

## Chapter 1: Introduction

I think the TRC (Truth and Reconciliation Commission)  
was also about making the private public.  
I think that only if we attempt this pouring out of personal feeling and thinking  
into the public domain,  
will the new public become possible.  
We cannot tell what kind of public it will be,  
but we do need to release more and more personal detail  
into our public home  
to bring about a more real human environment:  
more real because it is more honest, more trusting, and more expressive.

*Njabulo Ndebele<sup>2</sup>*

### **What is the background of my study?**

I am a Coloured South African woman. I was born in 1961 when Apartheid was 13 years old. While my study is not directly about political oppression and its effects on learning, the factor of apartheid in the life of any South African cannot be ignored. I believe that Apartheid and its effects will visit us at least “unto the third and fourth generation” (RSV 1975:Exodus 34v7 and Lamentations 5v7) which is why I find it important to make my private voice - as a 50-something year old, Coloured woman, who has lived and worked in South Africa all my life - public.

I believe that my private voice is important because it reveals not only oppression of various kinds, but also, and perhaps even more importantly, my study reveals how I and others have achieved *in spite of apartheid* and, what is more, seen how all life events, political and otherwise, oppressive or otherwise, impact on learning primarily as biological processes before they become sociological. I believe my private voice reveals an understanding of learning which is anthropological, and so can apply to all learners anywhere and through all time, and as such, deserves to be made public.

Over the past 20 years, I have noted the following, and find the situation deeply concerning.

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<sup>2</sup> Dr Ndebele was awarded an Honorary Doctorate at Durban University of Technology in 2011. This is an extract from the graduation programme.

1. The rate of success in higher education in South Africa is worryingly slow (Scott 2007). A recent study at the DUT revealed an overall student throughput of 23.60% (Pillay 2010). In Pillay's study, throughput is calculated by tracking a cohort of students registering for the first time in a given year, and completing the qualification in regulation time. In DUT's case, regulation time is mostly three years. The graduation rate overall in the South African universities of technology increased in the period 2004 to 2007 from 16% to slightly more than 20% (CHE 2009). Graduation rate is calculated "by dividing the total number of qualifications awarded at an institution by the total number of students enrolled in the same year" (CHE 2009:34). This figure provides only a rough measure of the number of graduates staying in the system and does not account for changing enrolments and different duration of programs. I believe that there is a need to find an approach that will improve both the rate and quality of student learning and increase the rate of student throughput and graduation in South Africa.
2. In South Africa, teachers in higher education are increasingly despairing because of learner apathy, disinterest and failure. The learners are faced with a system of education where the language of instruction is possibly their second or even third – or more – language – in effect, some learners are learning in a foreign language. The teachers are faced with increased workloads due to increased student enrolments – from 425 000 students in 1994 to 761 000 students in 2007 (CHE 2009). Teachers are faced with demands for increased research output and the demands of increased administrative responsibilities. In addition, both teachers and learners, in some cases, are experiencing changes in institutional cultures of learning due to the merging of higher education institutions, and the merging of departments within universities. The teachers and the learners need to find an approach and a space where they can negotiate their learning to motivate each other (Johnson 2006).
3. The sociological demographics of higher education learners are changing on a scale and at a rate which is unprecedented. There are more students in higher education from working class and rural backgrounds than ever before. Black African student enrolment has increased from 40% in 1993 to 67% in

2007 (CHE 2009; CHE March 2010). There is a need to find an approach that will motivate everyone regardless of their sociological origins and influences.

### **What is my rationale for this study?**

I believe that if we wish to address the concerns I have noted above, we have to find a way to make learning a positive and self-rewarding exercise for all learners.

In the last 20 years, as a teacher in higher education, I have observed learners learning, and note that those engaged in 'active learning' (viz. "learning by doing" (Dewey, 1938)), learn better. In addition, when I have worked with educators and learners to develop learning materials that promote active learning, I have experienced how learners who become emotionally happily involved have been motivated to learn. I have observed that when learners become enthusiastic, fascinated, and intrigued, they become engaged in, and contribute more, to their own learning, and then realise that learning can be self-rewarding. I have also observed, especially in children, that self-rewarding learning happens when they use their whole beings and are having fun and when they compete and collaborate with each other. Yet, in higher education learning is not often associated with having fun and with activity experienced through the whole being.

