Towards a Conceptual Framework for Interdisciplinary Teaching and Learning Dialogues in Higher Education

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Abstract

This paper explores the development and early validation of a conceptual framework for learning-centred teaching by six Teaching Advancement at Universities (TAU) Fellows and their mentor, each representing a different higher education institution and a different discipline. A grounded theory approach was used to construct the framework and its potential utility value was explored though the use of six teaching innovation projects conducted in undergraduate South African university programmes in law, medicine, education, and the arts. The project revealed that interdisciplinary dialogic spaces can be initiated and nurtured through opportunities offered by communities of practice such as the TAU Fellowship when academics suspend their exclusive disciplinary preoccupations to open up possibilities for a generative, emancipatory scholarship. We argue that the conceptual framework is useful to facilitate and promote dialogues across and between the multiple discipline specific ontologies, epistemologies and methodologies offered in higher education.

Keywords: Interdisciplinarity, learning, teaching, conceptual frameworks

Introduction

The insatiable knowledge demands of the information age and the complexification of globalised societies cannot be systematically or adequately addressed by the expertise vested within unitary disciplines in higher education (Jacob 2015: 2). Furthermore, as a counterpoint to the reductionism associated with historical materialism theorized by Karl Marx and Friedrich Engels, the established canons of the disciplines of new materialism (Bennett 2010) are rendered incomplete and inappropriate for addressing the devastating impact of modern capitalism on societies and the natural environment. For example, sustainable sources of energy are no longer the preserve of engineers and scientists alone: participation is now essential from public health experts regarding the health risks of fracking and nuclear energy (Levy & Patz 2015; Sidel & Levy 2008); from lawyers regulating the environmental impact and the ownership of land rich in fossil fuels (Adler 2001; Du Plessis 2015); and from financial experts who can establish whether such endeavours are ethically defensible and financially viable (Lewis 2010; Robichaud & Anantatmula 2011). These challenges can only be adequately addressed by professionals who have a range of discipline-independent skills including problem-solving, leadership and interdisciplinary thinking (Frenk *et al*. 2010). The latter, defined as: 'the capacity to integrate knowledge of two or more disciplines to produce a cognitive advancement in ways that would have been impossible or unlikely through single disciplinary means' (Spelt, Harm, Biemans, Pieternal & Luning 2009: 141) is one of the most recent additions to the higher education agenda and is being addressed in a number of constructive ways. In our quest for a post-human future as envisioned by Haraway (in Kroker 2012), for example, many higher education institutions are now offering education and training in the form of porous multidisciplinary programmes based on an additive approach and interdisciplinary programmes based on an integrative approach.

While such programmes do have the potential to equip graduates with the required knowledge and competence to achieve this mandate, the academic project can only be sustained by the appropriate training of teachers responsible for providing this type of education. Faculty development programmes do abound, but typically, initiatives which draw participants from a range of disciplines are usually restricted to disciplines within a specific field of professions. Faculty development initiatives that represent a range of disciplines which are not restricted to one cadre of professionals are more

recent additions to the list of faculty development activities offered around the world. Such programmes achieving representation from engineering, medicine, law, the arts, and education- do so by focusing on the scholarship of teaching and learning. This common agenda facilitates engagement across discipline-specific ontologies, epistemologies and methodologies. An example of such an initiative is the Faculty College of Wisconsin Teaching Fellows & Scholars Program, which is offered by the University of Wisconsin system's Office of Professional and Instrumental Development (OPID 2016). The OPID programme addresses the needs of around 30 000 educators across 26 campuses and more than 12 disciplines. Other similar programmes, though on a much smaller scale, have been developed in the Singapore Management University (SMU 2016), Manchester Metropolitan University (MMU 2016) and the University of British Columbia (UBC 2016). In South Africa, the Cape Peninsula University of Technology also offers a comprehensive programme (CPUT 2016).

The Interdisciplinary Imperative

South Africa faces many challenges in higher education, including the consequences of massification of education (Soudien 2007; Khan 2005), the need for educational support in widening participation programmes (Burch *et al*. 2013), and dwindling budgets (Business Tech 2015). The skills to address these concerns are not all located within insular disciplines, which thus transfers the obligation to academics to emerge out of their disciplines in order to collectively address the knowledge demands of the information age (Frenk *et al*. 2010). An interdisciplinary ethos is emerging in South African universities, as evidenced by five universities ranked in the top 100 Rankings by Subject (QS 2016), which offer development studies with an interdisciplinary focus. However, the real question is how these pockets of interdisciplinary work may be up-scaled to regional and national levels.

A key driver of current debate in South African higher education nationally is the need for curriculum transformation (Le Grange 2016; Luckett 2010; Shay, Wolff & Clarence-Fincham 2016). While the notion of transformation has taken on many divergent meanings in this context, at an abstract level, curriculum transformation as a social justice imperative is certainly one of the strongest justifications for pursuing the interdisciplinary

agenda. Quinot (2012: 412) notes that 'if the academic sector of the South African legal community is serious about the country's transition from authoritarian rule to a constitutional democracy, it is imperative that legal academics, without exception, should start to engage with educational theory as part of the core of their craft'. This reasoning applies equally to other fields of study. However, given that this endeavour is premised on the complex social realities in which university teaching occurs, it follows that the required change in approach must involve a greater interdisciplinary thinking than before (Quinot 2012). It is accordingly neither desirable nor feasible to conceptualise the teaching of any particular field of knowledge in a way that is isolated from other fields, aimed only at producing graduates for a singular, well-defined professional career track (Shay, Wolff & Clarence-Fincham 2016). Fit-for-purpose university teaching in South Africa should be aimed at equipping graduates with the capacity and inclination to drive societal transformation, as well as to tackle the complex challenges of reconstruction beyond the narrow confines of traditional disciplines (Burch & Reid 2011).

