

## Chapter

# Prospective Teachers' Role in the Construction of Authentic Pedagogical Content Knowledge

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## Abstract

The views and experiences presented in this chapter highlight the initiative of the teacher educator to adapt ideas that characterise twenty-first century teachers. An emerging trend in teacher education and training pioneers critical thinking and reflective classroom practice which are considered to be pillars for the development of competent teachers who are equipped with theoretical and applied competences. The foundations of conceptual ideas shared in this work are: 'engagement scholarship' and 'critical reflections', which propose the discourse in the education and training. Critical analysis of these two broad concepts provides a conceptual framework to articulate techniques and strategies to engage prospective teachers in collaborative learning activities. The observations of engagement and critical reflective collaborations of students were analysed. The findings of the action research contribute to the practical knowledge of engagement scholarship and development of critical reflective practitioners. This chapter upholds the perception that the shift from traditional practices and strategies entails analysis of the needs of teachers in a democratic, open and non-discriminatory society. The findings of the action research prove that prospective teachers have the potential to develop pedagogical content knowledge, which is relevant to real-life classroom experience.

**Keywords:** pedagogical content knowledge, authentic, prospective teachers, construction, engagement

## 1. Introduction

Researchers of the department of basic education point out that teachers who are trained at universities are frequently too theoretically oriented and are often unable to adjust to the curriculum innovations brought about by new government in 1994 and the iterations of CAPS since that date. This finding suggests that effective change towards learner-centred instruction cannot be brought about by governmental fiat or promulgation of policy or other directive from on high. For real change to take place, it requires the willing cooperation of enlightened practitioners who comprehend the need to move towards constructivist priorities embedded in OBE and its later manifestation in CAPS. The fact that university-trained teachers are demonstrably unable to adopt and adapt to the notions of a learner-centred classroom suggests that training, which is overly theoretical, prevents the application of new approaches and flexible adjustment to change. Research proves that there is no reliable correlation between highest professional or academic qualification and effective teaching and learning in classrooms. This paper is situated against

the broad political landscape of educational change: milestones of the path to liberal values and practice are discernible in the course of the argument.

The incapacity of teachers to implement curriculum changes has been scrutinised from various perspectives in South Africa and the United States of America. In South Africa, academics accused the state of adopting radical curriculum changes without adequately preparing teachers [1]. Researchers in America draw attention to the concept of 'back to basics' which emanated from difficulties that teachers encountered in implementing the progressive principles underpinning the post-1994 curriculum. Proponents of contemporary progressive philosophies uphold the belief that educational change is not an event but a process that requires collaborative effort from academic institutions, society, the state and students to find solutions pertaining to the demands and challenges facing local and international societies. This work pioneers the view that if change is to be a reality, student teachers in their initial education and training ought to be provided the space to make their own contributions. The students are the future work force and practitioners in classrooms; they should build intellectual muscles to partake in finding solutions to the problems of classroom practice. The principle of work-integrated learning should not be a ritual in teacher training but actual engagement with authentic experience of the work place.

Critical reflections on the practice or implementation of ideas in practice are essential in ensuring that the results or outcomes are achieved [2, 3]. Teachers in any country are considered to be important agents in educational change and the obligation for transforming the society through education rests with teachers [2]. Carl [4] argued that for teachers to be a valuable resource in society, it is necessary to allow them to play an active role in the construction of knowledge; rather than being recipients of ready structured knowledge. In the context of curriculum development, Carl [4] points out that teachers should demonstrate competence in selecting and sequencing content knowledge according to the socio-cultural and economic needs and cognitive capabilities of learners. Twenty-first century teachers, according to Fejes and Nicoll [2], should be proactive, lifelong learners, critical, creative and innovative thinkers, altruistic and reflective. These ideas beg the question 'how?' The 'how' question invites teacher educators internationally to seek mechanisms and techniques through which to envisage twenty-first century teachers' preparation. This study shares a perspective of South African teacher educator's experiences of the students in the initial teacher qualification programme contributions to the development of pedagogical content knowledge.

