

**STET**

**INAUGURAL LECTURE**

**15 SEPTEMBER 2016**

**TOWARDS AN ALTERNATIVE PEDAGOGY IN ECONOMIC & MANAGEMENT  
SCIENCES (EMS) EDUCATION.**

Presented by

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## Biography

### PROFESSOR TOM ASSAN

#### TOWARDS AN ALTERNATIVE PEDAGOGY IN ECONOMIC & MANAGEMENT SCIENCES (EMS) EDUCATION.

**Prof TEB. Assan** has more than 34 years as an academic in Economic & Management Sciences Education, research, project management and e-Learning; 26 of these years have been spent at the NWU. He specialised in Economic and Management Sciences Education and currently focuses on postgraduate supervision. His research interest is school improvement initiatives with specific focus on *classroom instructional practices* and curriculum initiatives.

He obtained BCom (Hons) at Cape Coast University, Bachelor of Education from UNISA, Master's degree in Economic Sciences Education at the University of London, Master of Education (Guidance & Counselling) at the University of North-West (now NWU) and a PhD in Teacher Education (Economic Sciences). He is an accredited assessor and moderator.

He is currently finalising his MBA with Mancosa which shall be conferred in 2016.

Professor Assan was admitted to Marquis's *Who's' Who in World Publications* in 2008.

He has been a member of the Global Alliance for International Advancement, since 2008.

He is a Research Volunteer Fellow for enhancing sustainability strategies of Family Strengthening Programme (FSP) Communities in Africa and the Middle East, sponsored by the Austrian Development Cooperation.

He received the American Council for Economic Education Award for a four-week training in Economics education in 2010/11

He was later invited as a special guest by the American Council for Economic Education (CEE) to the 50<sup>th</sup> Annual Conference on Economic and Financial Literacy Conference in Chicago, United States in 2011.

Professor Assan was also invited to attend and participate in a Continental Task Team Workshop on "Working towards Sustainability & Formulation Workshop" (ADA Framework

2013-2015), June 12-16, 2012, at the Nairobi Regional Training Centre, Kenya, funded by the Austrian Development Cooperation.

He has presented academic research papers at international and local conferences.

He was invited to give a motivational speech on ‘Culture of savings among public servants’ by the Department of Economic Affairs & Finance, North West Province in 2008 and 2010.

Professor TEB Assan is a leading member of the Faculty research team currently involved in two commissioned research projects from the Provincial Department of Education and Sports on school improvement initiatives as well as HR practices in schools.

He has been involved in several third stream income initiatives for the Faculty of Education in the form of short learning programmes and other commissioned research projects from ETDP-SETA, North West Department of Education and Sports, Department of Basic Education and Training, to mention but a few.

He is a member of the team that conducted impact studies (Evaluation) of the Lesotho Family Strengthening Programme (FSP) in Maseru 2009-2010.

In addition, he is a member of the 2016 Department of Basic Education Research Round table forum team on Rural Education.

Prof TEB Assan is a recipient of the NWU Prestigious Institutional Teaching Excellence Award (ITEA) and member of the Evaluation panel on ITEA (Institutional Teaching Excellence Award).

He received a European Union Award to study MA in Economics Education at the Institute of Education, University of London in 1994.

He was Awarded Top Researcher, Faculty of Education, North-West University in 2013.

He serves as academic mentor in the School of Teacher Education and Training.

He has served as member of Campus and Institutional Senates respectively spanning over 10 years.

He is a member of the Institutional Committee on Bachelor of Education (BEd) and Post Graduate Certificate of Education (PGCE).

Professor Assan is a Member of the Faculty Committee for Teaching and Learning (ICTL).

Prof Assan has been involved in the University Curriculum Development initiatives with respect to: EMS curriculum (ACE/ACT), BEd, 2000; BEd, 2008; BEd 2017; IKS 2008 & 2013 programmes. BEd Honours MEd, PhD in Education;

He has worked as a Curriculum consultant - Business Education (University of Botswana)

He served as a Chairperson for *TELIP (Teacher English Language Improvement Programme)* in collaboration with Wits University to upgrade the use of English language among teachers. The project was sponsored by JET and NDA between 1994-2004.

He has successfully supervised 40 honours, 27 Masters and 4 PhDs. and is currently supervising 6 Masters and 2 PhD students in Economic and Managements Sciences as well as in Educational studies. This is in addition to teaching 5 modules to undergraduate students and also participating in work integrated learning.