The Quest for Interdisciplinarity: The Case of Teaching Advancement at University (TAU) Fellowship

A significant challenge in enacting interdisciplinary faculty development programmes, both locally and internationally, is the need for a platform upon which educators with widely varying disciplinary orientations and expertise can engage in education dialogues that are not limited or constrained by discipline-specific ontologies, epistemologies, and methodologies. While the literature describes many frameworks that may be applied to education initiatives across a wide range of disciplines (Jacob 2015; Lyall & Meagher 2012; Wall & Shankar 2008), such frameworks do not in themselves provide an overarching philosophical and theoretical basis for education dialogues across disciplines. Furthermore, these frameworks do not address the need to find common ground and to mediate the power gradients and status differentials which are deeply entrenched in dialogues between adherents of different disciplines (Van Dijk 2008).

In response to the need for academics and researchers to adopt a more emancipatory outcome for higher education teaching and learning, at a national level the Teaching Advancement at University (TAU) fellowship programme

was launched in 2015. The TAU endeavour is funded by the Department of Higher Education and Training (DHET) through a Teaching Development Grant and hosted by the Chair of Teaching and Learning at the University of Johannesburg. The pilot project, possibly the first of its kind in the country, aims to bring together distinguished academics and scholars from across institutions and disciplines as scholars, leaders and mentors in teaching and learning in their institutions or disciplinary fields; to enhance the status and stature of teaching, by promoting the culture of teaching excellence, and contributing to the scholarship of teaching and learning (TAU 2015).

The 12-month pilot teaching fellowship development programme, involving 60 academics from a range of public higher education institutions, requires participants to engage in education projects which seek to address challenges experienced within their own institutional contexts, and which results in the generation of support materials for advancing teaching excellence in varied disciplinary contexts (TAU 2015). The authors of this article were participants in the pilot project (2015-2016). In addition to individual projects, an important component of the TAU fellowship programme required Fellows to conduct a group project focusing on one or many aspect/s of teaching and learning in higher education.

The purpose of this paper is to describe the 12-month scholarly journey of six TAU Fellows and their advisor as they initiated, engaged and completed a group project which culminated in the development of a shared conceptual framework of learning-centred teaching. The project was aimed at facilitating interdisciplinary conversations within higher education to achieve the common goal of enhancing the impact of their teaching and learning praxis.

Methodology

Participants

The TAU group 7 (dubbed G7) consisted of three women and four men (six fellows and an advisor), representing four professions (medicine, law, higher education, and the performing arts) from seven higher education institutions in five provinces in South Africa. Each of the Fellows is recognised as a distinguished teacher – the recipient of a departmental or an institutional teaching award and/or a National Teaching Excellence Award conferred by the Higher Education Learning and Teaching Association of Southern Africa.

Grounded Theory Approach

A grounded theory technique for building conceptual frameworks for phenomena linked to interdisciplinary bodies of knowledge and conceptual framework analysis (Jabareen 2009), was used to develop the framework described in this paper. As 'an inductive, theory discovery methodology' (Martin & Turner 1986: 141), grounded theory facilitates 'the generation of theories of process, sequence, and change' (Glasser & Strauss 1967: 114). Accordingly, it builds a 'context-based, process-oriented description and explanation of the phenomenon, rather than objective, static descriptions strictly in terms of causality' (Jabareen 2009; Orlikowski 1993; Andersson, Hallberg & Timpka 2003: 50).

Conceptual framework analysis, which 'aims to generate, identify, and trace a phenomenon's major concepts, which together constitute its theoretical framework' (Jabareen 2009: 53), focuses on three essential components: (i) the data: multiple bodies of knowledge vested within disciplines; (ii) the process: the iterative and continuous interplay between data collection, analysis, and comparison to 'control conceptual level and scope of the emerging theory' (Orlikowski 1993: 10), and (iii) the procedure: a stepwise approach of analysis, which included mapping, reading and categorising the data; identifying and naming concepts; deconstructing and categorising concepts; integrating concepts; synthesising and resynthesizing the framework; 'making it all make sense'; validating the framework, and rethinking the framework (Miller & Mansilla 2004).

Procedure

An organic iterative process of multiple conversations, based on the tenets of a grounded theory approach proposed by Strauss and Corbin (1990), was used to develop the conceptual framework and to achieve relative consensus on its utility in the disciplines represented within the group. These conversations, both face-to-face and online, were supplemented by extensive reading of the literature relevant to the concepts included in the framework. The process began during the first onsite session of the fellowship programme in July 2015 and was concluded at the last onsite session 12 months later. Throughout the process, the development of the framework was recorded in a document which was updated after each engagement and regularly reviewed by all members of the group. This was to ensure that it accurately reflected the conversations,

decisions made and the next steps to be taken. This paper, reporting the development and validation of the framework was written at the conclusion of the fellowship programme.

Developing the Conceptual Framework

Phase One

The first meeting of the G7 in July 2015 was characterised by apprehension and uncertainty, given the apparently inexorable diversity amongst Fellows and the difficulty individual members of the group experienced in identifying the common conceptual threads that linked the individual projects to provide coherence for a group enquiry project. However, it soon became apparent that a key unifying attribute amongst members was their individual and collective passion for teaching. The initial apprehension soon gave way to lively conversations on elements of good teaching, which affirmed a general sense that Fellows had more in common than was initially obvious. While the group acknowledged that the canonised teaching space within a discipline is an essential element of its integrity, cycles of individual introspection and group conversations allowed members to temporarily abandon institutional affiliations, disciplinary masks and ideological biases to pursue a process of improving the way they learnt and taught. This 'interdisciplinary space' provided an opportunity for the group to think outside the proverbial disciplinary box and helped clarify the need to establish a common platform for ongoing meaningful engagement across the multiple disciplines represented in the group.