## **2. Background**

The conceptual framework established through the critical synthesis of literature enabled me to identify certain key observations and perceptions gathered from the study. The conceptual understanding of active participation, social interaction in learning and constructions of knowledge is framed within the philosophical views about teaching advocated by Foucault, Freirean and Deleuze and Guattarian school of thoughts highlighted by Fejes and Nicoll [2] and Semetsky and Masny [5]. Freirean idea of praxis in learning points out that knowledge construction should focus on daily-life experiences of the learners, and learning processes should develop problem-solving skills which enable learners to manipulate authentic life experiences. In the same narrative, Foucault scholars Fejes and Nicoll [2] express the view that construction of meaningful knowledge requires active involvement of learners which means that learners are not supposed to be recipients of already crafted ideas contained in textbooks. Heller and Kaufman [6] encourage learners to navigate knowledge through inquiry- and problem-based knowledge construction which enables students to develop competences of critical reflection, logical reasoning, creative and innovative thinking ([5], p. 2). The repertoire of ideas gathered

from these philosophical views and the critical pedagogy of the Freirean school of thought provided the study with a conceptual base to explore the possibilities of engaging pre-service teachers in activities which revealed students' perspectives of professional practices for the changing society.

The importance of these ideas to learning in teacher education and training enables students to work deductively, from their own concrete experiences and observation of classroom practice. The search for alternative practices is informed by the experiences from the authentic work place observations. The concrete experiences provided students in the study with the terms of references in their argumentative dialogues and discussions. The critical reflections and logical thinking were based on actual examples; they were able to substantiate their contestations for a theoretical base for an alternative pedagogical content knowledge. Four groups identified their own philosophical and theoretical foundations for their pedagogical content knowledge, which encompasses: (i) nature of the learner in a cosmopolitan and democratic society; (ii) knowledge construction; (iii) teaching methodology and (iv) classroom environment.

The first concept that I need to define is 'prospective teachers' which is used in the title of this chapter. Observation of the culture of teacher education and training in South Africa brought to my attention that some students find themselves in the teaching qualification programme not by choice or vocation but due to various other often pragmatic or pecuniary reasons. Informal inquiry from students about the high dropout rates of students after the school-based teaching practice, the responses to the question highlighted to me that students do share their concerns about the pressure they experience from parents regarding career choices. It became clear to me on the basis of the information gathered from students that most of the students who do not come back after the 2 weeks of school-based teaching practice fall under this category. The assumption was made that not all students enrolled in the teaching qualification programme could cope with the challenges and demands of the classroom environment and practices of the democratic and human rights dispensation. The concept of 'prospective teachers' in this study is used to identify students who demonstrated a passion and aspiration to become teachers; no matter what it takes.

The rationale for the study is to enquire into the value of opening a space for students to evaluate the knowledge taught to them in their qualification programme. The design of this study was motivated by the various questions that students asked regarding the relevance of theoretical and philosophical knowledge in the education course. Examples of questions are:

Where is the knowledge of these theories applicable; from classroom practice, we have not seen teachers applying this knowledge? Why then are we taught about theories and philosophies that have no relevance to our practice?

### **3. Context of the study**

The study was undertaken to address the concerns of prospective teachers regarding the content of the course I teach in the qualification questions programme. The philosophical foundations for curriculum changes in higher education in South Africa advocate student-centred learning which is underpinned by cross-field exit outcomes which indicate the competences to be demonstrated by students at various levels of learning progression in education and training gazetted by the South African Qualification Authority (SAQA) 2001 and Higher Education Qualification Framework (HEQF) [7]. Coupled with the exit-level outcomes, teacher education and training encapsulate in the learning programmes the development of professional expertise in prospective teachers to perform six roles stipulated in the Minimum Requirement for Teacher Qualification (MRTEQ) 2015. This study was part of an exploration of techniques and strategies; to shift

the perception of learners that lecturers are the ones who should lead the process of their learning and to prescribe content to be covered for test and examination.

#### **4. Theoretical framework**

It is critical to highlight the theoretical principles that were used to guide the process of designing the study, the methodology and analysis of the finding. The interrogation of Mezirow's theory of transformative learning provided an understanding that learning for adult learners differs from that of young learners Mezirow [8]. Transformative theory advocates that adult learners should play an active role in their learning and be responsible for their own learning. Proponents of this theory [9] commend transformative learning in promoting self-reflection, inquiry, problem-solving and empirical-analytic strategies or action research as main strategies for exploring new ideas and for re-framing different perspectives. Mezirow proposed that adult learners are expected to demonstrate meta-cognitive abilities, which are the highest levels in the hierarchy of cognitive development of an individual. In this view, meta-cognitive abilities are evident in adult learning when students are able to manipulate knowledge skilfully and competently to meet the challenges of real-life experiences posed by the new environment. Synchrony was established from the synthesis of the views offered by proponents of meta-cognition and transformative learning [10] which assert that adult learners should be provided a space to analyse critically and examine perspectives; so as to find out the causes and effects or rationale underlying knowledge learned [11, 12].

