

LEARNING THROUGH TRANSFORMATION: A COLLABORATIVE LEARNING STRATEGY

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Abstract

This article describes how art and design students within a higher education in South Africa are able to learn through transformation during the periods leading up to, and eventually writing, year-end examinations. The description is related through data generated by means of a focus group interview with five purposefully selected participants which was then followed up by one individual interview with a sixth participant. These interviews essentially adopted a qualitative research paradigm from which the contextual phenomenon embodied in an end-of-year examination could be investigated. The data collected yielded that participants felt that the most effective learning strategy involved group or collaborative learning. Collaborative learning as described in this paper can provide supportive structures that not only facilitate learning but go a long way to help realise personal transformations. More importantly, collaborative learning was explored as being a critical marker in determining that Transformative Learning (TL) had indeed occurred, even though TL as a pedagogical tool had never been applied.

Introduction

As part of a broader study this paper discusses the important aspect of collaborative learning in the context of student experiences related to written examinations at an art and design department within a higher education institution (HEI) in South Africa. Traditionally, this department implements end-of-year, written examinations as a method of summative assessment for its theoretical subjects. The problem at the inception of the study was that although the process of examination was generally well-understood by departmental lecturers, students' experiences of written examination still remained largely unknown. To assist in the description of these experiences the theory of Transformative Learning (TL) as discussed later was utilised. The intention was, therefore, to seek out synergies between the experiences that participants' could potentially describe and the concepts that feature in TL theory.

The unknown experiences that students had of written examinations at the department were important to the study as it was felt at the time that the prevalent 'techno-rational' approach to assessment in art and design education focused primarily on objectivity, process and procedures (Orr, 2006: 79). The 'techno-rational' approach to assessment, according to Orr (*ibid*), emphasises the technical issues of delivering year-end summative assessments and largely ignores students' lived experiences thereof. The quantitative nature of investigating student experiences of examinations at the department was devised at institutional level and did not involve any qualitative means to engage with students on the issue. It was more about timely delivery and whether lecturers had met all the institutional criteria to present an appropriate examination paper. The evident approach to investigate summative assessment meant that lecturers at the department had not attempted to investigate fully or understand students' experiences of previous year-end written examinations.

Another contributing factor to the lack of understanding observed in the department was seen to be the position of relative power occupied by lecturers. The power associated with lecturers at the department is partly a result of the modernist influences attributed to the 'industrial' environment of the discipline. These modernist influences stem from the educational approach of the Bauhaus which was the first educational institution to offer a course that was relevant to industrial design practice (Heskett, 1984: 100). In the Bauhaus context, there were no teachers or pupils, but rather masters, journeymen and apprentices (Gorman, 2003: 99). This hierarchy is still evident in current industrial design education in that lecturers are the masters and students are the apprentices or journeymen. Therein, lies a strict code of conduct and students learn by practical example. This approach to teaching is suited to an industrial workshop environment, where discipline is crucial for various reasons, varying from the adherence to safety standards, to maximising productivity. This industrial environment, therefore, requires a certain degree of control in order for it to operate in a predictable machine-like manner. As such, 'disciplinary power' (Jardine, 2005: 42-43) that is essential for this control, provides the barrier to open communication between students and lecturers, not only suppressing enquiry into student experiences of aspects of the course that affect them daily, but making the ability to investigate problems experienced on a student level more difficult.

The research aim was to investigate the experiences of written examinations through the descriptions of the participants (Creswell, 1994: 11-12). This paper provides an insight into the experiences described by students and particularly those experiences that allowed them to learn through transformation by collaboration with others within the context of an industrial design education. Therefore, the problem that was addressed in the study entailed the investigation of the students' experiences of examination as a summative assessment method for theoretical subjects by being cognisant of the way in which students learned through transformation. The study was, thus, informed by the theory of TL which provided the basis from which students' lived experiences were described.