He has publications in several peer reviewed journals.

He has published several instructional and study materials for undergraduate and pre-tertiary institutions.

He serves as a reviewer for several journals and publication houses, including Oxford University Press.

He is a member of the Benchmarking team in National Senior Certificate examinations under – Universities South Africa (Economic Sciences)

Prof Assan is a Peer Review Panel Member as well as Project Evaluation/Review Panel member at the National Research Foundation (NRF).

He is also a Provider and Programme Evaluator SACE (South Africa Council for Educators) for Continuous Professional Teacher Development (CPTD).

He has served as a member of the North West Government Planning Committee.

Prof Assan also served as Deputy Director, Institute of Education, at Unibo; Head of Department – Educational Foundations – University of the North-West, and as Head of Department Professional Studies, University of North-West.

He served as School Director for Undergraduate Studies – North West University.

He serves as **external examiner** for several universities including University of Brunei – Darussalam; University of Swaziland; University of Pretoria; Walter Sisulu University; Central University of Technology; Tshwane University of Technology; University of Venda; University of Zululand, University of Johannesburg University of South Africa and University of Kwazulu-Natal.

Prof Assan is married to Charity and they have two boys and one girl.

## **INAUGURAL LECTURE**

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### **TOWARDS AN ALTERNATIVE PEDAGOGY IN ECONOMIC & MANAGEMENT SCIENCES (EMS) EDUCATION.**

#### **Introduction**

The issue of school improvement with specific reference to classroom activities has been on the board for a long time. The Department of Education Strategic Planning document (2011-2025) noted that due to evidence from assessment results across all levels of schooling, there is greater need than before to improve both the discipline and pedagogical content of classroom practitioners. This address highlights the initiatives using theory and practice to improve effective learning and teaching within pre-service and in-service teacher education with reference to EMS education.

#### **Overview of economic & management sciences education in South Africa**

The nature of South Africa's mixed economy necessitated an education system based on a critical thinking curriculum. When outcomes-based education (OBE) was introduced in 1996 and implemented in 1998, the demand for a new approach to teaching and learning was then created. There began a search for a 'new way of experiencing teaching and learning.' As Whitehead (1988) and Assan, (2007, 2011) pointed out, students live in a society which exhibits little consensus on values. This is a society not so complacent in tolerating a curriculum whose applicability they doubt. The school system is a melting pot for conflicting moral standards and conflicting cultures. The notion of authority is challenged and they demand more justification for what they do. The implementation of the National Curriculum Statement (NCS) in 2003, followed by the Revised Curriculum and Assessment Policy Statement (CAPS) in 2010 saw the introduction of EMS as an integrated subject at the senior phase (13 to 15 years) level. This new integrated subject therefore calls for innovative and creative ways by teachers to facilitate efficient learning and teaching. If social transformation is to be achieved, all South Africans have to be educationally affirmed through the recognition of their potential (Department of Education, 2002; Department of Basic Education, 2008, 2011; Assan & Lumadi (2012). The introduction of variation in teaching and learning within the

phenomenographic research approach would add to the repertoire of teachers' skills in facilitating knowledge, skills and attitudes. It would also add another dimension to assessment which would enable the teacher not only to determine the quantity of learning as has been the practice but also the quality of learning by each learner. In this case, learning intervention activities could easily be developed and implemented. Phenomenography looks at the "qualitative ways people experience learning" (Marton and Booth, 1997; Bowden and Marton 1998; Marton & Pang, 2014). Educators should understand how people experience learning qualitatively so that the conditions for creating effective learning could be maximised. This would help to advance the goals and principles enshrined CAPS.

### **Nature of EMS education**

The purpose of the EMS education, according to the Department of Education (2002 & 2010) & Assan (2007 & 2012) is to equip learners with knowledge, skills, values and attitudes that will enable them to participate in, contribute to, adapt to, and survive in a complex economic society. Furthermore, these skills will enable them to demonstrate a critical awareness of the benefits of responsible and sensitive resource exploitation in terms of the South African constitution. The social transformation in education (which includes learner exposure to diverse curriculum in pre-tertiary education) is aimed at ensuring that the educational imbalances of the past, as stated above, are addressed, and that equal educational opportunities are provided for all sections of the population.

Another aspect, which the assessment system failed to incorporate, was the affective considerations which, according to Curtis (1988), were of relevance to EMS in the wider context of the curriculum. The definition of Economics includes a normative function and the assessment system should include "both the cognitive and the affective domains" (Assan, 2007).