#### **5. Research design and data collection procedures**

This study was planned upon the premise of the qualitative research paradigm and methodology which implies that data collection procedures adopted for the empirical research focused on eliciting perceptions and views; based on the personal experiences of the students who participated in the groups discussions. The study targeted prospective teachers in the second year of the bachelor of education professional degree who participated in classroom observations and performed classroom practices under the supervision of the mentors in high schools in diverse socio-economic environment. It is compulsory for students in their initial teacher education and training to be placed in school for work-integrated learning and experiential learning. The criteria used in the selection process of the sample were: students should participate voluntarily, be willing to share experiences and to engage in all activities and should have experience of a private or public schooling in South Africa as learners and student teachers.

The design of the study adopted the following patterns. First, students formed four groups of five individuals each. The philosophies covered were: idealism, realism, existentialism and pragmatism and coupled with these philosophies were theories of learning, behaviourism, cognitivism, constructivism and social constructivism.

The model called dialogical argumentative instructional model (DAIM) was used in designing the activities for cooperative learning. The groups aligned their choice of philosophy with the theory of learning which in their view could assist them to understand the classroom practices of the democratic and human rights dispensation. Ethics were considered in the presentation of students' comments and examples of the verbatim expressions. It was this purpose that pseudonyms are used in this piece of work. The students organised themselves in the following groupings:

Group A: decided to focus on idealist philosophies and cognitive theory.

Group B: focused on realist philosophies and cognitive and cognitive constructivist theory.

Group C: focused on pragmatist philosophies and social constructivist theory.

Group D: existentialist and social constructivist theory.

Task: students were to review literature from online sources, for example, journal articles and books, to collect perspectives of scholars about the philosophies and theories of learning.

Evidence 1: students develop the factual and conceptual knowledge and presented notes in a power point computer programme. The presentation covered three key areas of pedagogical content knowledge indicated in the article by Killen ([13], p. 31) and these are (i) knowledge about the content, (ii) knowledge about learning and (iii) knowledge about teaching.

Evidence 2: students organised discussion where they critically reflect on their notes and present interpretations. These discussions took place during times convenient for students; they were recorded and the videos were submitted as proof of the discussion.

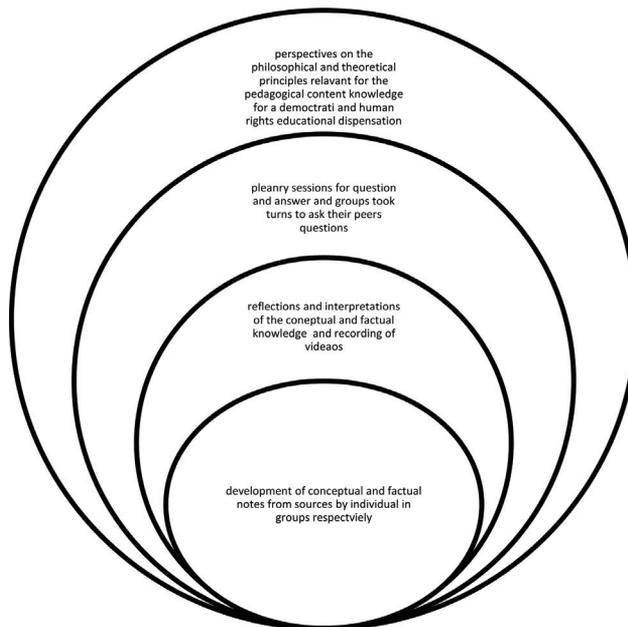
Evidence 3: Verbal presentations of arguments and debates were conducted in plenary sessions. Groups took turns presenting during the question and answer sessions.

## 6. Data analysis

The data gathered as perceptions and perspectives from students' written texts and verbal arguments in the phases illustrated in the diagram in **Figure 1** were analysed through qualitative means. The data were categorised and identified themes were highlighted and noted.

### 6.1 The contributions of groups A and B

**Table 1** presents the analysis of data gathered from group A under the key themes that address pedagogical content knowledge from idealist and behaviourist perspective.



**Figure 1.** The phases and the evidence produced by students in their cooperative engagement in the process of developing pedagogical content knowledge for prospective teachers' education and training.