Learning through transformation

To investigate students' experiences of written examinations the theory of TL was mostly utilised as a comparative lens and to enhance descriptions of student experiences. The theory of TL was therefore utilised to assist in describing students' lived experience of the phenomenon in question, but more importantly in relation to their specific discipline. In higher education and more appropriately industrial design education the focus should not only be about enhancing skills, but more importantly about producing people who can see problems and envisage new ways to solve these problems (Harvey & Knight, 1996: 7).

In current industrial design education a transformation has already occurred and the shift is not about gratifying the self; instead, an appreciation of different points of view different to a designer's own must be cultivated. Loewy (2008: 6) lists these new perspectives under technological concerns, user considerations, environmental concerns and social concerns. As such, TL as a theory reflects similar concerns and it would be ideal to find evidence in the data that this approach to teaching and learning is apt in a fast changing discipline. Industrial design, as a discipline, has itself transformed over a period of time and it is evident that a skills-based approach to pedagogy, although not completely redundant, should not be the sole preoccupation of the discipline. The discipline ideally should not be constrained by consumerism, but rather focus on considering the other, be they a community or an individual in need.

The theory of TL involves an individual process of change and self-generation. Change or more appropriately, transformation ideally takes place through questioning assumptions, values, beliefs and considering different points of view. This qualitative change can be described as a cognitive transcendence (Harvey & Knight, 1996: 7). Transformative learning in the context of industrial design education requires that certain TL ideals be attained. Firstly, both students and lecturers need to be actively engaged and committed to learning before any TL can be claimed (Reid & Solomonides, 2007: 27). Students are not only required to maintain engagement with their studies and lecturers, but must also engage with their respective profession. This is important as real

world problems are closer to them (the students) if they actively pursue engagement with the profession outside the structure of the institution. In other words, if students do not engage with, or seek, other perspectives outside their own, TL in the context of an industrial design education would be difficult to attain.

The 'engagement' being proposed in this regard is an idealistic term that best describes various relationships that students may develop in the process of learning. These vary from the students' relationship with the institution, programme, peers, lecturers, tasks, profession, industry, etc. (Reid & Solomonides, 2007: 28). Engagement is a result of the commitment that students undertake to pursue learning that is meaningful to them as individuals. In the case of industrial design students, meaning would be a difficult aspect to describe as it varies from one individual to the next. However, what is important is that there is evidence of a commitment that results in engagement which is relative to the meaning that is sought by the individual student. This relies on individual student motivation and interest to learn, which should be promoted by the lecturers concerned (Reid & Solomonides, 2007: 28). Indications of academic engagement are evident when a student displays a willingness to be thorough or organised and enter 'deeply' into learning through his or her own will (Reid & Solomonides, 2007: 28). Meyer & Land (2005: 386) propose that there is a certain 'threshold' that needs to be attained, before epistemological and ontological transformations are experienced. Therefore, TL is viewed as a result of an experience where the threshold is the driver or motivation required to achieve deep, meaningful learning.

Such a 'threshold', as proposed by Meyer & Land (2005: 386), is an indication that within a transformative phase of learning, transformation will only occur at a 'certain point of entry'. That point of entry could be described as the opportunity for the individual student to take ownership of knowledge and become part of the professional community. This process could be viewed as a 'rite of passage' that each individual student needs to 'move through' to become part of the design community. This movement, as experienced by students, could be indicative of the personal success that is sought by individual

students, through their willingness to learn. One of the key transformative goals of educators (including industrial design lecturers) is to 'socialise' students into the professional design community (Cranton & King, 2003: 34). The socialisation process requires that students' awareness of themselves or self-perception in relation to professional requirements mature with time, and that, to be part of that community, students must reach a threshold in their learning process. Mezirow (2000: 8) argues that, although transformative learning is an individual process, it does have strong social implications. These implications not only require that students relate their learning to broader community issues, but to issues that are specific to their profession and how they as students can find benefit in learning collaboratively.