The group adopted the view that their individual projects, focusing on the development of curriculum materials, had to be theoretically grounded. The idea of a common shared conceptual framework was first conceived of when a group member offered the University of Limpopo School of Education's conceptual framework which used the metaphor of an egg to encapsulate the outcomes of transformational teaching. Group members agreed that regeneration, development, empowerment and compassion, which were key concepts of the framework, were fundamental values that drive teaching and were common objectives in all the individual projects within G7. These concepts, thereafter called the 'drivers of teaching', were adopted for the further development of a shared conceptual framework of teaching, which was initially articulated as 'student-centred teaching', in keeping with current dogma.

The emergent interdisciplinary ethos within the group, brokered in dialogues during formal residence sessions, in conversations over dinner and between-residence online interactions, served as a catalyst to achieve further consensus on four other common concepts identified in the individual projects: self-regulation and self-efficacy; co-creating new knowledge; co-creating improved futures and meaningful reflection. These concepts, acknowledged by all to be the bedrock of their personal teaching practice, were termed the 'pillars of educational practice' and formed the foundation of the framework being developed.

Phase Two

During early online conversations, the theory of multiple intelligences (Gardner 2006) was invoked as an essential component of the framework. This was included in the framework to capture, in a discipline-independent manner, the different intellectual capacities which predispose students to learning, remembering, understanding and performing. Furthermore, the mandate to activate these psychosocial and cognitive domains in a variety of teaching/learning environments reminded the group of the need for teaching processes which engage the diverse and broad spectrum of students present in higher education spaces in South Africa.

A visual interpretation of the framework, developed by the performing arts academic in the group, started as an interlaced Venn diagram reflecting the foundational pillars of practice, the drivers of transformational learning and the theory of multiple intelligences. The interlaced design reflected an early intention to depict the interweaving and interdependent relationships between the constructs. After review of the initial Venn diagram, the concept of 'caring', one of the drivers of transformational learning in the egg metaphor used by the School of Education at the University of Limpopo, was replaced with 'compassion' because it represented a more generic construct of humanity that did not invoke an academic discipline.

Phase Three

Reflection and feedback from the group resulted in consensus that student-centred teaching should be replaced with 'learning-centred teaching' (Sparke 1999; Reynolds 2000; Candela, Dalley & Benzel-Lindley 2006; Whetton 2007; Mostrom & Blumberg 2012). Further, as a process of deconstructing and

categorising the key concepts, the initial simplistic Venn diagram evolved into a more complex 'flower' metaphor (see figure 1). The Lotus flower was chosen for its many symbolic attributes, including the depiction of practitioners who carry out their intellectual labour with little concern for reward and with a full liberation from attachment (Ravenscroft 2012). This was perhaps a turning point for members of the group who, despite being acknowledged scholars in their respective fields, chose to suspend their individual disciplinary scholarly pursuits to embrace the identity of the collective. The name of the group subsequently changed to 'Group 7: Lotus', with each member identified as 'loti'. While a Lotus flower is the product of a plant (seen as a metaphor for the teaching environment), both the open flower and the unopened Lotus bud forms are associated with human traits which offer a further metaphor for learning and teaching: that of shrouding oneself within a discipline, but with the ability to unfold oneself to heightened empiricism, (Barone 1992), emancipatory knowledge and deep understanding.

Further attributes of the Lotus image emerged, including spiritual references of being associated with higher knowledge and life-long learning. The image of the Lotus was particularly significant in depicting turbid contexts, since lotus flowers thrive in the prevailing grimy conditions of the ponds in which they survive and flourish, without being tarnished by the grime. This is indicative of the flower's resilience and tenacity, which are valued attributes of university academics who work in conditions of adversity. The muddy waters around the Lotus epitomise the complexities of the political context, socio-cultural dynamics, economic pathologies, enabling or disabling legal frameworks and the dynamic policy landscape - all of which constitute the human ecosystem. Further, the use of the Lotus image with its elaborate, layered petals thriving within its ecosystem elegantly demonstrates the conceptual framework design, which offers a multidimensional visual representation of the complexity of the teaching/learning endeavour. The Lotus flower closes at night and re-opens in the day, which for the group, represents reflective practice, which is an essential element of effective teaching.