Current understanding of active learning (Bonwell and Eison 1991; Angelo 1993; Allen 1995; Cooperstein and Kocevar-Weidinger 2004; Massey *et al.* 2005; Collins *et al.* 2007; Boyas 2008) does not account for the nature and operation of the activity in learning, or what constitutes the kind of activity that makes learning happen effectively. Currently, perceptions about learning are that learning is *primarily psychological*. Educational and cognitive psychology (Piaget 1926; Bruner 1977; Gagne 1985) multiple intelligences (Gardner 2006) and emotional intelligence (Goleman 1995) are cited as important factors at the learning and teaching interface. Reflection on learning behaviours (Schon, D 1983a) reveal that motivation is a common feature in all instances (Malone and Lepper 1987; Garris *et al.* 2002; Gom 2009) but that people are motivated by different things (Huizenga *et al.* 2009; Chang and Chang Winter 2012). *I argue that there must be something amongst all these factors that motivate learning is common to everyone.*

Since 2004, some of us at DUT - educators and learners - have been engaged, and continue to be engaged, in deliberately designing and using various forms of emotionally-informed active learning exercises including game and poster construction. I have observed that everyone involved, even those who are initially sceptical and disinterested, become motivated and work longer and with greater commitment and achieve greater success. I have also observed that the learners enjoy the learning process, even when it involves what is commonly perceived as boring and tedious learning content.

I have found myself wondering “What then is active learning, and what is it about active learning, learning by doing, that makes it work?” To address this question, I considered it necessary to explore the possibility that learning goes beyond its psychology, and is rooted in human biochemistry (Gershon 1998; Pert 1999; Fields 2005; Pert 2006; Fields 2008b). I believe that such an understanding could inform educators in higher education with new insights about the nature of learning, and that such an understanding and such insights might inform and improve teaching and assessment practice, so that learners find learning a pleasurable and self-rewarding exercise. I believe that learners who enjoy learning are more likely to succeed in their studies at university, and in their careers and lives beyond the university.

### **What are the research questions which I have attempted to answer?**

My principal research question is *How can I account for my understanding of learning as a biochemical process?*

Two further questions are :

1. What scientific evidence is there for a biochemical basis for learning?
2. What empirical evidence is there in the classroom that human learning occurs biochemically?

During the course of my study I realised that the title of my thesis could be improved if it was stated as “*How do I account for my understanding of learning as a biochemical process?*” My request was refused by the Faculty Research Committee on the grounds of the fact that a thesis cannot be titled with a question. I was most

disappointed. However I feel I have compensated for this disappointment by using questions as sub-headings throughout my account of my understanding of learning as a biochemical process.

### **What did I aim to do in my study?**

In my study, I aimed to

- explore the biochemistry of human beings as a factor in human learning;
- demonstrate the possibility of the biochemistry of human learning through my own lived experiences, and the lived experiences of others, of active learning.

### **What do I claim to have done in my study?**

In my study ...

- I have explored the anthropology of learning, by exploring an understanding of human biochemistry as a common denominator in human learning;
- I have investigated how being “hardwired for pleasure” (Pert 1999) increases learners’ engagement in their learning when play and fun during learning, teaching, and assessment in Higher Education are introduced.
- I have illustrated through the lived experiences of a number of learners, myself included, the role and operation of positive emotion-driven learning in our learning experiences of different kinds – personal, spiritual and educational.
- I have identified the role of ‘joy-filled love and love-filled joy’ in my learning processes, and the learning processes of others.
- I have suggested that the learning that lacks love and joy does not motivate and engage learners.
- I restrict my focus on the significance of social, economic, political oppression as factors in learning, because their inclusion would make my study unmanageable at this level.

## **What have I deliberately not done in this study?**

In this study I have not ...