Idealism/realism and behaviourism	
Conceptual knowledge	Interpretation and view
<p>Man is born with innate ideas Human mind develops through abstract thinking Ability to think deductively and inductively facilitate generation of ideas Truth is arrived at through reasoning and questioning Behaviourism theory was generated by conducting experiments in animals such as rats, pigeons and dogs</p>	<p><i>Knowledge about the learner:</i> Freedom of learners is possible through recognition of their abilities to think. Freedom and liberation of the learners is in the opportunities to explore the world through deductive methods in order to discover their cognitive, intellectual potential. Learners have a variety of ideas which could be actualized through logic and critical reasoning.</p>
<p>Question-and-answer method Deductive methods and inductive Teacher in still moral and ethical virtues in learner</p>	<p><i>Knowledge about teaching:</i> Teaching is about programming what to be learned. Our observations of teaching in classroom taught us the teacher is in charge. Teachers decide on the content and teaching methods. Teachers are the authority of knowledge and they spend more teaching time maintaining order and discipline. Teachers are undemocratic and not considerate of the leaders freedom to explore and to generate their own ideas from the programmed content</p>
<p>Factual knowledge is based on abstract thinking and speculation Knowledge is absolute truth and universal. Moral and values are the basic foundation of truth Realism considered knowledge as real and concrete evidence based on the laws of nature.</p>	<p><i>Knowledge about teaching</i> Freedom and democracy promote contestation and debates. Promotion of the idea that knowledge of infallible has no space in democratic society. <i>Knowledge about environment</i> Knowledge and environment are inseparable. Realist is of the view that learning is about get to know and understand environment through senses. Subject knowledge should be what learners generate from what they see, touch, experience from their surroundings and come up with ideas based on real and tangible evidence from reality.</p>

**Table 1.**  
*The analysis of data reflecting students' thought that was aligned discussion with absolutists' philosophies and pedagogical theories.*

### 6.1.1 Finding and interpretations from written texts

The effort demonstrated by students in searching ideas and competence in creating arguments based on strong conceptual understanding of the idealism philosophy and behaviourism theory was phenomenal. The relevance of the analytical comparison between idealist and behaviourism in the context of classroom practices in the democratic and human rights dispensation was noted. The findings developed the perceptions that students need a space to apply critical thinking skills and critical reflection about the learning they construct. The text presented by students was evidence of independent thinking and abilities to conduct critical reflections on the observations of classroom practices during their school-based work-integrated learning. Interpretation of conceptual knowledge in the context of socio-economic and political changes was an indication of the ability of students to manipulate knowledge in relation to the reality in real-life experiences. The intended outcomes of the learning process were achieved and the evidence was the students' ability to work out the rationale for having certain philosophical foundations and theoretical knowledge being part of the content for educating and training of prospective teachers. Students made their own recommendations about how views of the idealist could be crafted into the pedagogical content knowledge in the process of preparing teachers for democratic and human rights educational dispensation.

## 6.2 Contribution of groups C and D

Analysis of data identified congruence between the views and perceptions based on the conceptual knowledge they gathered from sources regarding philosophies and learning theories (Table 2).

Pragmatism/existentialism perspectives Congruence in the perspectives and interpretations	
Conceptual knowledge	Interpretations and views
<p>The ideas of pragmatist promote values of democracy in education. Education is an active and constructive phenomenon. Education is productive and progressive and not reproductive (John Dewey) Constructivism and cognitive learning theory promotes active participation, engagement of learners in construction knowledge through problem-solving, inquiry and discussions. Cognitive theory emphasises acquisition of skills for cognitive development according to Blooms Taxonomy (low-order and high-order cognitive skills) Jean Piaget and Jerome Bruner Similarly, the existentialist ideas advocate freedom to choose, development of subjective knowledge, recognition of interest, beliefs and experiences</p>	<p><i>Knowledge about the learner:</i>                      Students perspective of the learner from the philosophy and learning theory was:                      Learners are unique and independent individual in terms of interest and abilities.                      Learners are by nature active and desire freedom to pursue their own interests. They are eager to participate in activities that make meaning to them about their surrounding</p> <p><i>Knowledge about teaching</i>                      Approaches to teaching ought to be democratic in order to give learners opportunities to debate and critique the book knowledge or even the teachers' interpretations.                      Constructivist teacher and pragmatic inclined teaching methods promote cooperative and collaborative teaching. Our views about classroom teaching are influenced by pragmatics philosophy. We believe in an atmosphere that promotes freedom to ask questions and challenge opinions</p> <p><i>Knowledge about content knowledge</i>                      Paulo Frere was correct to advocate construction of knowledge that resonates with learners' experiences.                      Freedom to choice context for learning could enable learners in high school to discuss real-life world issue instead of structured topic decided upon by someone else.</p> <p><i>Knowledge about environment</i>                      Knowledge construction cannot be delinked from the environment and everyday life experiences of the learners in their communities. Problem-solving and inquiry-based learning should enable learners to unleash ideas which our peers of idealism referred to.</p>

**Table 2.**  
 The analysis of data that indicate congruence in the views and perception regarding philosophies and theories of learning.