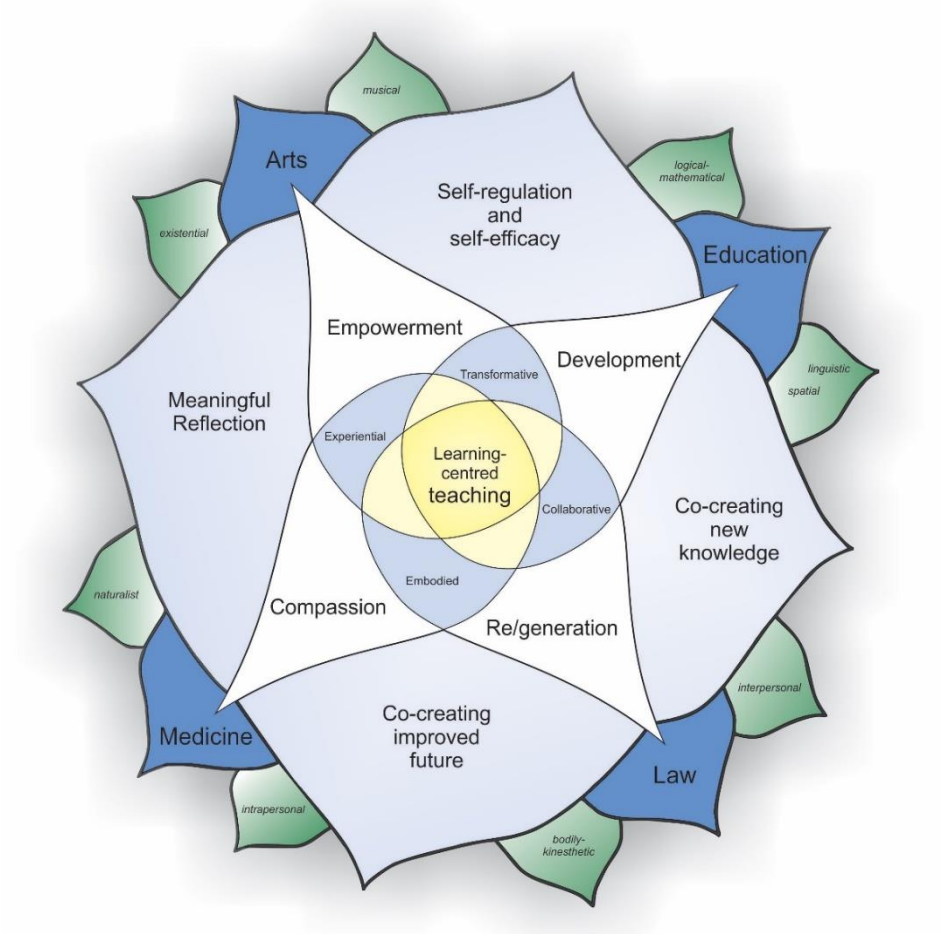

Figure 1. Lotus diagram

The layering effect of the Lotus image represents the integrated and interdependent nature of the concepts, while the overlapping centre of the original Venn diagram represents the central construct of the framework. Student-centred teaching was replaced with learning-centred teaching for the reasons already noted. Furthermore, the layers of petals, which unfurl from the centre (learning-centred learning) in a specific order, reflect the hierarchy of concepts contained in the framework – the pillars of educational practice (the

learning outcomes to be achieved) are activated by the drivers of teaching (motivation for teaching), which are in turn catalysed by specific teaching activities (unsettling rituals of practice). All the components of the framework serve to inspire the passion to learn. Figure 2 and figure 3 serve to highlight the key work from the literature which provides the theoretical underpinnings of the conceptual framework.

Phase Four

The last phase of the development of the framework provided an opportunity for the group to reflect on the potential utility of the framework within the complex multidisciplinary teaching and learning context of higher education. To this end, the group used the six individual group projects (Table 1) to determine whether the key concepts of the framework were indeed present in the projects located in education, law, medicine, and the arts. This was done by asking each fellow to first determine whether the concepts embodied in the framework were identifiable in their own individual projects. Based on this analysis of each project, fellows wrote a short tabulated comment which summarised the key elements of the respective projects. This table was then circulated to all the members of G7 for comment and feedback. Since the individual projects had been extensively discussed during the onsite sessions, and group members had attended the oral presentations of each project during the TAU Research Day, each group member was familiar with all the projects; and it was easy to confirm whether the comments captured in the table reflected the key elements of the project that were relevant to the concepts contained within the framework. A final review of the table was then undertaken by the group to verify the analysis of each project and to establish consensus.

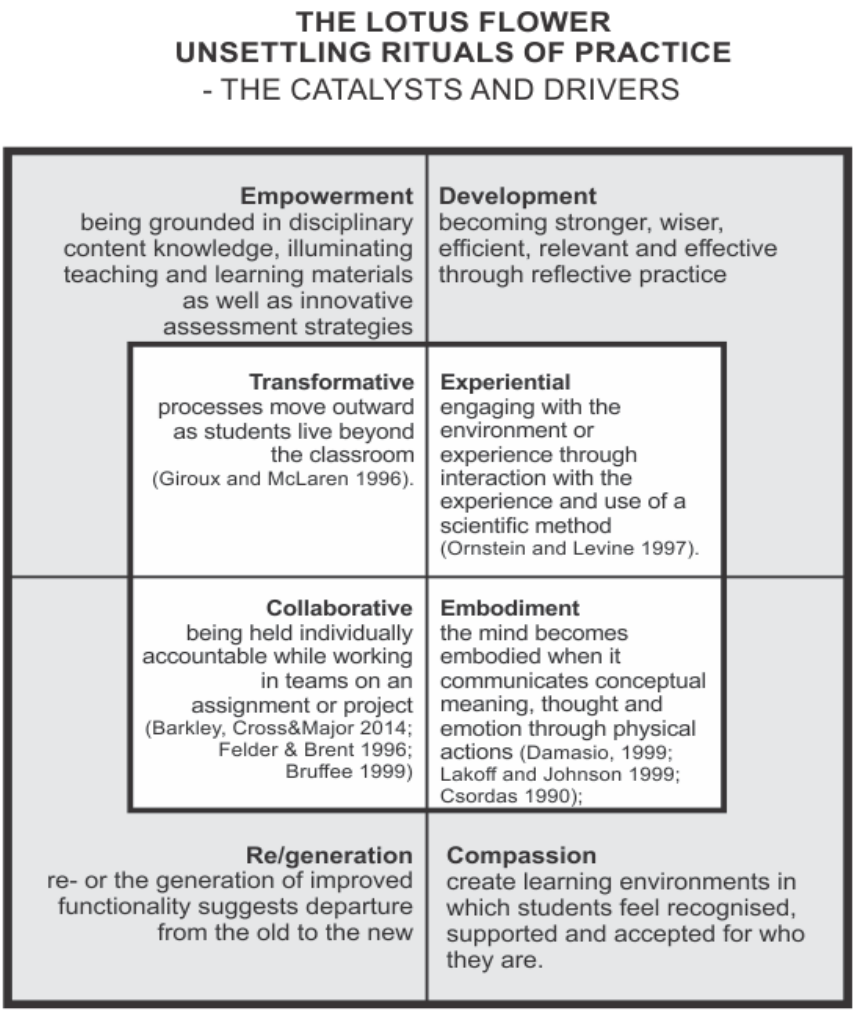

Figure 2: Theoretical underpinnings of the catalyst and driver layers of the Lotus conceptual framework

Figure 3 – Pillars of practice towards interdisciplinary learning-centred teaching

Table 1: Short description of the projects

		Project description
PROJECTS	***1 - Arts***	This project explores the use of embodied performances and activation of/in space/s as an augmented reality performative learning tool.
	2- Education	This project focuses on developing education support materials for novice physical science teachers engaging in teaching practice training opportunities.
	3 – Law (a)	This project investigates ways of using a whole-course approach to embed collaborative learning in law education in South Africa.
	4 – Law (b)	This project explores ways of engaging students in a process of creating ancillary learning materials for a course in customary law
	5 – Medicine (a)	This project explores the use of new educational methods to support and develop the diagnostic reasoning expertise of junior medical students.
	6 – Medicine (b)	This project examines resiliency in medical education, initially concentrating on Cuban-trained SA medical students.