- included any laboratory or biological analysis in the determination of learning as a biochemical process;
- investigated teaching and learning at any other institutions except those recorded;
- attempted to explore the scholarship of motivation *per se*, beyond recognising its role in learning;
- implied that psychology and sociology of education have no place in education;
- explored to any significant degree the implications in my study of the affects of social, economic, political oppression;
- made claims about specific ethnic cultures or gender;
- explored personal and group identity as factors in learning.

All of these deliberate exclusions from my study imply that they need investigation at another time. I deal with this in the Conclusion of my study.

## **How have I integrated the review of literature in my study?**

Mine is a multidisciplinary study. The multi-disciplinarity of my study has required that I read in a number of disciplines and directions. Because of this, I have integrated my literary references throughout the study where such references are pertinent (Bruce 1994:144).

## **What original contribution do I believe I have made to the body of scholarly knowledge, evidenced by my study?**

I believe that I have identified the link between learning as a biochemical process and the efficiency of games as a learning tool, and thereby shown the link between learning and fun.

I believe that I have shown that learning is simultaneously an emotional and intellectual process.

I believe that I have found a new role for educators in addition to “the sage on the stage” (King 1993) and “the guide on the side” (King 1993), viz. the designer of *whole-being-learning* opportunities - an architect of *whole-being-learning*.

I believe that I have made a contribution to self-study in showing how I have focused on developing my ways of knowing, my ways of being, and my values and attitudes using my personal voice.

I believe that I have made a contribution to a growing understanding of the study of self as subject and object in a study (Jousse 2000:26).

Using myself as subject and object of my study, I believe that I have shown coherence between ways of human knowing (epistemology), ways of being human (ontology) and ways of human valuing which translate into human attitudes (axiology).

I believe that I have demonstrated how to bring people to a knowing, an awareness of their spiritual and creative selves.

I believe that I have made a unique contribution to personal, spiritual and educational learning showing an holistic, organic relationship between them through the intrinsic connections between personal, spiritual and educational learning.

I believe that I have shown how methodologies designed and used by others can be adapted and modified to personal use in different contexts.

### **What is the structure of my thesis? What is the rationale for this structure?**

I begin my thesis in Chapter 1 with the background, rationale and questions investigated in my study. I briefly state what I have set out to achieve and what I actually achieved as my original contribution to knowledge.

I provide in Chapter 2 an analysis of the methodologies that I have used in my study in order to promote a clear understanding of the diversity of approaches I employed in undertaking my research.

I include in Chapter 3 an account of my understanding of learning as a biochemical process by examining the scientific literature presented out of the lived experiences of a number of scientists engaged in scholarly studies of human biology, physiology and human expression.

In Chapter 4 I share my autobiography, and an auto-ethnography, from the perspective of, and through the lens of, my personal learning in order to provide an account of critical incidents that illustrate my understanding of learning as a biochemical process.

In Chapter 5 I provide an account of my evidence of the biochemical nature of learning from the perspective of spiritual learning, and through a spiritual lens, as I study myself as a learner and teacher in my spirituality which is as a Christian.

In Chapter 6 I provide an account of my evidence of the biochemical nature of learning from the perspective of educational learning, and through an educational lens, in a university of technology. I describe the concept of *whole-being-learning* as manifested in a safe community of practice with nurtured relationships, recognised talents and gifts and integrated knowledge.

In Chapter 7 I provide evidence of my understanding of the biochemical nature of learning through the lived experiences of teachers and learners with whom I have engaged in a university of technology.

In Chapter 8 I provide a chronological account, spanning the past decade from 2002 until 2012, of how I have shared my understanding of learning as a biochemical process in various public spaces in local and international conferences and symposia. In my reflection I provide an account of my own *whole-being-learning*.

I conclude my thesis in Chapter 9 by sharing a summary of my original contributions to knowledge as well as posing new questions for future studies which will explore the understanding of learning as a biochemical process and the implications thereof.

I have presented a Bibliography and not a list of References. My Bibliography reflects a wide spectrum of readings that I have explored as part of this doctoral journey.

In both the Appendices and enclosed DVD's, I have included a Schedule of Participants (SOP) in which I have listed all the audio- and video-recordings that I have referred to in my thesis. I have included a selection of working documents in the Appendices to provide my readers with an indication of my *modus operandi* when I was mining my 'data' for 'evidence'.