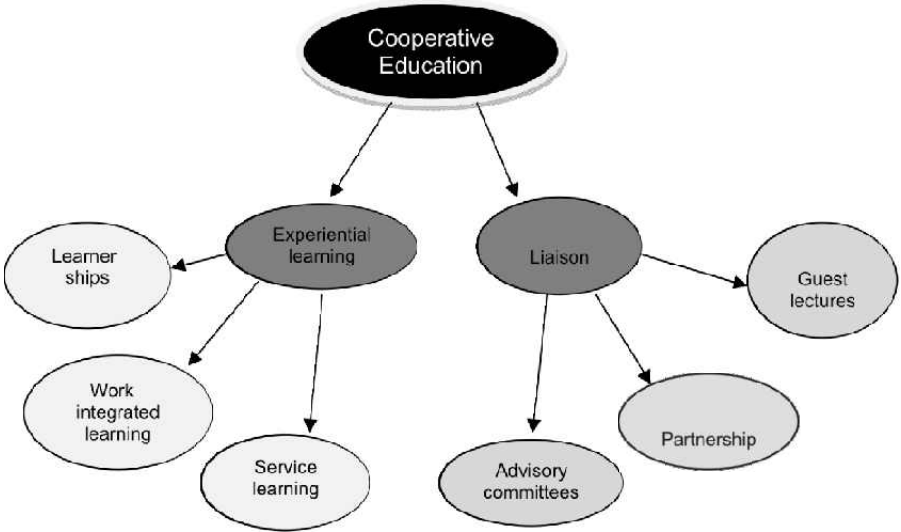


Figure 1: Policy framework for cooperative education for the Tshwane University of Technology

4.2 Formulation of an institutional conceptual framework for cooperative education

As Mouton and Marais (1990:143) indicate, during the compilation of a model an attempt is made to demonstrate the relationship between the main elements in the process. Fourie (2000:252) defines a conceptual model as a constructional representation in which complex problem statements and variables are placed in relation and cognitively aid in explaining theories and indicating the relationship between the variables concerned.

A conceptual framework (see Figure 2) was drafted for the university in a graphical and descriptive format to be consistent with the policy and strategy of the university on cooperative education (Wessels, 2007:318). The conceptual framework illustrates that cooperative education consists of mainly two components, namely (1) experiential learning, which consists of various learning types such as work-integrated learning, service learning and learnerships (workplace components) and (2) liaison, entailing guest lectures, partnerships and advisory committees. Experiential learning and liaison were thus identified as the two core components of cooperative education activities at the university (see Figure 1).

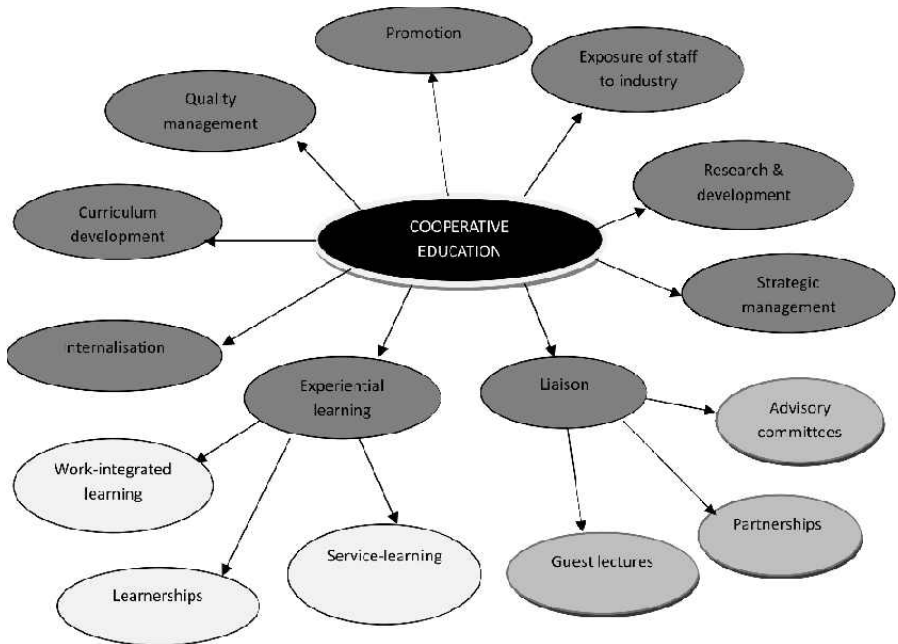


Figure 2: Conceptual framework for cooperative education

4.3 Management of cooperative education

From the policy and strategy, a management structure was proposed and approved by senior management and the Senate of the university. This management structure makes provision for institutional and faculty cooperative education (see Figure 3).