In light of the above, EMS education in schools did not only receive a boost but it also had a face lift. Instead of offering EMS mainly at the high school level then, the new curriculum extended the offering from foundation to FET levels in various integrated modes. According to Todd and Mason (2005), the main reason for the introduction of outcomes-based education at all levels was to prepare young South Africans for a globally competitive and technologically sophisticated economy and this has accounted for the introduction of the revised curriculum, including EMS. The outcomes, according to the Department of Basic Education (2002, 2011), **encourage a learner-centred and activity-based approach to education**. By focusing on the critical and the developmental outcomes in EMS, the

phenomenographic approach hopes to develop ways through which learners could create their own meanings as and when they experience the concepts.

### **Training to teach EMS**

EMS, like any other discipline, is not a compulsory subject at any teacher education institution **but available as an individual discipline** and, prior to being made compulsory, not all schools were offering this discipline from the foundation to senior phases. Even at FET phase, only a few schools offered one or more of the EMS subjects depending on the resources of the schools at that time. The implication was that only a few teachers have been trained or have received subject content knowledge (SCK) in these disciplines as opposed to pedagogical content knowledge (PCK) at the time EMS was made compulsory at the senior phase. Hence it was difficult for those teachers who were called upon to teach EMS. This meant that most of the teachers have low or no content knowledge but they were compelled to teach EMS. In most instances they were teaching EMS from the textbook and hence Accounting, which is technical in content, was skipped from instructional activities. This low content knowledge was one of the priorities for professional development in the Department of Education Integrated Strategic Planning Framework for Teacher Education and Development in South Africa 2011-2025 (Department of Basic Education, 2011). Prior to 1998, it is on record that teachers should have received training sessions in EMS but these workshops were insufficient to provide the essential knowledge and skills needed to offer EMS. The same situation currently prevails.

The University of North West (Now, North-West University) was accredited by the Council on Higher Education (CHE) and approved by the Department of Education (DoE) to introduce the ACE programme in 2002 which offered a minimum of one year teacher training in both content and pedagogical knowledge in EMS. Bachelor of Education (Honours) in EMS, MEd & PhD (EMS) also received approval and accreditation respectively (I was the first PhD graduate in EMS).

We had about 10 to 15 teachers who went through the ACE programme to reskill and upgrade until all the EMS education programmes at the Mafikeng campus were placed on hold in 2009 due to low enrolment and other “due diligence” issues. Besides, there were about 10 teachers who went through the Honours programme in EMS. In 2013, a short course in EMS was offered for EMS teachers by the University from the ACE programme, mainly in content and methodology of teaching. Otherwise, as a compulsory learning area for senior phase, the need



for mass training and re-skilling of teachers to deliver this integrated discipline to ensure effective and efficient instructional process has never been more felt. The need for more and extensive training still exists (Department of Basic Education, 2011, Assan 2014). Due to increasing demands from our BEd graduates and practicing teachers, the EMS cluster in the Faculty has initiated the process of bringing back the Honours programme and also develop Advanced Certificate in Teaching (ACT) and Advanced Diploma in Education (ADE) for EMS as well as in FET Accounting, Economics and Business Studies.

### **EMS as an integrated learning area**

The shift from the traditional curriculum to the new curriculum brought with it innovations not only in teaching, but more fundamentally in knowledge: what to teach and how to learn in schools. With the various changes made to the pre-tertiary curriculum it is concluded that there has been a shift from the use of the term ‘teaching and learning’ to ‘learning and teaching’ because of the change in the relationship between educators and learners and the manner in which teaching and learning and its assessment is transacted (Jephcote and Abbot, 2005). The curriculum changes signify the move from the teacher-led transmission methodology to a learner-centred, interactive and participatory style of learning as well as a more inclusive notion of assessment. EMS as a learning area consists of different subjects including Economics, business studies, office practice, Accounting and entrepreneurship. The teaching of EMS in an integrated way serves to provide learners with the basic knowledge which would support their choice of subjects at the FET levels and it also means that learners who exit at the GET band would have basic knowledge in financial management (Lumadi & Assan 2013). Besides, the new curriculum also placed an obligation on educators to teach and think about EMS in integrated ways. Educators handling EMS at the intermediate and senior phases have to be able to teach a bit of Economics, Accounting and business studies. Many of these educators have limited experience and exposure to the disciplines of EMS and a majority have not studied Accounting yet they have to teach it. In the practical sense, many EMS educators avoid teaching Accounting, the effect of which shows when the Grade nine learner enters the FET phase. The disciplines of EMS have conceptual and social dimensions in their essence and use. Thus EMS disciplines, for example, Economics and Accounting, have highly conceptual domains and fields of knowledge consisting of concepts that are structured in specialized ways and which entail that the processes of knowing and understanding are specialised. The ability to do Accounting or understand Economics well, to represent and communicate Accounting or Economics effectively, is based on individuals