Finally, the common conceptual framework was subjected to peer critique in the form of a poster presentation on the final day of the TAU fellowship programme. The poster depicted the image of a lotus flower with an attendant explanation of the layers (petals) of the flower. In addition, an augmented reality (Kipper & Rampolla 2013) digital application called Aurasma (2016) was used to embed short video presentations of the respective projects within the poster to demonstrate how each Fellow applied the framework to his/her individual project.

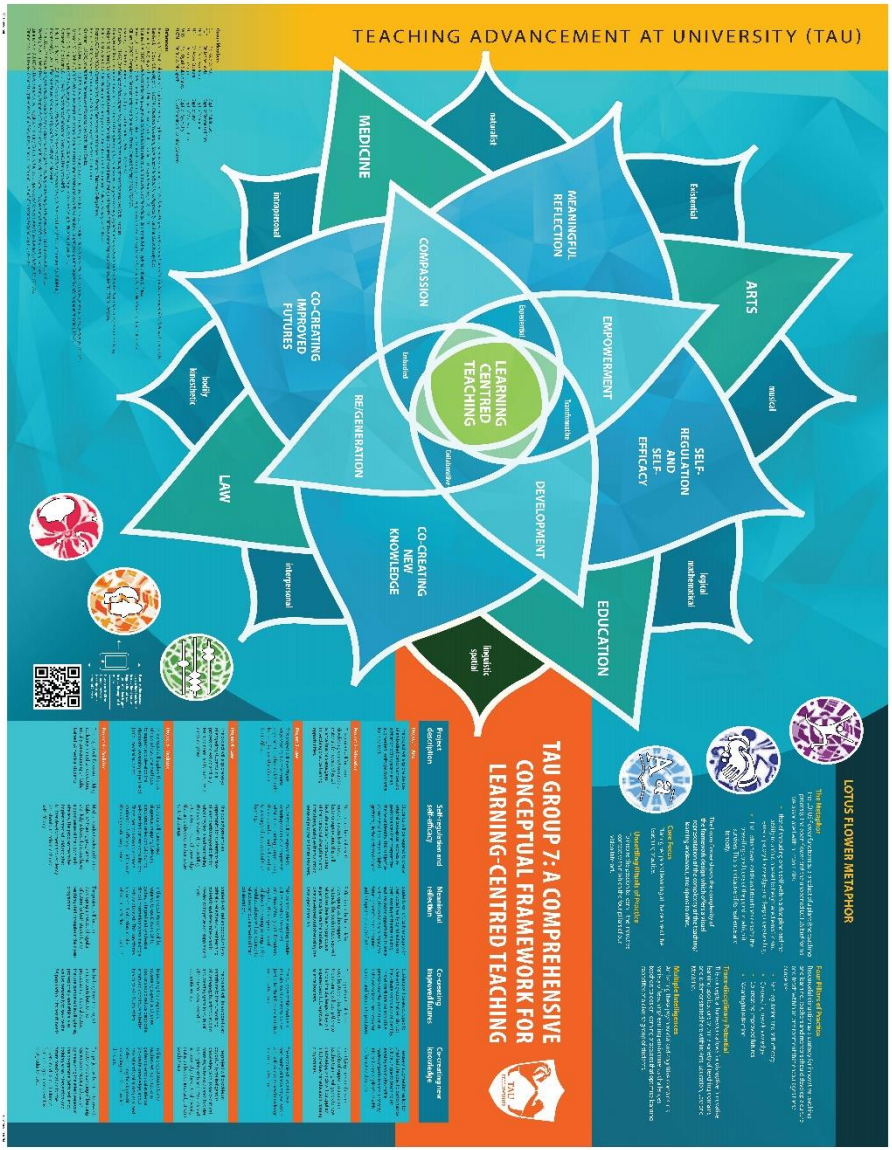

Figure 4. Digitally interactive poster presentation of the Lotus conceptual framework.

Results

Tables 2a to 2f show the outcome of the process of reviewing the projects through the multiple lenses of the Lotus conceptual framework towards learning-centred teaching. As can be seen, each petal of the framework was identified in each of the projects. In some cases, the petals were uniformly expressed in the projects, such as the notion of 'experiential learning', while other concepts were more divergently articulated, such as self-regulation and self-efficacy. Because a more substantive elucidation of individual conceptualisations falls outside the scope of this article, the authors intend to explore projects and themes in more depth in further publications.

Tables: Project-specific Disruptive Innovative Learning-centred Teaching

The tables follow below.

Table 2 (a) Site-specific performance and AR in the performing arts

1- ARTS		
Catalysts	**Drivers**	**Pillars of Practice**
Embodied performance and learning are the primary focus for activation of the conceptual tools.	**Re/generation** - conceptual embodied commentary on current personal-cultural and socio-political circumstances using Augmented Reality (AR) performance.	**Self-regulation and Self-efficacy** - original conceptual expressive performance creation.
Transformation - Students reflect critically on the theme of 'Embodied performance and learning are the primary focus for activation of the conceptual tools.	**Empowerment** - site-specific performances that explore aspects of identity, diversity and transformative potential of dialogic interactions that transcend cultural insularity.	**Meaningful Reflection** - critically engaging with social reality as reflection of theatre-making. leaving a visceral comment as a legacy for future generations to encounter and reflect on.
Experiential - critically engage with a theme and conceptualize their views through practical performances.	**Development** - demonstrating an understanding of conceptual composition in/for site-specific performance creation. and collaborative practice.	**Co-creating new Knowledge** - create narratives that disrupt their single story views of identity. Generated a shared social commentary for current and future interpretation.
Collaboration - ensemble performative aspects of body space and time in order to execute the narrative (literal/non-literal or abstract) successfully.	**Compassion** - supportive and respectful engagement.	**Co-creating an improved future** - augmented reality site-specific performance is unique to learning about alternative modes of performance.