## 6.3 Divergence views and perspectives gathered from students' verbal presentation during plenary sessions

Group B and A members' comments supporting principles of realism and cognitive theory in conceptualisation of pedagogical content knowledge for initial teacher training in the democratic and human rights dispensation are captured as in the paragraph below:

*Student Xabiso: Realist ideas are about teaching towards the essence of knowledge and its purpose in the real life world. Teachers who are imbued with the ideas or influenced by the realist idea will know that learning is about exploring reality in order to adjust environment or change the environment. Reality could be the diverse encounters that form barriers or problem, which require careful analysis and examination in order to create something to address those problems or challenges. Student V: The implication of the realist view and cognitive theory in the*

*mediating process is for teachers to first package subject content knowledge under various contexts in which learning should be focus. This approach will enable learners in the subject to relate the knowledge acquired and the processes used to arrive at understanding it with the real world beyond the classroom.*

*Student Paul: Principles underpinning acquisition of skills and conceptual knowledge from the cognitive view point indicate that learning is a stratified process, meaning that it develops in a continuum from low order and high order abilities that determine maturity which is emphasised by Cognitive theorist such as Jerome Bloom.*

*Students Morgan: In our view, the school curriculum should not be time and assessment driven, for the reasons that learning of knowledge and skill development takes time and it depends on the learners' levels of maturity. The development of knowledge and skill development, in our view is not possible if teaching and learning is confined by time schedules of thirty minutes.*

### 6.3.1 Comments and argument of students in groups C and D in defence of their views and perspective on pragmatism and cognitive constructivism and social constructivism

Prospective teachers who formed this category firmly believed that a transforming society which upholds the values of democracy and freedom should adopt views and ideas of the pragmatist philosophy. In their own convictions and reflections of pragmatism and social constructivism, they argued:

*Student Sebastian: The principles and values of the democratic society could be better promoted if teaching, learning, classroom environment and subject content knowledge could be directed by the views and ideas of the pragmatist principles. We have concluded that teachers in a democratic society should be open to criticism, debates and argument about learning content and accept contestations and diverse perspectives, from colleagues and learners. The classroom should be viewed by teachers, learners and school managers as an environment of freedom to explore new ideas, invent new knowledge and to verify or critique views in knowledge that promote hegemony, inequality, social injustices and exclusion and bias and prejudices.*

*Student Hluma: The education and training in this philosophy could mean identification of areas from the society that need to be critiqued and verified. Investigations and explorations are considered by the group as vehicles for acquisition of ideas, facts and views which constitute the conceptual, factual, theoretical and procedural knowledge about the disciplinary knowledge. Whereas the alignment of skills should enable learners to apply, test, experiment and verify factual knowledge in order to construct new knowledge. The testing and verification should be provided contexts based on learners real life experiences or physical world. These practices should be driven by learners' free will and interest.*

*Student Rumber: Active participation should not be a slogan to us during our training but if we are influenced by these views and ideas nothing can stop us from bringing change in the classroom practice to make democracy a reality for learners in classrooms.*

*Student Tozi: Prospective teachers' choice of philosophy and theory was influenced by their critical review of existentialist philosophy and social constructivism theory. Their reflections highlighted the following views about the pedagogical content knowledge required for preparing teachers for the transforming society.*

## **7. Interpretation of findings and discussions**

The arguments and comments of students in both the written texts and during the plenary session were summarised and the following issues were identified about engaging students in the development of pedagogical content knowledge for initial teacher education.

### **7.1 Implementation of competence-based teaching and learning in higher education**

#### *7.1.1 Integration of teaching, learning and assessment*

The study highlighted the prospect of success in integrating learning, teaching and assessment. The role played by the lecturer in the entire process of learning was minimal. Through cooperative work, students identified their own philosophies and learning theories. The formation of groups was driven by their perspectives and interests. The role of the lecturer was only to collect evidence of learning per stage in the process and provide qualitative feedback on the work produced by groups. The lecturer was more of the overseer and the mentor. The assessment part was to observe and to monitor the development of meta-cognitive skills and competences, for example, developing of conceptual knowledge through intense consulting sources, guard against plagiarism, development of skills of analysis and synthesis as students reflected on their school-based experiences and conceptual knowledge. The other skills and competences that were assessed were: communication and academic literacy skills, as students presented their arguments and contested their peers' ideas in plenary session. The assessment of the competences was based on the criteria proposed in MRTEQ: 2015 to measure vertical progression in the development of competences in higher education. These criteria complement the performance levels asserted in SAQA for curriculum development in higher education institutions. Identification of the outcomes for learning the development of the task and alignment of these with the assessed criteria is recommended in Biggs's constructive alignment theory. The study served the purpose of testing the practicability of implementing the principles of this theory as well.