If we relate the term 'threshold' to TL theory, we begin to hit on the notion of what Mezirow terms a 'disorienting dilemma' (2000: 22). In Mezirow's terms, disorienting refers to a lack of orientation or direction in terms of the choices needed to solve the dilemma. A dilemma suggests a problematic state of affairs. Adults experience many types of dilemmas throughout their lives. Dilemmas by their very nature require that adults make choices and these choices are not always easy to discern. These choices must be made in order to avoid any negative implications for the individual. Therefore, a dilemma is not an easy event to navigate as an adult. However, the learning potential that is derived from such an experience is invaluable to the individual's development. By making a decision, adults put forward an action that will end up in a set of final outcomes that may be necessary in order to solve a problem. According to Mezirow (1991: 161), taking action is an integral dimension of TL. From that experience, adults would have derived deep or intimate learning because of the attention that was focused on the issue or problem. In other words, learning happens regardless of whether or not the experience of the dilemma is good or bad. Transformative learning, in this respect, is problem solving at its best, which occurs through redefining the problem (Mezirow, 2000: 20).

The concept of a 'disorienting dilemma' was seen as critical to the study for various reasons. First, the event of the written year-end examination was investigated in terms of whether or not it was experienced as a disorienting

dilemma by students. Examinations are regarded as important milestones that need to be attained by students whilst being engaged in the act of a formal education. It has been argued that, for transformative learning to occur, dynamic action in the form of a 'journey of the self' is required (Dirkx, 2006: 20). The journey, in the case of the study, is the learning experience that students undergo before they can be accepted by the professional community to which they aspire. This journey, therefore, not only suggests a personal development, but also a deep social engagement and collaboration with others within the same context (Dirkx, 2006: 19). During that journey, certain milestones need to be attained so that learning can be validated as having occurred for individual students. This validation is usually undertaken through the process of assessment.

As meaning is seen to exist within the individual, validation can only occur through communication or interaction with others operating in a similar context (Cranton, 2006: 23). Communication with others with regard to the process of an examination relates to the existing relationship between the student and the lecturer. It is understood that in many instances in HEIs the examiner is a different person to the lecturer. However, in this context the lecturer is also the examiner and therefore there is an existing relationship of which to be cognisant. It is the lecturer who best understands the individual in terms of the discipline and it is the lecturer who carries out the teaching and subsequent assessment. The lecturer in a sense is the critical link between industry and students aspiring to gain entry into their respective professional practice. Validation in the context of an industrial design education can only truly occur if such a relationship is already established.

To foster TL requires that students be taken out of their 'comfort zones' (Davis-Manigaulte, Yorks & Kasl, 2006: 27) and this can only be done by placing problems en route to each individual's development through learning. Examinations, therefore, embody a learning problem which is a useful method to remove students from their developmental comfort zones. This pressurised situation has an ability to focus student attention on meaningful learning that is needed for the display of self-appropriated knowledge and understanding in the

context of their intended discipline. Cranton (2006: 20) demonstrates that recent developments of TL theory have been inclined towards the encounter with a disorienting event and a subsequent questioning of assumptions.

Similarly, in the study undertaken, the encounter with the disorienting dilemma and the exploration of the resultant learning ideals necessary in the context of industrial design education, were critical to establish whether or not examinations provided the impetus in the TL experience. There is much evidence from literature to suggest that examinations can be considered to be a disorienting event. One of the key themes of current TL research is that transformative learning is initiated by a disorienting dilemma (Cranton, 2006: 52). However, the disorienting event as described by Mezirow (2000: 21-22), Kappel & Daley (2004: 84), Cranton (2006: 71), and Taylor (2008: 6) is not only seen as one singular dramatic event (epochal), but can also be described as a series of progressive transformations happening over a period of time (incremental), but which still result in TL.

In considering the disorienting dilemma as a critical part of the study the following questions needed to be asked: how could the experience of examination as disorienting dilemma best be described? Could these experiences be described as epochal or incremental transformation? Are these transformations in any way related to the context of an industrial design education? The experiences of a dilemma are varied as there is an individual dimension of which to be cognisant. Students are individuals and they perceive experiences differently. Therefore, it would be important to utilise appropriate research methodology that valued both the individual and the group as the participants from which the study could benefit.