Table 2 (b) Physical science teaching toolkit

2- EDUCATION		
Catalysts	**Drivers**	**Pillars of Practice**
The Physical Science toolkit is an **embodiment** of a set of resources that empowers student teachers to transform how and what they teach, benefiting both student teachers and practicing teachers.	**Re/generation** - It is envisaged that our students will contribute towards the regeneration of the rural communities as they enter this space as subject 'experts' and disturb the current status quo.	**Self-regulation and Self-efficacy** - Student teachers used the support materials without lecturer supervision, offering an understanding of their personal strengths and limitations, and gave them a strong sense of purpose as future teachers.
The toolkit has **transformed** the mindset of Physical Science student teachers. Teaching resources are no longer considered stumbling blocks.	**Empowerment** - The toolkit empowers students by providing them with tools that can improve their practice as future teachers due to the easily accessible resources they have electronically on a CD.	**Meaningful Reflection** - The student teachers reflected on their teaching practice experience before the materials were developed and after using the developed materials.
Experiential - teaching practice experience is relied on when identifying needs in the project questionnaire. The toolkit also improved the teaching practice experience for student teachers.	**Development** - the toolkit has improved student's content and pedagogical knowledge. The additional references, textbooks and science dictionary aided in their professional development.	**Co-creating new Knowledge** - The support materials to be used by student teachers in their training will equip them to handle the challenges they will experience as future physical science teachers.
Collaboration - Students and lecturer worked collaboratively to identify and develop the resources used in the toolkit. The resources respond to the lived experiences of student teachers in their contexts.	**Compassion** - The caring environment within which the toolkit was developed and distributed allowed them to freely share with learners and mentor teachers during teaching practice.	**Co-creating an improved future** - Identifying the shortfalls and benefits of support materials in teacher training will generate new knowledge, which will be applied in future teacher education training programmes.

Table 2 (c) Collaborative learning in law training

3 - LAW (a)		
Catalysts	**Drivers**	**Pillars of Practice**
Embodiment - Students are required to verbalise the process of their knowledge construction, activating a consciousness of epistemology as constructed and embodied.	**Re/generation** - law graduates conceptualise their professional identities so that they view themselves primarily as collaborators with others in pursuit of legal/social justice instead of competitors in pursuit of victory over the other.	**Self-regulation and Self-efficacy** - Students were responsible for ensuring continued engagement within their learning groups during the module and took charge of this aspect of their learning.
Transformation of learning to a networked or collaborative activity so that students' perception of being alone in the learning process is mediated and transformed.	The approach **empowers** graduates not only to be successful practitioners, but also empowers them in the pursuit of justice as a collective societal endeavour.	**Meaningful Reflection** - The design of the collaborative learning module was based on the guided reflection of final year LLB students regarding their experiences of collaboration during training.
Experiential - The approach imitates authentic application settings within the learning context in the form of team problem-solving activities.	**Development -** to develop the paradigm of legal education from a highly individualised and competitive one to a more collaborative one.	**Co-creating new Knowledge** - The module constitutes a community of knowledge-creators who co-create new knowledge and their own insight into the field in a collaborative manner.
Collaboration is the main catalyst in this approach as the project aims to develop a collaborative model for teaching law and thus relies heavily on collaborative learning in its design.	**Compassion** - The ability to relate to others, to respect and value their divergent views are core aspects of the collaborative learning design.	**Co-creating an improved future** - An important outcome of the module is to train law students to pursue justice for their future clients and social justice generally in a collaborative manner.

Table 2 (d) Learning materials for a course in customary law

4 - LAW (b)		
Catalysts	**Drivers**	**Pillars of Practice**
Embodiment - Conscious shift that laws are socially constructed and embodied in the everyday realities of people's existence rather than instruments of subjugation and control.	**Re/generation** - The project served to challenge traditional conceptions of professional legal identities, moving students from custodian of the law to promoters of social justice.	**Self-regulation and Self-efficacy -** A critical part of the project was affording the students some agency and autonomy in determining what they learn.
Transformation - The legitimacy, equal status and diversity of customary and cultural systems the students represent is recognised as legitimate.	**Empowering** through moving away from a taught curriculum towards a learning curriculum which draws resources from within and outside the formal setting.	**Meaningful Reflection** - Students had to engage in critical and meaningful reflection on both the existing material and what they would add to it including what should be excluded.
Experiential - perception and memory through orature and anecdotes and are recognised to complement codified sources. The plurality of customary law acknowledged.	**Development** - The transformative ethos that underlies the project is meant to lead to an emancipated and developed graduate.	**Co-creating new Knowledge** - the creation of new knowledge in that other forms/types of knowledge stemming out of living customary law including anecdotes and orature are recognized.
Collaborative use of an adapted jigsaw learning technique in researching and selecting different aspects of the various customary law topics fostered both accountability and interdependency.	**Compassion** - acknowledging the special needs of adult learners through inculcation of some of the principles of andragogy. Whilst recognizing and respecting the values, ideas, needs and histories of our communities.	**Co-creating an improved future** - a capacity building programme for councillors in municipalities, aimed at improving their work in their communities.