#### *7.1.2 Theoretical and applied competences*

First, reflections of students on their experiences during school-based classroom observation and practices indicated that students were committed to inquire about the link between theoretical knowledge and practice. The undertaking of the study to engage students in the activities was inspired and also capitalised on their desire to know. The policy on the Minimum Requirement for Teacher Qualification (MRTEQ) in South Africa proposed the blending of theoretical and applied competences into the initial professional education and training of teachers in South Africa. The purpose of this integration or blending is to enable prospective teachers to be critical practitioners, and to enable teachers to manipulate curriculum and educational changes. Integration gives teacher educators a mandate to re-think and to re-conceptualise teacher education and training to prepare teachers who are competitive in the world. The findings of this study provide evidence about the possibility of integration of theoretical competences and applied competence. Concerns of the students about teaching from the learner textbook highlighted the ability of students to reflect on the practice of classroom practices: 'the reason for boredom and dislike of classroom by learners we experienced during our work integrated learning could be linked to the beliefs of teachers demonstrated in their approaches of classroom

practice'. This argument overwhelmed the plenary session when students proposed that as the new generation of teachers, it is incumbent upon them to ensure that practices of teaching and learning in classroom are relevant to the forces of democratic changes. The proposal advocated liberating learners from textbook knowledge to a more open curriculum which will enable them to explore world knowledge. The views and opinions expressed by students reflected critical thinking based on the philosophical ideas of Paulo Freire, Dueleze and Guattari and John Dewey of the open curriculum or praxis. The strong criticism of structured knowledge in chapters for schools was noted. To students, the relevant pedagogy for the changing times is the one that promotes exploration, critical thinking, and creative thinking, inquiry and self-discovery knowledge. Findings of the study confirmed the views pioneered by Carl of empowerment of teachers through curriculum development.

### *7.1.3 Evidence-based transformative learning through dialogical argumentative instructions*

The shift in the students' thinking patterns after the task was evident in the comments and in reflections such as the following:

Active participation and enthusiasm demonstrated by students in generating arguments through reflective thinking was based on what they decided upon to be the core ideas about each philosophy and theory was remarkable. This experience revealed the unfairness of our delivery of disciplinary and pedagogical content knowledge to our students through lectures. The abilities and skilfulness of students in collaborative work through all the stages of the task indicated to me that in the period of 10 years, I have been suppressing students' creativity and critical thinking skills through the preaching of knowledge in podiums in lecture theatres and treating learners as my audience. The plenary sessions organised by students depicted the conference meeting where scholars quote ideas of the renowned proponents of philosophical ideas to support their arguments.

My observation of the altruistic disposition of students in debates and discussion propelled by their own choice of content and context confirmed Mezirow's views about transformative learning which advocated that adult learners should be perceived differently from school learners in that to them learning should enable them to manipulate knowledge to solve problem and challenges in the real-life world. This assertion by Mezirow was evident in the manner in which students transferred conceptual knowledge of philosophies and theories into the conceptual understanding of the professional practice in the evolving world of educational practice. The attitude of the students of being negative about the teaching of various philosophical ideas about education and its practice was noted in the verbal presentations and as they answer questions posed by their peers. The critical reflections and inquiry learning were the main learning strategies which transformed the pre-engagement activity perceptions and attitudes. Students found it pleasing to discover things on their own without being given notes to read. Reciprocally, I derived encouragement from the commitment and enthusiasm demonstrated by the students to take their own initiative to understand the relevance of theoretical and philosophical knowledge in the pedagogical content knowledge for teachers.

### *7.1.4 Reflections and comments of group A during plenary sessions*

*Student Buya: It is advocated in idealism that every individual is born with ideas. Ideas are generated in the mind. The ideas are revealed through inductive and deductive process. The human mind has an ability to operate with concepts that are not found in the real world, which eventually can manifest through creativity to be*

*real and physical. These ideas about the nature of humans should be entrenched in all theoretical content knowledge about who a learner is. The description of a learner from this perspective rejects the perception that learners are empty vessels. The view of the idealist is that individuals are born with the ability to think abstractly which implies that teachers should accept that it is in the nature of the learner to be inquisitive about things in their environment.*

*Students Kombi: In the context of pedagogical content knowledge this idealist perspective implies that as teachers we should not influence or imbue learners with the book knowledge but to use knowledge related to learners' interest as the point of departure to assist learners to use the mind to develop abilities that could enable them to think creatively, logical and critical. In that approach learners could question anything they found interesting by: asking questions—working out relevant assumptions—deciding on methods to arrive to the solution or truth. Abstract thinking through deductive and inductive methods of Socrates learners of the democratic and human rights dispensation could identify injustices in the social, economic and political systems in their societies.*