DIRECTORATE: COOPERATIVE EDUCATION

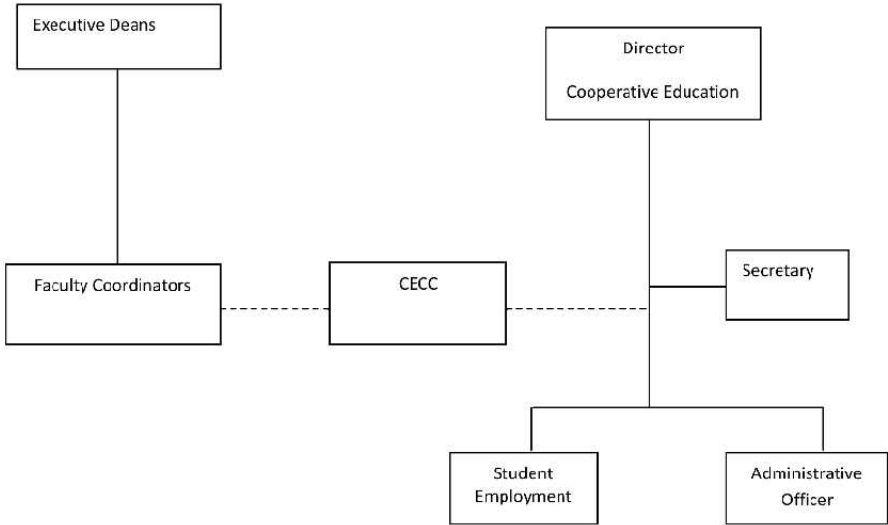


Figure 3: Management structure of the Directorate: Cooperative Education of the Tshwane University of Technology

4.4 Quality assurance of experiential learning: experiential learning management

Finally, a procedure was drafted in support of quality assurance for the management of experiential learning which included work-integrated learning and service learning for each learning programme in the university (see Figure 4).

⁴ CECC: Cooperative Education Central Committee.



Purpose: To manage and administer Experiential Learning (EL) within the University.

Scope: Includes the required process for the successful completion of Experiential learning .

Definitions: TUT means Tshwane University of Technology; EL means Experiential Learning; AC means Advisory Committee
Defined definitions could be found in the [Policy on Corporate Education](#)

Input	Flow Diagram	Output	Doc's	Who
<p>Start</p> <p>Students that successfully meet the admission requirements for EL Approved employer</p>		<p>Preparation of students for EL and the workplace. Class Attendance and pass mark</p> <p>EL placement</p> <p>HCD approve admission to do EL; EL Registration per cue dates</p> <p>Minimum one visit per semester plus telephonic e.o. contact</p> <p>Assessment, Issue of qualification</p> <p>Students who completed EL successfully Convene AC</p> <p>End</p>	<p>Student prep. manual</p> <p>Employment letter, Approval from Acad dept</p> <p>Proof of registration and payment for EL; Logbook; Policy</p> <p>Report; Logbook; Policy & guidelines</p> <p>Assessment; mark; Logbook with Policy & guidelines; Projects</p> <p>Written report; or feedback session.</p>	<p>Students; Coop Ed /Acad staff;</p> <p>Students; Coop Ed/Acad Staff;</p> <p>Students; Reg. Dept; Coop Ed/Acad Staff;</p> <p>Students; Coop Ed/Acad Staff;</p> <p>Students; Coop Ed/Acad Staff;</p> <p>Students; Coop Ed/Acad Staff;</p>
<p>Process owner: ML Wessels: Cooperative Education Checked by: Directorate of Quality Promotion</p>		<p>Date: 11 August 2005</p>		

Figure 4: Quality assurance cycle for the management of experiential learning/work-integrated learning