Methodology

The success of the study was dependent on the ability to describe students' experiences of summative assessment in the form of year-end written examinations. These experiences were to be compared to the ideals of TL theory and if the comparative results were in any way different or similar to a transformative learning experience. As it was the intention of the study to

investigate students' perceived experiences of the phenomenon of written year-end examination, a qualitative research approach was utilised. Phenomena or events are understood as mental processes characteristic of an interpretive paradigm taking place within social contexts (Henning, van Rensburg & Smit, 2004: 20). It was within this interpretive paradigm that frames of reference were sought from which the meaning was shaped. The enquiry attempted to understand the meaning of the experience as the knowledge gained through an inductive mode of enquiry (Merriam, 1998: 4). The enquiry required that the perspectives of the participants be drawn using detailed interviews (Denzin & Lincoln 1994: 5). However, of even greater importance was the fact that the interpretation of the data was to be undertaken in relation to the envisaged theoretical framework of transformative learning. Therefore, the social dimension related to students' experiences was investigated from the personal accounts of individuals who had lived through the phenomenon of written examinations.

The typical qualitative data collection instruments that were used in the study were audio-recorded focus group discussions and an individual interview. By utilising qualitative data collection instruments, participants were encouraged to answer open-ended questions that were designed to elicit open discussion. The qualitative research approach allowed for the interpretation of the phenomenon in question based on the manner in which the participants communicated their meaning. The inclusion of two data collection methods also allowed for more than one interpretative practice; this was necessary so as to augment the quality of the study.

The study followed a phenomenological design, which is a qualitative research design found in human and social science research (Creswell, 1994: 11-12). The students' experiences of written examinations at the Department of Industrial Design were investigated as the phenomenon in question. In phenomenological studies, human experiences are investigated through the descriptions of the participants being studied (ibid). Therefore, in the context of the study, the lived experiences of students with regard to written year- end examinations at the department were investigated and described.

The study also sought to find common themes that enabled an exposition of the range of meanings related to the phenomenon in question (Struwig & Stead, 2001: 226). The exploration of common themes allowed for the identification of a 'common essence' within phenomena (Kvale, 1996: 53). Phenomenology was found to be an appropriate research design for dealing with participants' experiences. The intention of the research was an attempt to understand the qualitative diversity of the participants' experiences and to explain the meanings of those experiences as they related to the ideals of TL. The term 'experience' was viewed as the act of living through the specified event, which was termed the 'lived experience' (Henning et al, 2004: 33). The event of the written examination was, therefore, understood as the specific period of activity and described as the 'situated activity'. The students' experiences of examinations were, thus, seen as an event or a phenomenon that is part of the learning process and it is an activity situated at the Department of Industrial Design. The theory of TL was also utilised as the lens through which experiences were analysed.

The participants were purposefully selected from the student body at the Department of Industrial Design. Purposive sampling seeks appropriate participants that fit the researcher's criteria (Henning et al, 2004: 71). The criteria for participants to be selected for the study required that they be students in their fourth year of study. The main reason for this choice was based on the understanding that this group of students had collectively gathered more lived experience of examinations at the department than any other year group; they had three years of examination experiences at the department. The

purposeful sampling strategy can also be described as homogeneous sampling, as the study dealt with a subgroup with similar backgrounds (Struwig & Stead, 2001: 99; Krueger, 1988: 18). Furthermore, purposeful sampling was utilised to select 'information rich' participants (Struwig & Stead, 2001: 122; Merriam, 1998: 61; Maykut & Morehouse, 1994: 45).