*Student Zingi: Our own reflections on idealism and cognitive theory is that they both focus on the development of the abilities of the mind to think from an abstract realm and to create models that present the images of such mental models. To use an idealism philosophical principle in teaching assists learners to use their minds to verify what they see, touch, and experience from the physical world, and to develop new ideas as they work in a deductive manner (creating hypothesis and testing or verifying the known truth). Adopting the principles and methods of idealism and cognitive principles could enable us, prospective teachers to develop intellectuals who are independent and creative thinkers. Learners will not reproduce what is known but instead they will use such knowledge as a springboard for further research. Application of these principles in classroom teaching could make every subject content knowledge taught to learners meaningful and relevant to them to solve problem and to be self-reliant citizens.*

*Student Zuleigha: According to Piaget, the principles of cognitive theory are that learners are unique so they have different capabilities. Every learner is born with potentialities which through the process of actualisation mature to become abilities. Self-realization is the output of the process of actualisation. The teacher's role in the classroom activities has to be minimal to allow the learner to self-actualise, which is termed maturity or self-realisation. The role of the teachers in the mediating process in our view is to prepare activities based on the learners' interest and the levels of maturity of their abilities.*

#### *7.1.5 Integrated learning (situational, pedagogical and disciplinary learning)*

The collaborative engagement in the dialogical argumentative instruction activities with the skill of working out a synchronic synthesis of real classroom practice in South African schools was significant. The influences of the knowledge about contesting views of philosophies about what teaching and learning ought to be enabled students to analyse issues which they considered impaired the advancement of their abilities and competences in understanding subject content knowledge. The teaching of knowledge out of real-life contexts was described by the student as the main disabler in the learning process [13]. The other factors that came under serious scrutiny were the techniques and strategies of teaching which in their view, teachers

unwittingly or wittingly used to indoctrinate them with meaningless factual knowledge which does not resonate with their choice of future careers nor to equip them with relevant skills to make adjustment in the changing world.

*Student Vuyani: to support the view of the abstract and contradictory factual knowledge in the field of Science: “during my school days I was puzzled by the fact taught in Physical Science and Geography about universe. The sun is said to be at the centre of the universe and the paradox to me is; the very sun that is I am told does not move is said to be rising from the east and sets in the west. I asked my teacher about this mystery and fallacy but instead of engaging with me I was told to know this as indisputable reality”*

The students, who were inspired by the realism school of philosophy and cognitive theory of learning, critiqued learning of knowledge which does not make meaningful sense and teaching methods that suppress learners’ inquisitiveness about their surroundings or environment. To this group of students, teaching and learning should assist learners to unlock reality through first-hand experience.

*Student Dora: The perception we developed through our reflection is that it cannot be true that learners are ignorant about what is happening in socio-political, economic and environmental changes that are witnessed globally. Learners of the millennium era are exposed to multimedia and as a result they could not be indoctrinated with views that are remote from what they experience in their surroundings. This implies that learner in contemporary times should not be treated as inactive spectators of what is taking place. In our view behaviourist theory is relevant in as far as moral and value generation is concerns for example: discipline and conduct which is required for effective learning and maintenance of order in classroom.*

*Student Kula: The operant conditioning of Pavlov and Skinner are outdated because they conducted in animals which cannot think and reason like humans. Learners are inconstant engagement with life around them so therefore it could not be true that they do not have ideas to contribute towards improvement of their lives and space.*

The emphasis on context-based teaching and learning in students’ plenary session shed light onto what students insinuate in their arguments about the nature of content knowledge and environment. The student reflections which pointed directly to what would underpin their own philosophy of classroom practice were captured. These views provided guidelines on what supervisors of work integrated learning will be likely to witness in these students’ classroom practice.

#### 7.1.6 Analysis of concept of a ‘learner’ with the twenty-first century teachers

The students’ dialogical arguments pointed to the knowledge explosion and the revolution in the technological advancement in the global village as the context to be used to define the twenty-first century learners.