5. DISCUSSION

Some constraints identified during the development of cooperative education at the university included differences in paradigmatic perspectives between representatives from the former technikons and different management models used in the cooperative education environment. The lack of permanency and the high level of mobility of senior managers due to retrenchments at the university was one of the main hurdles the task team needed to overcome in order to achieve its objectives. These constraints hold a serious threat for the survival of many departments and staff at the university, including cooperative education. It must be emphasised that senior management provided full support for cooperative education at the university since it was recognised as a system which allows the student to be exposed to a period of learning in the labour market (TUT, 2008:4). The philosophy of cooperative education enables the university to provide career-focused education (TUT, 2005:36). The university successfully developed and implemented a policy, strategy and managerial structure on cooperative education. This policy and strategy provided the directive for cooperative education in terms of a conceptual framework at institutional as well as operational level. Contributions to the successful outcome of cooperative education included agreements on the position, concept and related terminology. The success of the outcome lies in the continued engagement of both internal and external role players on cooperative education.

The development of an institutional conceptual framework as a result of workshop deliberations and supported by postgraduate research resulted in the university positioning itself with regard to the concept of cooperative education and related terminology. The university's position on cooperative education was discussed and supported in relevant forums outside the university. These forums included various role players.

A centralised-decentralised management model for the management of cooperative education at institutional level was formulated. This entails an institutional office that should provide leadership in cooperative education in the university. A cooperative education central committee (CECC) as sub-committee of the academic committee (consisting of the Deputy Vice-Chancellor Academic, deans and academic support staff) convenes regularly to coordinate and communicate cooperative education activities at the university. Such a committee consists of faculty coordinator representatives from faculties and is chaired by the director of cooperative education. At operational level faculties have been allocated a full-time cooperative education coordinator responsible for the coordination and communication of cooperative education at faculty level. This includes meetings on a regular basis, chaired by the faculty coordinator, with representative lecturers (WIL coordinators) from each learning programme.

A quality assurance process for the management of experiential learning, which includes work-integrated learning and service learning, was compiled by the task team in collaboration with faculties as part of the strategy on cooperative education. This process would guide academic staff in terms of the preparation, placement, monitoring, assessment and debriefing of students in learning programmes. It must be noted that provision is made for the remedial action of students who did not achieve the outcomes as required for specific experiential/work-integrated learning.

6. CONCLUSION

The aim of the article was to present a reconceptualised approach to cooperative education at the Tshwane University of Technology. It was necessary to establish a new conceptual framework on cooperative education for the university and to standardise the usage and application of cooperative education and related terminology and practices.

The authors, together with the members of the task team, objectively analysed cooperative education theory and practices to accomplish the scientific formulation of a conceptual framework that would ensure consistent application. The authors presented a conceptual framework on cooperative education after policy and strategy development. The conceptual framework that was presented in graphical and descriptive format on cooperative education not only clarifies the concept but the roles and responsibilities related to the relevant role players. It must be emphasised that the authors and the task team were able to take a stand in terms of cooperative education in the university. This achievement was extended to a senate-approved policy and strategy, which incorporated a management structure for the university and a quality assurance model to ensure that all learning programmes comply with a specified minimum standard.

This article offers a new approach towards the conceptualisation of cooperative education in higher education. The authors' model suggests an alternative but inclusive approach to cooperative education and its components in the university environment. It can be concluded that the conceptual framework on cooperative education offers a way to manage learning types in the higher education sector, such as work-integrated learning and service learning.

It is recommended that the cooperative education community engage more readily with academics on this topic in a more formalised way to establish a position on cooperative education in universities. In addition, cooperative education practitioners should make an attempt to educate academic staff at universities on this topic. Senior management of universities should provide support to cooperative education practitioners to ensure that this practice does not become extinct because of current or future turbulence in higher education.

In conclusion: this article could provide a directive for universities that take cooperative education seriously as a philosophy to provide career-focused education. Institutions often fail to recognise that the key success factor of viable cooperative education programmes in a university is faculty ownership (Groenewald, 2004:2). The conceptual framework as implemented at the Tshwane University of Technology could act as a directive for higher education institutions in recognising cooperative education as an important teaching and learning strategy.

It is hoped that this article will trigger further discussion in higher education institutions and related forums on this topic to ensure that the “state of confusion” becomes minimised or even extinct.

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