As a qualitative approach was used in the study, a relatively small sample of participants was utilised to investigate the phenomenon in the specific context. The number of students invited to participate in the study was six, as this was the total number of students in that particular year group. However, this modest number of participants is seen by qualitative researchers as suitable for conducting an effective focus group, assuming that participants are homogeneous (Gray, 2004: 323; Krueger, 1988: 18). Because of the qualitative nature of this study, data were collected by verbal means. This is termed 'overt data' (Struwig & Stead, 2001: 100). The data collection methods employed were typical of a qualitative enquiry, as the focus was on eliciting verbal data. The aim of the methods was, therefore, to generate 'rich and holistic data' (Merriam, 1998: 78).

In the context of the study, questions posed during the focus group were used to stimulate interaction between participants, discuss issues they considered important and assist in eliciting the participants' experiences of the phenomenon in question (Barbour, 2007: 2). The purpose of the focus group was to generate multiple perspectives from the participants within a predetermined time limit (ninety minutes) and with maximum transparency. To substantiate the focus group interview data, individual interview data were also utilised. The reason for this related to the outcomes of the focus group interview in that focus group discussions were useful in eliciting further questions for personal discussion (Struwig & Stead, 2001: 100). The participant that failed to attend the focus group interview due to illness was invited back for an individual interview. This session presented the opportunity to interview a participant that was not affected by group opinion and had not been part of the focus group interview. It had been observed that during the focus group interview, dominant participants highlighted certain issues that were later picked up by the other

participants. Interviewing a participant on his own was an effective strategy to elicit data that were either going to confirm or contradict data that were previously generated by the focus group.

Through utilising the above data collection methods, the horizons of individuals and group were expanded through the verbal exploration of the unknown. This ensured that the methods did not lead to forced or false conclusions as there was no agenda within the research (Valentine & Ivey, 2008: 164). The main focus was on the experienced meaning of the participants' life world. The phenomenological perspective of the data collection methods enabled access to participants' experiences of the phenomenon (Kvale, 1996: 53). The data collection methods were guided by the phenomenological ideals of listening without prejudice, allowing participants to relate accounts of their experiences, allowing verbal accounts to unfold without interruptions and allowing for interpretative listening to multiple perspectives (Kvale, 1996: 135).

Formal data analysis occurred after all the interview transcripts were completed. The interview transcripts were typed verbatim because raw data could not be summarised or rephrased to be grammatically correct, as this was considered to be methodologically inaccurate (Ryan & Bernard, 2003: 279; Struwig

& Stead, 2001: 169). Participants readily used language that described actions or tasks that designers typically use in their daily routine. Participants also referred to processes and materials unique to the discipline of industrial design. During the transcription process, it was realised that familiarity with the participants made for easier separation of voices, which was important when seeking clarification and exploration during the data analysis process (Barbour, 2007: 60). It was also realised that, whilst in the process of transcription, analysis was already taking place (Struwig & Stead, 2001: 169).

The process of 'hands-on' transcription resulted in familiarity with the data which was useful for further recall (Barbour, 2007: 79). During analysis, instances were recalled that were interesting during the interview and allowed for the concept or idea to be allocated to a voice. These recollections became

precious finds within the context of the research. Replaying sizeable portions of the recordings and comparing them to the initial transcription allowed for more accurate description of what was actually being communicated during the interviews (Barbour, 2007: 79; Silverman, 2003: 354). This strategy was employed with good effect during the transcription process and, albeit arduous, was vital to the outcome of the research.

As the aim was to develop an argument grounded in the data, the analysis process utilised the constant comparative method or technique (Gray, 2004: 214; Henning et al, 2004: 115; Charmaz, 2003: 249; Babbie, 2001: 361; Strauss & Corbin, 1998: 79). This was an inductive method of research where the data generated were utilised to induce themes from the captured text (Ryan & Bernard, 2003: 275; Struwig & Stead, 2001: 170). It commenced with 'line-by-line' reading of the initial transcript while simultaneously listening to the recording so as to ensure that any notable information during transcription had not been omitted. This also allowed for talk and text to make sense and in some cases small changes were made, especially when participants repeated words or phrases more than two or three times. A final printed version of the raw data in the form of the transcript was then made available for coding.