*Student Erica: The twenty first learners are characterised by: freedom of choice and self-driven learning, the former describes the learners as individual who should be considered as active participants in the learning environment. The freedom of choice, in the students view, should be the principle that underpins curriculum development and its delivery in classrooms. Further, this principle allows learners to part take in the selection and organising of learning content and the choosing*

*of techniques or strategies of teaching and learning. The self-driven learning was explained in the context of the argument in terms of knowledge construction, whereby learners identify real life experiences which they consider significant and interesting to know. This learning is made possible through advanced technological devices such as i-phones, internet and computers.*

The critical description of a twenty-first century learner by the students was evidence of the importance of engaging them in the development of a theoretical knowledge for meaningful education and training. The repertoire of theoretical knowledge for pedagogical content knowledge developed through argumentative engagement of students proved to be relevant to the issues of classroom practice, such as classroom management, discipline and mediation processes. The views and experiences of diverse classroom practices were unleashed during discussions and arguments. These activities enabled students who came from different socio-economic background to address stereotypes and ethnocentric knowledge they generated from hearsay.

The argumentation afforded students to gather first-hand information as they questioned one another about the experiences and their communities' world view. Questions such as: how did you manage to learn in a school environment where there is no electricity and Internet or Wi-Fi? Are learners still learning under those circumstances? Notably, these questions were asked by students who grew up in townships and urban areas; for these students, it was difficult to figure out a classroom environment in a remote school in a countryside.

The group of students who came from rural schools confessed that to cope with the technological developments they experience in the urban life style is a challenge to them. They realised that to adjust to the experiences of their urban counterparts, they needed to be pro-active and develop their own techniques and strategies to adapt to the twenty-first century culture. One student said: 'it is really an advantage to be in this environment because besides academic courses I have developed my own courses driven by interest and passion to know my world'. Another honest student reflected on her own circumstances of having attended school in remote countryside in South Africa. This candid student admitted that as a student from such an isolated environment, there is nothing that teachers did to expose her to the broader world of experience through teaching. She felt embarrassed when she identified huge gaps in her knowledge about the national and international world.

*Student Royan: I will teach in rural areas after completing my qualification for the purpose of expanding the worldview of my learners." Asked about how he will plan this, the student highlighted that the first thing is to link his teaching to technology such as You Tube videos in order to bring realities such as laboratories, industrial activities, manufacturing industries and in the main technology and processing into remote contexts.*

The patterns of thought developed by students were not based much on theories of Pavlov, Skinner and Thorndike per se, but they came up with their own description of the twenty-first century which encapsulated the needs of the contemporary learners. The description highlighted the twenty-first century learners' styles of thinking are driven by knowledge explosion which is made possible by technology. Learners of the technological advancement are facing a demand to adjust to the fast developing world of electronic devices. Therefore, the acquisition of knowledge and skills in high-school learning ought to enable learners to adjust to the environment and the demands of life beyond the school or institution's premises. These factors

were raised by students in their arguments indicated to me that the generation of prospective teachers should be part of the construction of knowledge about what they perceive to be the meaningful practice in the classroom. They are the generation of teachers who are from schools under the current dispensation: they have ideas to share about what they think teachers should have done to cope and comprehend real-life experiences. All the ideas shared by students informed the designing and development of the booklet for work-integrated learning. The outcomes of the study conducted for this chapter endorse the views expressed by Fejes and Nicoll ([2], p. 68) that 'the teachers own professional practice should be the platform of knowledge production designed by teachers themselves'. The preparation of teachers for the current and future dispensation requires a radical but realistic paradigm shift in the fundamental point of departure in conceptualising teachers in the context of curriculum development in South Africa. Societies such as South Africa's that are overwhelmed by issues of joblessness, poverty and social injustices need transformative and reflective teachers.

## **8. Conclusion**

The main conclusions drawn from the findings presented in this chapter are summarised as follows: first, the evidence-based teacher education and training and transformative learning solicited by the study appeared to be a high point in the outcomes of the study. The views and experiences shared in this study contribute to trends of thought in teacher education and training. Second, collaborative engagement of students proved to be an effective approach for competence-based learning; however, guidelines and facilitation of the process of learning are critical in ensuring that students do not lose track of the pre-determined learning outcomes and assessment criteria. Third, the idea of allowing students to select philosophies and theories of knowledge they consider to be of meaningful influence to their conceptualising of professional practice appeared to be an effective mechanism for development of multiple skills and competences. Fourth, alignment of learning outcomes, the task and assessment criteria and continuous feedback to students' performance was possible as engagement in the task continued.

Lastly, the change of disposition and worldviews of students was transformative as witnessed in the competences demonstrated in students' elevated critical thinking, critical reflections and in constructing views about the pedagogical content knowledge for themselves. The application of conceptual knowledge in arguments enabled students to develop their own professional identity that is informed by their own choice of philosophical and theoretical knowledge. The reality of the matter is that prospective teachers are the agents of transformation in the societies; this view of the teacher implies that abilities of prospective teachers' to reflect and construct ideas about what ought be an effective and ideal professional practice to implement societal change and transformation should be nurtured during their initial education and training.

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