

TEACHING ADVANCEMENT AT UNIVERSITY (TAU) FELLOWSHIPS PROGRAMME

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Title: Designing for transformative learning in technology-rich and technology-constrained higher education contexts in South Africa

Abstract

After some exploration of the challenges associated with the process required to adopt a collaborative course design process for supporting technology-enhanced teaching and learning in a South African university, a Teaching Advancement at University (TAU) fellowship participant gives an account of her learning journey from a university educator perspective. Her account of using a design-based research methodology in the re-conceptualisation of course design for transformative learning is shared as 5 lessons. These lessons could have some influence in supporting African university teachers who need to design learning activities in both technology-rich and technology-constrained learning environments.

The Challenge

The need to strengthen institutional capacity in designing academic programmes for student-centred, blended and online learning was identified as a priority area at the Nelson Mandela Metropolitan (NMMU (NMMU Vision 2020 Strategic plan.) Subsequently, a programme for assisting academics to embed new technologies into their programmes was set up. However, choices of pedagogical models that could be used to galvanize the curriculum development process are yet to be fully concretised. This is particularly important in a South African context where there is an urgent need to transform curricular in order to address past inequalities and embrace social innovation simultaneously (Ngcamu & Teferra, 2015; Jones & Walters, 2015), and in contexts where teachers and students operate in both technology-rich and technology-constrained learning environments.

In many instances where exemplars of best practice are adapted to fit African contexts, documentations of the modifications of the design process that can be passed to others are limited. There are virtually “no records of success to build on” (Awidi, 2008, p.66). In their reference to adoption of technology-enhanced learning, Czerniewicz and Brown (2009) argued that there was “...no evidence of critical mass being achieved”...nor indications “...of the requirements for scalability” (p. 130). Challenges of adoption of still persist (Tarus, Gichoya & Muumbo, 2015). There are many instances where staff are not willing to change their practices to accommodate technology adoption (Awidi, 2008; Ramos, Taju & Canuto, 2011). Reports of courses being ‘dumped’ into institutional learner management systems are quite common. According to (Conole, 2014, p. 502), “designing for learning is a key challenge facing education today”.

Gilly Salmon’s (2013) Carpe diem learning design principles seemed appropriate as a source of collaborative course design principles to adopt in the NMMU context. They were simple to use, based on the enduring Vygotskyian (1978) cognitive development idea of scaffolding linked to Salmon’s (year) 5-stage model¹. The Carpe

¹ The five stages include access and development, socialization, information exchange, knowledge construction and development. Available at <http://www.gillysalmon.com/five-stage-model.html>

Diem process itself was not over-theorised and scalable (see figure 1)

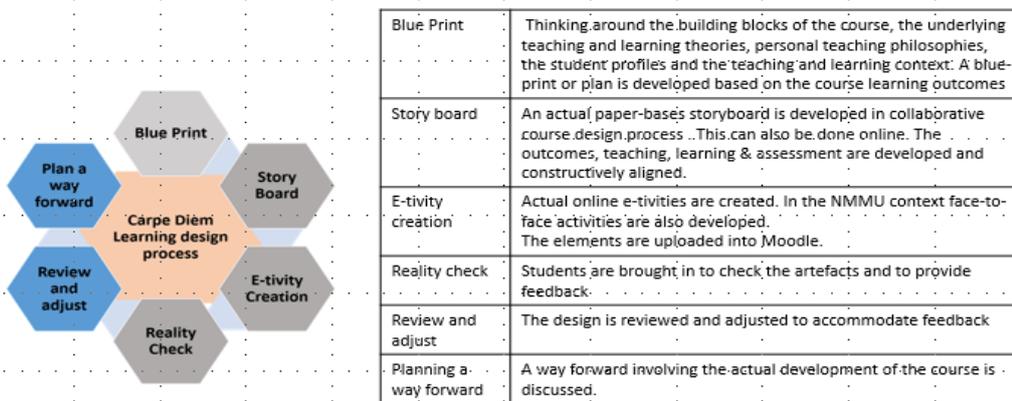


Figure 1: The Carpe Diem learning design process (Salmon, 2013)

Purpose of the project

The purpose of this project is to use the design-based research methodology to try out a set of interrelated course design principles grounded in transformative learning theory, and anchored in a Carpe Diem learning design process. The design principles have been tried and will continue to be tried in different workshop settings. The aim of the project is to help participants prepare for technology-enhanced learning design in higher education contexts, and, through reflection, to extract design principles that are useful for HE practitioners working in the field of blended/online lecturer training in African learning contexts.

The following research questions have/and are being explored:

1. Can a sample of the Carpe Diem workshop participants identify any elements of the process as being transformative? If yes, in what ways do they perceive this process as being transformative? Which elements of the process are considered to be transformative? If not, what are the reasons?
2. How do the participants intend to apply these transformative ways to their interactions with their workshop participants (students or other academics)?
3. Can the answers to questions 1 and 2 be used to inform a process for developing a pedagogical framework for designing *for* transformative learning activities in technology-rich and technology-constrained higher education contexts?