Coding involved a process of breaking down data into manageable segments and identifying those segments (Dana & Yendol-Silva, 2003: 90). In addition, the process of coding the raw data entailed careful reading and required highlighting actions, assumptions and consequences (Ryan & Bernard, 2003: 275). The identification process required that units of meaning be selected with a highlighting pen. Meanings were derived from words, sentences and paragraphs and a simple coding system was devised to identify the unit of meaning. This code was not only devised to retain participant anonymity, but it ensured that it related directly to the line on the transcript and the meaning that it embodied (Struwig & Stead, 2001: 171). Identification codes were written on the side of the transcript next to the line where the unit of meaning originated and then transferred alphabetically on computer as new codes developed. This method allowed for a fair degree of control and retained the clarity required when assigning new codes. Codes were then analysed and interpreted in the

specific context of the research questions and in conjunction with other codes.

Codes were systematically grouped into similar categories which were further developed into broad themes. Both similarities and differences were grouped and placed in a category (Strauss & Corbin, 1998: 79). A composite picture gleaned from the coded data had thus been built as a result of grouping the unitised data (Struwig & Stead, 2001: 171; Merriam, 1998: 179). The inductive process of theme construction was necessary so as to capture recurring patterns from the coded data. Coding involved not only defining and categorising the data, but it also involved finding new perspectives from the data (Charmaz, 2003: 258). As such coding remained analytical and a 'theoretically saturated activity' (Ryan & Bernard, 2003: 276; Silverman, 2003: 356).

The transformative dimension of collaborative learning

The study revealed that students used group collaboration to enhance their learning and that learning through verbal communication in class or outside the class further contributed to communal learning. The value of collaborative learning is depicted in the following comments:

...that's why it's been helpful in terms of studying in a group like (in the) last few years... (Participant 6: 2010).

...I think the other thing which also, influences a class or a group is the way they communicate between each other... (Participant 5: 2010).

...we are all friends we share our information and we learn a lot more... (Participant 4: 2010). Students seemed to motivate one another through group dynamics, by sharing workload and assisting each other in grasping new or difficult concepts. The 'me first' attitude changed during the course of three years at university into one of building relationships with one another and furthering community values that enhanced personal growth and learning (Coker & Coker, 2010: 7). Learning in groups, according to Boyd (1989: 467), can provide supportive structures that not only facilitate learning but help to

realise personal transformations. Cranton (2006: 163-164) explains that, in supportive learning groups, there is commitment to the group's goals, loyalty, responsibility within the group, good communication, an acceptance of other opinions and the ability to endure frustration. According to the participants, the learning group was not only about work but also incorporated group socialising which was important to establish a place for the individual within the group. This idea was best explained by participants in the following ways:

...the class meets each other outside the classroom atmosphere, so they can relax and talk about other things, not just what have you studied... (Participant 5: 2010).

So, I agree with Participant 5 by saying that the external part of it is actually very important as well, because, when you know your peers, you actually accept their input... (Participant 2: 2010).

As such, the following participant felt that through enhanced peer interaction between the various year groups they had created a collaborative learning community:

...we help them ... with pleasure and they (are) willing to help us and that's creating like an industrial design community, within the university... (Participant 2: 2010).

Relationships within learning groups facilitate the 'engagement' necessary for students to develop their own learning. These relationships include not only relationships with the institution, peers and lecturers, but also relationships with their subjects, profession and industry (Reid & Solomonides, 2007: 28). Through the development of communal approaches to learning, a commitment is formed between those that are engaged in this process of learning. This commitment is a result of the individual students' willingness to learn, interest in the subject being studied and the support received from both fellow students and lecturers (Reid & Solomonides, 2007: 28). These aspects were all evident in the study. However, engagement does not occur overnight; instead, it is

something that is nurtured and which takes time to develop before it becomes a truly effective means by which individuals learn. The realisation that this engagement had occurred was best summed up as:

...I mean this is awesome, we are all learning from each other (Participant 2: 2010).