having achieved a conceptual understanding of Accounting or Economics principles, concepts, procedures and the relations between concepts and procedures (Mwakapenda, 2008). The Department of Education (DoE, 2008) emphasises that learners should be provided with ‘powerful conceptual tools’ to enable them to ‘analyse situations and arguments, make and justify critical decisions, and take transformative action.’

Seeing that EMS as a learning area is fairly new and also the fact that it is already an integrated Learning Area (subject) consisting of different subjects (Economics, Leadership and Management, Entrepreneurship and Financial Knowledge) does mean that we should also teach and think about EMS in integrated ways.

### **Learning Theories on EMS**

Sfard (1998) describes contemporary perspectives on learning in terms of two metaphors: the acquisition (constructivism) and the participation metaphor. Emanuelsson (2001) added a third dimension of learning, which she calls the “constitutive” (the theory of variation/phenomenography). Lave (1996) opines that all learning theories at a minimum should address three aspects of learning – the direction of learning, mechanism and subject-world relation. According to Emanuelsson (2001), the proposed third metaphor in this phenomenography, tries to transcend the theoretical gap between the other two. Phenomenography involves a more precise focus upon *how the learner sees experiences or understands what is learned* (Marton and Booth, 1997; Bowden and Marton 1998; Marton & Pang 2013; Pang, et al, 2015; Rovio-Johansson Ingerman, (2016).

The focus here to explore the phenomenographic approach as a new way of learning and teaching EMS as an *integrated discipline* (GET Phase) as well as individual subjects at FET phase such as Accounting, Economics and Business Studies.

Effective learning and teaching in an EMS classroom does not ignore the ways in which learners make sense of the world<sup>1</sup> around them and the ways<sup>2</sup> in which they bring to and use their everyday knowledge in the classroom. Learning and teaching therefore constitute the “*core object of learning*” which is “*to get learners to reflect on the differences between what*

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<sup>1</sup> The world as we know it contrasted with the objects of learning which not the same in nature are as mountains ... to be explored...

<sup>2</sup> As if they were real objects

*they know and believe and what the teacher or other learners know and believe.* When we recognize this, the object of learning takes a much more different dimension than that of memorization and recall of knowledge. In this way learners are led to believe that their own ‘knowledge’ is necessarily right but are encouraged to reassess its basis” (Assan 2011, Jephcote & Abbott, 2005). Pang (2002) and Pang & Marton, 2005) refer to the concept ‘metaphor of learning’ to reflect the view of phenomenography where learning is a matter of seeing, or experiencing something in a new way. There are transformative aspects involved in thinking about learning in this way: does seeing or experiencing something in a new way change that thing? Or, does it change the person doing the seeing and experiencing? Does the object being seen change? Learning is thus associated with a change in discernment (perception), which entails a change in the aspect(s) of the phenomenon in the focal awareness of the learner; in other words, a change in the way of seeing the phenomenon. Bowden and Marton (1998) pointed out that discernment “is a defining feature of learning in the sense of learning to experience something in a certain way” (p.35). Thus learning entails discerning, or experiencing certain aspects of something in one’s awareness, a change in one’s structure of awareness. Bowden & Marton (1998) as well as Linder & Marshall (2003) are of the opinion that people can build up their competence in seeing, that is, understanding the world to deal with the new situations in the future.