Research Design

Before the project, a brief preliminary survey exploring the professional training needs for NMMU staff was conducted. There were 70 respondents and all of them indicated that they were interested in curriculum development and adopting a blended learning approach to their teaching. Workshop attendees have been Educational/Academic development professionals and a few academics at NMMU.

The main sources of data include surveys, interviews and participant generated artefacts. For the first phase of the project, participants went through Carpe Diem course design workshop under the guidance of an international Carpe Diem facilitator- Professor Alejandro Armellini. The materials of the course are available at the NMMU Moodle site: <http://learn.nmmu.ac.za/course/view.php?id=2434>. The initial workshop was followed by a series of workshops in which the team practiced facilitating stages of the workshop.

The emerging conceptual framework used includes an expansion of Jack Mezirow's (1991, 2000) and Illeris (2014) references to transformative learning as a developmental progression that involves changing learners' identities, reformulating how they *come to know* by reconfiguring previously held beliefs, worldviews and assumptions as

they make sense of new, filtered experiences. There is reference to Freire’s (1970) in relations to learner consciousness raising and awareness. The project attempts to identify triggers that will lead to the desired habits of mind and dispositions fundamental to transformative learning realization (Bamber, 2016).

Design-Based research

Design-Based research (DBR) (Herrington, 2012; Anderson & Shattuck, 2012) is used as a methodological tool. DBR developed because of the perceived lack of meaningful impact educational experimental designs were having on educational practice. Initially DBR projects were presented as design experiments (Brown, 1992), developmental research (Gravemeijer, 1994) and design research (Collins, Joseph, & Bielaczyc, 2004). Wang and Hannafin (2005) describe DBR with five main characteristics: pragmatic and based on reality; grassroots but research based; interactive, iterative and flexible; integrative and contextual. The DBR process consists of three phases: In the first phase, the design principles are identified and articulated. The second phase involves enactment and refinement, while the third phase is about revising the pragmatic principles. Bakker and Van Eerde (2014) categorize these three phases as 1) preparation and design; (2) teaching experiment and (3) reflective analysis. McKenney and Reeves (2012) refer to these three phases as (1) analysis and exploration, (2) design and construction, and (3) evaluation and reflection.

The project has three main parts:

- (1) Part I is a study of the *first workshop process*² and its impact on subsequent learning design practices. (see table 1)
- (2) Part II is the researcher’s account of using a design-based research methodology in the re-conceptualisation of course design for transformative learning shared as 5 lessons.
- (3) Part III is a study of subsequent workshop processes on participants’ learning design and teaching practices. This investigation will involve revisiting the emerging framework for learning activity design. The ultimate aim is to produce resources to stimulate design ideas and discussion around technology-enhanced transformative learning (see table 2)

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Table 1: Three phases of the Design-based Research project- Part I

	Phase I :Analysis and exploration or Preparation and design	Phase II :Design construction and Implementation or the Teaching Experiment	Phase III: Evaluation and reflection or reflective analysis
When	November -December 2015	February- June 2016	Whenever the ethical approval is approved
Research activities	<ul style="list-style-type: none"> • Literature review on DBR and transformative learning • Pre-workshop survey with participants to establish profile of participants and their expectations of participation in the workshop 	<ul style="list-style-type: none"> • Running of Carpe Diem workshop • Begin analysis of some of the artefacts 	<ul style="list-style-type: none"> • Interviews with participants to find out what aspects of the workshops impacted on transformative learning activity design • Development of tentative framework for NMMU course design process

² The NMMU Institutional human research ethics approval process has not been completed therefore I will not share any data collected so far. Interviews will be conducted once the ethical clearance of the project has been obtained. The application and all the instruments developed are available in the TAU google drive:

Table 2: Three phases of the Design-based Research project-Part III

	Phase I :Analysis and exploration or Preparation and design	Phase II :Design construction and Implementation or the Teaching Experiment	Phase III: Evaluation and reflection or reflective analysis
When	November -December 2016	February- April 2017	April - June 2017
Research activities	<ul style="list-style-type: none"> An extended Literature review on DBR and transformative learning Use analysis of the process to inform the development of a Carpe Diem workshops for NMMU academics Pre-workshop survey with participants to establish profile of participants and their expectations of participation in the workshop 	<ul style="list-style-type: none"> Running of Carpe Diem workshop Analysis of some of the artefacts Interviews with participants to find out what aspects of the workshops impacted on transformative learning activity design 	Evaluation of impact of process of academics' learning and teaching later on Writing of final research report

Outcome: 5 Useful lessons when using DBR the-conceptualisation of course design for transformative learning

The initial Carpe Diem ('seize the day') learning design embraced was informed by the University of Northampton's Teaching and Learning strategy and model. The facilitator helped participants practice designing using online tools in Moodle- the Learning Management System used by the university, as well as opportunities for participants to work collaboratively on design projects. The initial design is presented in Figure 2.