Table 2 (e) Teaching diagnostic reasoning skills in Medicine

5 - MEDICINE (a)		
Catalysts	**Drivers**	**Pillars of Practice**
Embodiment - students embody the conceptual and theoretical understandings which are made explicit through practice.	**Re/generation** - The mandate to train health care professionals capable of addressing the complex and interdependent health care needs of the 21st century requires a pedagogy of regeneration that develops graduates into change agents.	**Self-regulation and Self-efficacy** - The project explored the impact of new teaching methods on the self-efficacy beliefs of medical students regarding their clinical reasoning ability.
Transformation through significantly improving student's self-efficacy beliefs regarding their clinical reasoning ability.	**Empowerment** - Teaching/learning methods that have a positive impact on self-efficacy beliefs empower students to persevere when learning complex skills like clinical reasoning.	**Meaningful Reflection** - Utilisaiton of structured reflection charts, clinical reasoning skills, evaluated and purposely used clinical information to substantiate a differential diagnosis made during real patient encounters (reflection-in-action).
Experiential - Students practiced their clinical reasoning skills in authentic patient encounters in an outpatient clinic setting	**Developing** students' clinical reasoning skills motivated the development of the new teaching/learning approaches evaluated in this project.	**Co-creating new Knowledge** - This project advances our understanding of the effects of novel methods on medical students' self-efficacy beliefs about their diagnostic reasoning ability.
Collaboration - Teams of students collaboratively derived a differential diagnosis during patient encounters.	**Compassion** - fostering an understanding of diversity and compassionate engagement rather than the competitive approach typical of high-achieving students.	**Co-creating an improved future** - Improving clinical reasoning ability is likely to positively impact the process of learning thesse skills and ultimately improving diagnostic expertise, which should reduce diagnostic errors and improve patient care.

Table 2 (f) Resilience of Cuban-trained South African medical students

6 - MEDICINE (b)		
Catalysts	**Drivers**	**Pillars of Practice**
Embodiment - The students embodied values of communication, understanding medical concepts and knowledge necessary for the practice of medicine in SA.	**Re/generation -** The Cuban-SA training programme serves to regenerate undergraduate health professionals training by cultivating a pedagogy of care which values resilience as a skill in medicine.	**Self-regulation and Self Efficacy** - Students selected for the Cuba-SA training programme demonstrated a sense of resilience and exhibited success in the face of demanding times.
Transformation - The learning of medicine in a foreign country in a foreign language necessitated the transformation of student's values and attitudes to enable them to adapt to the medical system in SA.	The sense of **empowerment** engendered in these individuals is evident in their ability to practise their skill in SA independently, having learnt different clinical reasoning skills, despite being trained in a foreign context.	**Meaningful Reflection -** Students were able to reflect in a very engaging way on their experiences in Cuba as well as in SA medical schools and the health system.
This process was **experiential** as the students, upon entering the SA Health system, had to adapt to and practice their medical reasoning and knowledge within the context of a new system.	**Development -** Instils knowledge, skills, appropriate attitudes and values as a core pursuit in the development of health professionals, rather than the acquisition of disciplinary knowledge alone.	**Co-creating new Knowledge** - Engagement with the students indicated a strong need for the production of medical doctors that are competent in all spheres, professionally and ethically as well as personally to service the SA population in its health needs.
Collaborative - Students trained as a cohort, for 6 years, shared experiences which catalysed their learning in a foreign country and all had to adapt collaboratively to the new system in SA.	**Compassion -** A training programme that engenders self- efficacy, encouraging compassionate engagement with their patients.	**Co-creating an improved future** - building resilience in medical education by measuring the effectiveness of the programme and future consideration for the general medical curriculum at both undergraduate as well as postgraduate level.

Discussion

Nurturing Dialogic Spaces

The TAU programme (TAU 2015) is the first national attempt to coalesce a

diverse group of HE practitioners in a dialogic space to advance their teaching potential through a community of practice. While the programme has certainly succeeded in the first part of its mandate of bringing practitioners together, participants had to negotiate their own way into interdisciplinary spaces to engage in learning dialogues, which were discipline-bound. For the group of authors, representing four diverse professions (education, performing arts, law and medicine) this proved to be an unfamiliar task and the conceptual framework described in this paper was born of the need to find common ground by engaging in a process of 'thinking across perspectives and disciplines' (Miller & Mansilla 2004). Through a process of dialogue, reading the literature and critical reflection, the group, with their advisor, conceptualised a framework which captures the essential dimensions of learning-centred teaching (Sparke 1999; Reynolds 2000; Candela, Dalley & Benzel-Lindley 2006; Whetton 2007; Mostrom & Blumberg 2012). Essentially the framework articulates 'why we do what we do' (the educational principles that should underpin 21st century teaching practice), 'to what end we do what we do' (universal drivers of teaching) and 'how we do what we do' (the catalysts of learning embodied in our teaching practices).

Embedding and Strengthening Conceptual Coherence

This paper does not provide a detailed description of the theoretical underpinnings of the concepts embedded within the framework. These are well articulated elsewhere in the literature and key work is referenced in the figures included in the paper. Rather, the paper focuses on describing the emergent process that was instrumental in achieving conceptual coherence across the diverse disciplines represented in the group. On reflection, it is clear that key elements of processes where interdisciplinary work has been successfully achieved (Miller & Mansilla 2004) were present in the journey undertaken to create an interdisciplinary space in which the group could work towards achieving a common goal. These strategies- which include reasoning through analogy, creating compound concepts, building complex and multi-causal explanations, advancing through checks and balances and bridging the explanation-action gap- were not an explicit part of a pre-planned process but were easily identified when reflecting on the project at the time of writing the

paper. An example of each one of these strategies is briefly described to illustrate the point.