### **The principles of Phenomenography and the Variation Theory of Learning**

The view of phenomenography is that learning is a matter of seeing, or experiencing, something in a new way. The term “phenomenography” was developed by Marton (1981). Phenomenography describes the conceptions of the world around and identifies an empirical research paradigm dating from the 1970s that aims at describing the *qualitatively different ways in which people experience or see the same phenomenon*. These theoretical descriptions are used for analysing learning as well as teaching. To investigate the teaching of *banking services, specifically overdraft*, from the described theoretical perspective, implies analysis of how different aspects of the content are focused upon or thematized, what aspects are left unfocused and whether the focused aspects open up dimensions of variations or not (Runesson, 2005, 2008). In the phenomenographic perspective, learning occurs when the learner is able to identify the critical aspects of the objects and situations and focusing on them simultaneously (Wood, 2006; Rovio-Johansson Ingerman, (2016). Variation theory of learning is a theoretical approach that can be used to describe what is required for learning to

occur. According to Linder & Marshall (2003) and Marton (2015) learning cannot take place without discernment, while discernment cannot take place without variation. Using variations theory means ‘trying alternative ways of understanding’ a phenomenon and making explicit the implications of their way of understanding the whole phenomenon or parts. In order to master an object of learning, the enacted object of learning – in other words the knowledge building and sharing that underpins learning – involves one being able to discern its critical features and also to focus on them simultaneously (Marton & Pang 2013).

**Variation theory** proposes that in order to discern such critical features, it is a great advantage if one experiences patterns of variation that distinctly help make those features noticeable. If such a pattern of variation carries a design that has some features being kept invariant while others are varied, then the learning advantage becomes distinct (Marton & Tsui 2004, Carstensen & Bernhard 2004, 2009). Some ways of experiencing are more powerful than others (in relation to certain outcomes). This means that the way something is experienced is fundamental to learning (Runesson, 2005, 2008); (Marton & Pang 2013) & Marton, (2015).

Variation theory is underpinned by certain concepts that need explanation, namely conceptions, outcome space, and object of learning.

### *Conception*

*Conception* is a unit of description in phenomenography (Marton & Pong, 2005, Marton. (2015).) and refers to different ways of experiencing or understanding a particular phenomenon. A conception is made up of two aspects (Pang, 2002; Marton & Pong, 2005): the *referential* aspect, which refers to the global generally accepted meaning of the object or phenomenon conceptualised; and the *structural* aspect, which shows the specific combination of features that have been discerned and focused upon by the learners. A feature of an object or phenomenon, according to Marton & Pang (2005) & Marton, (2015), is “*a way in which the object appears to be different from other objects*” and the discernment of a feature is a function of the variation experienced by the learner (Thuné & Eckerdal 2009). For example, *how* the different aspects of *overdraft* are thematized, *what* aspects are left un-focused and whether the focused aspects open up dimensions of variations or not.

### *Outcome Space*

An *Outcome space* is a representation in the form of categories of descriptions or ways of experiencing the phenomenon referred to as *conceptions*, which are further analysed with regard to their adequacy and logical relations (Marton & Pang, 2005). According to Åkerlind (2005), outcomes are represented analytically as a number of qualitatively different meanings or ways of experiencing the phenomenon, but also including the structural relationships linking these different ways of experiencing. In other words, outcome space represents predetermined levels on which the different conceptions are placed for the purpose of ascertaining their hierarchical positions with reference to the referral and structural aspects of the conceptions and also to “distinguish the empirically interpreted category from the hypothetical description that it represents” (Åkerlind, 2005, Marton, (2015). For example, the learning outcome of overdraft is a hierarchical order in the form of 4, 3, 2, and 1.

### *Object of learning*

An *object of learning* is what the learner discerns from the critical aspects of the phenomenon, as a result of engaging in a learning process. A critical aspect of the object of learning is necessary for a particular meaning to appear in the learner’s awareness (Wood, 2006). The presence or absence of any critical aspect distinguishes between the meanings of the object of learning from one another (ibid). According to Wood (2006) and Marton & Pang (2013), an object of learning could be constituted in *three different ways* within the theory of variation of learning: the *intended object of learning* (intended learning outcome), this is what educators planned for (*objectives* in CAPS). The enacted object of learning constitutes of what learners encountered in the classroom (learning activities). This was constituted together by both learner and educator and what was learnt depends upon the dimensions of variation “corresponding to critical aspects of the object of learning” (Wood, 2006:55). Thirdly was the *lived object* of learning which refers to *what was actually learnt*, which depends upon what dimensions of variation of learning were actually experienced by the learners as explained below in the three different studies with Grade 9 learners across the North-West Province with selected teachers through Learning Study Approach (Marton & Pang 2013; Rovio-Johansson, & [Ingerman](#) (2016).