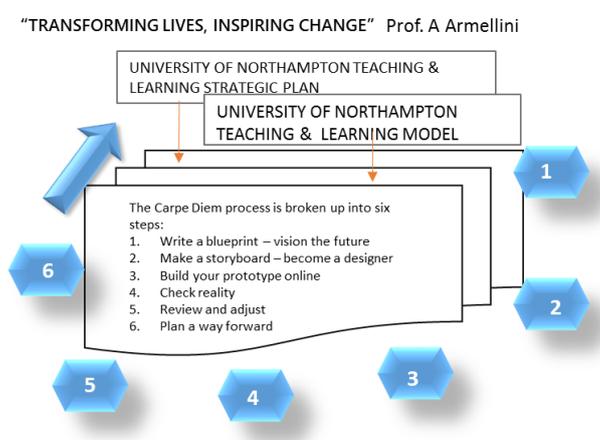


Figure 2: Initial design of Course design workshop

Below are the lessons learnt so far:

DBR use Lesson 1: Understanding the institutional culture takes time

My being new to the institution presented challenges with understanding protocols required to getting the research process started. Fortunately the Dean of Teaching and Learning, offered to pay for the expert facilitator's flight, stipend and accommodation. From a DBR perspective, an understanding of institutional culture is important as the research environment has a bearing on the intended purpose and the education innovation possible.

DBR use Lesson 2: There are variations in DBR

There are variations of DBR depending on what the reasons for conducting the research are. There seems to be two major variations of design research which are applicable to DBR: "...one that primarily aims at direct practical use,

and one that *primarily* aims at generating theory on teaching and learning processes (Prediger, Gravemeijer & Confrey, 2015, p. 880). The theory generating approach often involves testing and improving a hypothetical learning trajectory in several iterations of design experiments (Cobb, 2000; Bakker, 2004). According to Cobb et al. (2003), p.10) “design experiments are conducted to develop theories, not merely to tune ‘what works’”. The approach used in this project is the one focussing on practical use, resulting in the development of curriculum products and design principles (Prediger, Gravemeijer & Confrey, 2015).

In either of the approaches, there is a constant tension between trying to produce “locally usable knowledge on one hand and scientifically sound, generalizable, knowledge on the other” (Sandoval & Bell, 2004, p. 199). DBR involves trying to make sense of a messy real-world which is not easily bounded like laboratory experimental settings. It is a flexible process with multiple variables. The researcher alternates between researcher and designer roles, and the participants operate as co-participants in the design and analysis (Barab & Squire, 2004

One DBR methodological challenge relates to the credibility of the data collected as the natural settings are tampered with during the iterations. The second one involves the extent to which results are generalizable since the interventions are carried out in specific settings. The third one has to do with the bias and subjectivity of the researcher and how this influences the research results.

DBR use Lesson 3: Scalability and sustainability

There are two challenges:

- a) A need for the design team members to deepen and simultaneously develop a shared understanding of the design processes so as to ensure coherence
- b) The lack of sufficient numbers of IT staff with the necessary pedagogical exposure to support the curriculum design adoption process.

The lesson learnt here is that one needs to discuss issues of scalability and sustainability before embarking on projects such as these.

DBR use Lesson 4: The instructivist/constructivist debate

As facilitators, we are often drawn into debate about the merits of instructivist/ constructivist approaches to teaching. It is difficult to underscore the role of the educator without making the teaching and learning activity “teacher-centric” as opposed to being “learner-centred”. Dalziel et al (2016) emphasize the value of construing “learner-centeredness” in terms of what makes student learning work. Given the differences in disciplinary discourses from the variety of programmes offered at NMMU, the lack of lecturer training in teaching and learning, the development of design workshops are opportunities for exposing academics to active learning models and learning activity design practices for teaching for technology-enhanced transformative learning.

DBR use Lesson 5: The value of student (participant) voice in the design process

In the Carpe Diem process, we bring in the students as reality checkers and this helps the participants check if what they are developing. We also share a variety of techniques for getting immediate feedback from students and peers. The DBR process allows one to collect valuable information about how participants experience the workshop session, what they have learned and if transformation (if any) has occurred.

A planned way forward

The first sets of data were collected after the workshop in March 2016 but an application for ethical clearance to conduct the research has not yet been received from the NMMU research committee. Once this is completed, the data will be analysed and the project resumed. The data collected will be used to inform the design of an NMMU coursed design workshop and a manual to support the process. The planned completion date is July 2017.

Projected outcome

- A preliminary model or pedagogic framework for teaching the design for transformative learning in technology-rich and technology-constrained higher education contexts to adapt and apply.
- An opportunity to model design practice for future facilitators and academics
- Capacity building for *Carpe Diem* implementation and evaluation across the institution.

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