At this point in the argument, it is important to note that learning was not attributed to the act of writing the examination; this was expressed clearly in the following manner:

I don't think it (examination) proves that you know. It just proves that you can study it (Participant 4: 2010).

In the following participants' opinions, constructive learning had already taken place mostly through lectures and class discussions that opened up various topics and reinforced new ideas:

...I think the actual lectures where we were taughteverything, that's what I go away with, in industry that's what I'm going to relate to (Participant 1: 2010).

I agree with Participant 1, in a sense that for me, the exams haven't taught me as much as everything else throughout the.....course. I got most of my information from actually conversing with the lecturers or my fellow students... (Participant 2: 2010).

Preparation for examinations required that students work in groups to facilitate learning. The prior knowledge that was developed through an academic year had a positive impact in terms of the way in which students approached learning for examinations. As such, it becomes clear that the students perceived experiences of examinations at the department were not credited for contributing to their development. While it was established that there were enough instances of transformative learning, these were not directly linked to

the phenomenon of the written examination. It appeared from the data that the 'little' events and processes along the way towards examination and ultimately towards the practical application of theory contributed to individuals' learning through transformation.

The transformation of the individual was also not seen as sudden, but instead took time to occur. Participants described examinations in terms of their personal development within the field as part of a process of maturation and learning within the context of industrial design education. Participants used words such as 'obstacle' or 'hurdle' to describe the transformative experiences of examination in the following ways:

I see exams as just a little obstacle in the road, you know you need to get through it and you need to pass it. But you carry on with your journey (learning) after that (Participant 3: 2010).

I see it as maybe a hurdle to overcome, in order to be able ... to prove that I know the information. I already do feel like I do know it, but it has to be a part that you actually show that you have some knowledge or understanding of what's being taught... (Participant 6: 2010).

These comparisons indicated that examinations were one of many other such impediments along the way towards personal development. Examinations, nonetheless, held an important position on the path towards personal development. The concept of a 'disorienting dilemma' was evident from the findings of the study (Mezirow, 2000: 22). However, examination could not be described as contributing to epochal transformation, but was described as part of a series of 'progressive transformations' happening over a period of time (Taylor, 2008: 6; Cranton, 2006: 71; Kappel & Daley, 2004: 84; Mezirow, 2000: 21-22).

Conclusion

At the outset of the study, the intention was to seek out students' experiences of the phenomenon of written examinations and to ascertain whether these experiences represented an ideal learning experience that allowed for the transformation of the individual. Therefore, the aim of the research was to elicit the students' experiences of written examinations as a critical component of transformative learning.

What was found was a group of individuals motivated by one another and ready to enter into their professional practice, all of whom could be described as transformed and undergoing transformation. They embody the progressive action of transformative learning that will never really end for these individuals. However, for these participants, transformation was not a result of writing examinations, but instead, examinations provided the intricacies or 'obstacles' on the way to their personal development as industrial designers. They have undergone what Dirkx (2006: 20) refers to as the 'journey of the self'. This journey not only speaks about 'obstacles' and 'hurdles', but also mentions the attainment of milestones along the way in the form of personal development, deep social engagement and collaboration with others within the same context (Dirkx, 2006: 19). Examinations are, therefore, part of a valuable means by which TL is fostered, beyond the constraints of the classroom. It brought students together in groups that achieved far more in terms of developing transformed attitudes towards each other as individuals and which extended their appreciation for the discipline of industrial design.

Nevertheless, it is also important for lecturers to help realise the personal development of the individual student to achieve their own learning objectives, be they personal or social, in conjunction with lecturers' objective to help students become autonomous thinkers (Wiessner & Mezirow, 2000: 348). It is also worthwhile to note that although TL as a teaching and learning theory was not formally applied in the department, it is apparent that elements of this approach could be adopted in future. Ideally, TL could be utilised as an appropriate pedagogical tool. The adoption of a TL approach may reinforce an understanding of the responsibility that industrial design as a discipline has in

society.

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