## **Research Studies in Phenomenography and the Variation Theory of Learning**

### **(International Studies)**

- The first study by Dahlgren (1975) identified the various conceptions that university students held about the Economics concepts contained in a textbook, and found that the level of outcome space was determined by the number of dimensions of variations being simultaneously focused on.
- Dahlgren (1979) carried out a similar study on the conceptions of price held by nursery and primary school learners, and an outcome very similar to that of the university students in 1978 was obtained.
- Rovio-Johansson's study (1999) focused on first-year Economic and Management Sciences' students at university.
- The study by Pang and Marton, (2003) based on experimental phenomenography, attempted to explore the possibility of learning certain Economics concepts where these concepts became the object of learning.
- In her study she sought to establish the different ways in which teachers deal with content when teaching fractions and percentages (Runesson (2008)).

### **South African Studies**

- ✚ Reed, B. (2006). Phenomenography as a way to research the understanding by students of technical concepts. University of Cape Town. The study used Phenomenography to investigate a range of different ways that students experience technical concepts, or in fact, various aspects of learning in general for chemical engineering students.
- ✚ Brandon I et. al (2009). The experience of interacting with technological artefacts. The outcome of a phenomenographic study is a set of categories that characterise the key aspects of the different ways in which an experience can be viewed with 15 learners in a Cape Town School.
- ✚ Booth et al (2013) Variation in the mastering-practices of first-year, South African engineering students: A phenomenographic study. This is a phenomenographic study into the learning practices of first year chemical and metallurgical engineering students at Wits, which found that two qualitatively different kinds of study practice were exercised when the students studied alone.

- ✚ Assan, T (2014). Human capacity building in education: A phenomenographic study of student-teachers' experiences. This study traces conceptions of teaching as a career.

### **Examples of Phenomenographic study (incorporating Variation principles)**

In all cases the learners were interviewed or requested to complete questionnaire after they have had interactions with the phenomenon.

#### **Study 1. Grade 10**

##### **Example 1: Why do you think the price of one loaf of bread costs R8.50?**

##### **Categories of Variations**

- 1 “... there is a lot of things in it, it’s the raw material that costs money, the wheat, flour and then to have it baked and wages...and...the costs of selling it.” (8)
- 2 “Because the producers have set a price. They have included all costs.” (12)
- 3 “If you consider the market price, that’s where demand and supply are in equilibrium, that is the point.” (5)

There seems to be a difference between the students’ responses to the question. There are those who say the price of a loaf is the sum of the ‘value’ of the things that go into making it. The price of a loaf is equal to its ‘value’. And there are those who say the price of a loaf is determined by the suppliers of the loaves (*structural*). The price of a loaf is determined by the market price of the things that are needed to make it: in other words, the price depends on the supply and demand situations for e.g. wheat, flour and transport services and of course, bread (*referential*)

#### **Study 2**

A sample of Grade nine students (n=120) from 12 schools in the Southern and Central regions of Northwest were asked to explain in their own words, after a series of lessons on banking services, the concept of ‘overdraft.’ The learning outcome can be categorised into *four* different experiences of the concept of ‘overdraft’:

##### **Example 2: Explain the concept of overdraft**

The responses can be categorised into *four* different experiences of the concept of ‘overdraft’: The research emphasised on the students’ voice in and offers considerable potential for the development of effective classroom approaches.

- 4 ‘Overdraft is an amount that you have spent or want to spend that is greater than the amount you have in your bank account’: in other words, *is an agreed amount with your*

bankers which allows the account holder to withdraw money over and above the credit balance or the deposit amount. The student does not mention. An overdraft is a short-term loan, which requires repayment at a short notice. The student does not specify the type of account that an overdraft can be granted. (14 students).

- 3 'Overdraft is the money borrowed by the bank to a person who has overdrawn or a situation in which one draws more money from the bank account than one has in it.'[In other words, *this is similar to the above explanation except that here the students have equated an overdraft to money instead of to an amount, which can be expressed in currency terms.* Like the above explanation, the student failed to specify the type of account that an overdraft can be granted (62 students).
- 2 'Overdrafts are money used in business but it does not own but it must be repaid over one year'. *This explanation does not link an overdraft to banking services, neither to any form of credit. Like A2 it refers overdraft to money. Another aspect of this explanation is that an overdraft must be repaid within a year but it failed to mention whether an overdraft is a credit facility of some sort* (24 students).
- 1 'Overdraft means the equation is shown in a statement called the balance sheet'. *This explanation has linked an overdraft to an equation, which is reflected in a balance sheet. These students have seen an overdraft reflected in a balance sheet and their experience of the concept is limited to their knowledge of an overdraft as a figure reflected in a balance sheet* (20 students).