At the first meeting, the use of discipline-specific analogies facilitated a process of mapping the properties of 21st Century education from one domain onto another domain, thereby articulating the key pillars of education practice. The process of identifying existing concepts that bridge domains led to the next level of the framework, the drivers of the teaching and learning enterprise, i.e. creating common concepts. Thereafter the group engaged in a prolonged (six months) process of revision and review of the emerging framework using different disciplinary perspectives, i.e. a series of checks and balances to keep the process 'intellectually honest'. A critical part of the development of the framework was the process of bridging the explanation-action gap. This took place during the transition from a text-based framework to a visual representation of the framework using the metaphor of a flower. It is the opinion of the group that this was the 'tipping point' of the process and the step that cemented the inter- and trans-disciplinarity of the framework.

Plurality of the Conceptual Framework

The potential utility of the conceptual framework in the diverse landscape of higher education was explored by a process of peer evaluation (a poster presentation during the TAU fellowship programme) and preliminary validation (Jabareen 2009) using six authentic HE teaching projects representing four diverse professions. This was done to obtain an overview of how the petals of the Lotus framework could be (re)positioned within discipline-specific contexts. While a detailed description of the diverse representations of the conceptual framework in each project is beyond the scope of this paper, some observations of the initial validation process are worth reporting.

How the lotus petals are easily positioned within the disciplines can be seen by reflecting on the concept of experiential learning, which was easily identified in a set of projects located within a paradigm of 'learning by doing'. This elegantly demonstrates the direct applicability of some of the simpler concepts contained in the framework without the need for more careful analysis to uncover convergence.

The need to reposition the Lotus petals within the respective projects was apparent when reviewing the role of self-efficacy. The scope of expression of this concept included 'the ability to engage in original expressions of learning' (arts project), 'teaching without the need for supervision' (education project), 'taking charge of one's own learning' (law project A), 'developing a sense of agency and autonomy by participating in a process of curriculum development' (law project B), 'a belief in one's ability to make an independent diagnosis' (medicine project A), and 'resilience in the face of challenges encountered in a training programme' (medicine project B). While the concept of self-efficacy is well described in discipline-specific work, the plurality of expression in an interdisciplinary space, without violating the tenets of disciplinarity, provides a new way of seeing the potential convergence of these concepts while retaining context-specific divergence.

Based on the broad compatibility of the framework in this limited validation processes, the authors are cautiously optimistic that the Lotus framework may be a useful way of facilitating learning dialogues in interdisciplinary spaces created by faculty development programmes, which aspire to facilitate the development of graduates who are equipped to deal with the complexities of modern society. Further work using a large sample of teaching and learning projects to determine the wider utility of the Lotus conceptual framework in higher education is clearly needed.

The Challenge of Interdisciplinary Dialogues

While the emergence of inter-and transdisciplinary education has accelerated the need to find common ground for co-operative engagement across disciplinary bodies of knowledge, the literature contains many descriptions of the challenges associated with doing so and provides examples of the failure to achieve this mandate. Recent examples include the work of Vanasupa, McCormick, Stefano, Herter and McDonald (2012) and Gillette and colleagues (Gillette, Lowham & Haungs 2014). One of the key success factors in the work undertaken by the authors of this paper was the use of the theory of multiple intelligences (Gardner 2006), which speaks to cognition, and therefore learning, at a universal level. This common approach to understanding learning across disciplines effectively limited the opportunities for conflict by averting the need to resort to disciplinary discourses and engage with the power vested

in, and restricted access to, these discourses (Van Dijk 2008). In addition, this approach also avoided the misunderstandings which emerge 'in interdisciplinary meeting places as a result of the inability, and perhaps the continued unwillingness to learn the language of the other' (Newman 2006: 75).

The approach does suggest that the dialogic process was not punctuated by divergent views during the process of constructing the Lotus framework. However, each of these conversations was tempered by the shared goal of finding a common platform for meaningful engagement and a conscious undertaking to 'see one's own thinking, suspend one's epistemic beliefs, and engage in productive dialogue' (Vanasupa *et al*. 2012) in order to achieve this outcome. Other strategies which facilitated difficult conversations was a shared recognition of the value of, and the need for disciplinary pedagogy outside clearly demarcated interdisciplinary spaces; and the reconceptualization of the framework as a Lotus image which provided a broader understanding of the complexities of working in a discipline-based world, and an unwavering commitment to the ethos of the TAU programme, i.e. improving the teaching and learning praxis in higher education in South Africa.

Concluding Remarks

Higher education is an arena that is under constant and, sometimes, brutal scrutiny, which places enormous pressure on institutions to deliver on their promise of quality and excellence in teaching and learning. Repeated failures over the years to resolve perennial problems related to curriculum, institutional cultures, governance and financing, behoves us to concede that conventional modes of enquiry no longer effectively serve their intended purposes and call, instead, for radical shifts from individualistic to collaborative approaches. As the value of conventional modes of enquiry is placed under scrutiny, the *raison d'être* of higher education is being challenged, notably by students themselves. An enduring condition inhibiting transformation is our continued adherence to essentialised and ritualised disciplinary identities.

The pilot project on which this article is based reveals that interdisciplinary dialogic spaces can be initiated and nurtured through opportunities offered by communities of practice such as the Teaching Advancement at Universities (TAU) Fellowship, and when academics suspend their exclusive disciplinary preoccupations to open up possibilities for a generative, emancipatory scholarship. The pursuit of participatory parity requires us to feel comfortable with making public our curiosity about each other's work, and in

the process, share in the common values, interests and beliefs that emerge through engagement in interdisciplinary, inter-institutional projects.

A key success indicator of whether the TAU interdisciplinary community of practice will survive beyond the formal fellowship programme, is the ability of Fellows to sustain the collaboration in their institutional contexts and more importantly, to expand the networks beyond their institutional contexts. By the time this article was concluded, the members of G7 had developed collaborative relationships in three of the provinces, forging a trans-regional network of Fellows at traditional universities and universities of technology. This engagement with the collaborative suggests that the Lotus conceptual framework may be sufficiently durable and pliable to facilitate interdisciplinary dialogues about teaching and learning in higher education. Further work is needed to interrogate this contention and provide further evidence in support of the broader utility of the framework.

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