### Study 3

#### **Example 3 What determines the Rand value/price on the foreign exchange market**

The following analysis of the pre-test and post-test results showed the different ways in which the Grade 9 learners experienced *variation of understanding in the Rand value/price* determination before and after learning and teaching. Most studies in this line of research would pose the question as "*what are the different ways of experiencing the phenomenon?*" From the post-test results it emerged that the Rand price determination is the function of the following:

1. None
2. Government



3. International trade
4. Demand and supply for the Rand

## Discussion

Conception 1      *If the economy is doing well and if there is no crime then the price of the Rand is fixed or determined.*

## Conception 2

(Pre-test)      *The price or value of the South African currency is determined by the policies of the government.*

(Post-test)      *The Minister of Finance and the Governor of the Reserve Bank can determine the Rand price on the foreign exchange market.*

## Conception 3

(Pre-test):      The price of the Rand is determined by the amount of money South Africa gets from selling to other countries.

(Post-test):      When international trade takes place and exchange of currency is necessary that is when the Rand price or value is found. That is, a country's currency is determined by how much the country can produce and sell to other countries.

Conception 4      *"The Rand price determination takes place on the foreign exchange market when the factors which determine supply and demand of the Rand are brought together and the supply curve meets the demand curve. The price of the Rand is at an equilibrium point where demand meets supply curve."*

**Figure 1. Outcome Space for Levels of Conceptions of How Rand Price/Value is Determined on the Foreign Exchange Market**

## Implications for teaching, learning and assessing EMS

It would not be enough to simply describe a general idea of overdraft within the banking services or the foreign exchange market in general. Rather, from the outset the learner, reader of the text must be invited to explore the implications of variation in banking services, viz a viz credit facilities; or the supply and demand principles. Textbook material must be presented in such a way that this *critical aspect* is foregrounded for the student unlike

presenting it as a reading text. Through learning studies, learning communities are created among and across subject areas. The learning study approach, in contrast, seeks to bring about learning with critical aspects referring to aspects or dimensions of variation in the object of learning that the learner has not yet learnt to discern and attend to at the same time. Hence, the teacher should provide a certain pattern of variation to help learners to discern and focus on those critical aspects

Teachers can address the learning difficulties that student have in relation to this phenomenon by presenting a *pattern of variation* that correspond to this aspect. Variation in the arrangement in the forms of *credit facilities and bank deposits* must be experienced by the student to allow this aspect of overdraft to be discerned. In the teaching situation, the teacher must be able to *discern critical aspects* of the content and *critical aspects* of student's learning simultaneously and this must be done against a background of an experienced *variation* of the aspects. Variation in the arrangement in the forms of credit facilities and bank deposits must be experienced by the student to allow this aspect of overdraft to be discerned.

Finally, the perspective on South African education explores the extent to which EMS education has prevailed in the country during the pre and post-apartheid periods. It is clear from the exposition that EMS has received a tremendous boost due to curriculum change at school level, which has ensured that EMS is taught throughout the country at least up to grade nine.

It is important that apart from the end results in grade 12. The focus should also be placed in the GET to ensure that learning and teaching is made more effective so that learners come to higher grades with more *referential meaning* to economic and Accounting concepts.

## Conclusions

In conclusion the whole essence of application of the variation theory in teaching is to assist our teachers to package the discipline content by putting similar 'files' in one folder. This assists the teacher to expose the 'critical aspects' of the phenomenon during lesson presentation helping learners to create awareness of the various components of the main topic/theme. Learners should not see related concepts as individual compartment. Learners should consider that in any given topic/theme there are various concepts link to the major or the 'big picture' the conceptions held by learners are like the folders containing many files. Through the variation approach the teacher has to enable learners to unpack the files and place like files in specific folders. For example, the teacher has to link overdraft to other

banking the whole banking services (folder) such as credit facilities, current account, savings, etc. and once the learner awareness is focused then she/he can explain overdraft from the folder of banking services. If such a pattern of variation carries a design that has some features being kept invariant while others are varied, then the *learning advantage* becomes distinctive. It is acknowledged that teaching has other dimensions than learning and there are probably other constraints and possibilities for learning than the space of variation that is constituted in the classroom as well.

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