The case studies: authentic learning

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Introduction

Moving from theory to practice in higher education is deeply challenging. While exploring pedagogical models in the literature may lead to tacit understanding of general principles, actually implementing these principles in practice can be an entirely different matter.

Authentic learning is a pedagogical model that is sometimes misunderstood, such as when teachers believe that in order for authenticity to be achieved, learning must occur outside the classroom in the real world. In fact, authenticity – as described in this model – can readily be achieved within the regular classrooms and lecture halls of the university environment. Providing examples of successful cases of such authentic learning environments offers an opportunity to explore the practical application of a theoretical model, and provide concrete instances of implementation in different subject areas. This chapter provides three such cases.

The cases presented here provide international examples of authentic learning in practice across different discipline areas, using different technologies, and focusing on different aspects of the approach. The first case (Case study 14.1) describes the use of reflective analysis and role play in the study of obstetrics, using the model of authentic learning described in Chapter 5 (Herrington, 2014). It focuses on the use of technology as a mediating vehicle for authentic learning through the use of practice dilemmas. The second case (Case study 14.2) describes specific tasks developed within an authentic learning environment, using characteristics of authentic tasks (Herrington, Reeves, Oliver, & Woo, 2004). This case describes the use of complex contexts and the development of case notes in the study of physiotherapy. The final case (Case study 14.3) explores the use of wikis and blogs to medicate authentic learning in sport science education. All the cases represent authentic learning in action, and include details of the context, the tasks, and the problems that inevitably arise when teachers necessarily relinquish their more traditional role to allow students to take primary responsibility for learning. They are also effectively works in progress, where solutions are refined and improved in successive iterations. But above all, they are visible and tangible exemplars of theory in action.

Case study 14.1 transforming obstetric experiences through students' construction of collaborative critical insights

Veronica Mitchell

In medical education, much emphasis is placed on the scientific grounding of evidence-based practice and the achievement of measurable and assessable learning outcomes. However, the curriculum as designed differs from the enacted curriculum. Forces that play out as students engage in their curricular tasks weather the linear and predictable nature of a systematically organised accredited curriculum. These dynamic, fluid and complex influences underpin what and how students are learning. Consequently unpredictable outcomes result from the additional social aspects of interrelationships in the learning contexts, which impact on each individual student's learning (Barnett & Coate, 2005, p. 44). Students' clinical encounters beyond the classroom introduce uncertainty, ambiguity and at times dissonance, challenging their developing professional identities. Students sometimes face conflicting behaviours, attitudes and values, especially and surprisingly in the discipline of obstetrics. At the University of Cape Town (UCT), the student community is a vulnerable population working within a weak public health system amidst the hierarchy of medicine in practice and university structures. There appears to be a mismatch between insights gained by students to practise medicine in a socially accountable manner and their observations of human rights violations in the workplace (Vivian, Naidu, Keikelame, & Irlam, 2011; Mitchell, 2012).

This case example draws on the problematisation of the medical curriculum and calls for change, and an authentic curricular task in the Department of Obstetrics and Gynaecology is explained as a design-based research project (Reeves, 2006). The reflective element of authentic learning is strongly valued as students are provided with a forum to articulate and recognise their emotional dissonance. Through the affordances of technology, students' workplace challenges are surfaced and shared, fostering a collaborative effort to delve into the real-life problems encountered in our healthcare delivery. Yet, as Herrington and Kervin (2007) claim, "Experiences that put technology into the hands of the students challenge the traditional roles of teachers and students and their associated relationships" (p. 233).

Background
Shifting paradigms are occurring not only from the perspective of medical education as a discipline, but also from students' expectations. A brief theoretical background will lead to an explanation of this authentic learning case study in obstetrics. In addition to the educational changes spurred on by emerging technologies, there are strong calls for rethinking practices in medical education, emphasising a focus on transformative learning and interrelationships and a shift away from the apprenticeship approach and competency-based curricula (Dall'Alba & Barnacle, 2007; Frenk et al., 2010; Taylor & White, 2000). The limitations imposed by a focus on competence to practise has devalued the importance of taking a reasoning, critical stance in the curriculum, embracing and sharing multiple perspectives (Kneebone, 2002; Savin-Baden, 2009; Zembylas, 2013).

There is increasing recognition of more curricular focus on the developing professional identity of future doctors and the health needs of communities in which they work (Jarvis-Sellinger, Pratt, & Regehr, 2012). Furthermore, the complexity of the curriculum with "multiple variables [which] are interacting simultaneously" confirms the stance to move away from reductionist and binary concepts (Mennin, 2010, p. 27). Reflective practices contribute to an expanded approach. Yet reflection is not generally favoured by students and remains a challenging process for educators to motivate and to facilitate (Bozalek & Matthews, 2008). Herrington, Reeves and Oliver (2010) point out that "learners need to work at times beyond their comfort zones and to take risks as they seek to develop their solutions as part of the learning process" (p. 127). Students expect their teachers to be good role models, yet frequently they witness professional lapses (Vivian, Naidu, Keikelame, & Irlam, 2011; Mitchell 2012). There is a tendency to silence criticism. Ruch's (2002) research with social workers highlighted the professional ethos that "expects workers to be unaffected by the experiences they encounter and able to operate regardless of their emotionally toxic professional context" (p. 207).

Students' meaning-making from their curricular experiences reflects their individual social constructs. Within a diverse student population, this richness of multiple knowledges offers a multi-coloured bouquet of understandings. Such learning towards real-life relevance is fundamental to authentic learning and provides an opportunity for meaningful engagement especially appropriate in a discipline like obstetrics which is characterised by tension and uncertainty.

Question
How can educators better prepare students for the complexities of practice and facilitate advocacy in promoting women's health?

Approach
The elements of authentic learning included in this case study are outlined in terms of the nine characteristics identified by Herrington, Reeves and Oliver (2010, p. 18):

1 *Authentic contexts*: Students reflect on their delivery experiences in the Maternal Obstetric Units (MOUs).
2 *Authentic activities*: Fourth-year students share and interrogate their obstetrics experiences. They interpret and prioritise what they wish to present to the class at the end of their eight-week learning block.
3 *Expert performances*: Students have access to experts such as midwives and clinicians, also learning from senior students in tutorials. The Internet offers wider learning opportunities.
4 *Multiple roles and perspectives*: A reflective online tool is used in preparation for the classroom interactive workshop. Through probing questions in the spiral tool (see Figure 14.1), the perspective of the different players is illuminated: the student, midwife, doctor and patient. By seeking to understand the forces that play out in obstetrics, students are opened to shifting frames of reference.
5 *Collaborative construction of knowledge*: Students post reflective commentaries online, engaging with a critical friend and developing group presentations.
6 *Reflection*: Reflective enquiry is on-going and facilitated within a visual framework.

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7 *Articulation*: Students converse with each other during the block and in preparing for their interactive workshop. Critical dialogue is encouraged online and in the classroom.

8 *Coaching and scaffolding*: Sharing personal experiences and reflections can be challenging. This is acknowledged throughout the process. Student queries are responded to either online or in person. Notes of encouragement are offered on the Faculty Learning Management System (LMS), over e-mail or in class.

9 *Authentic assessment*: Assessment happens through performance rather than judgement. Students create an authentic product in the form of a presentation, with multimedia, role-play or other elements.
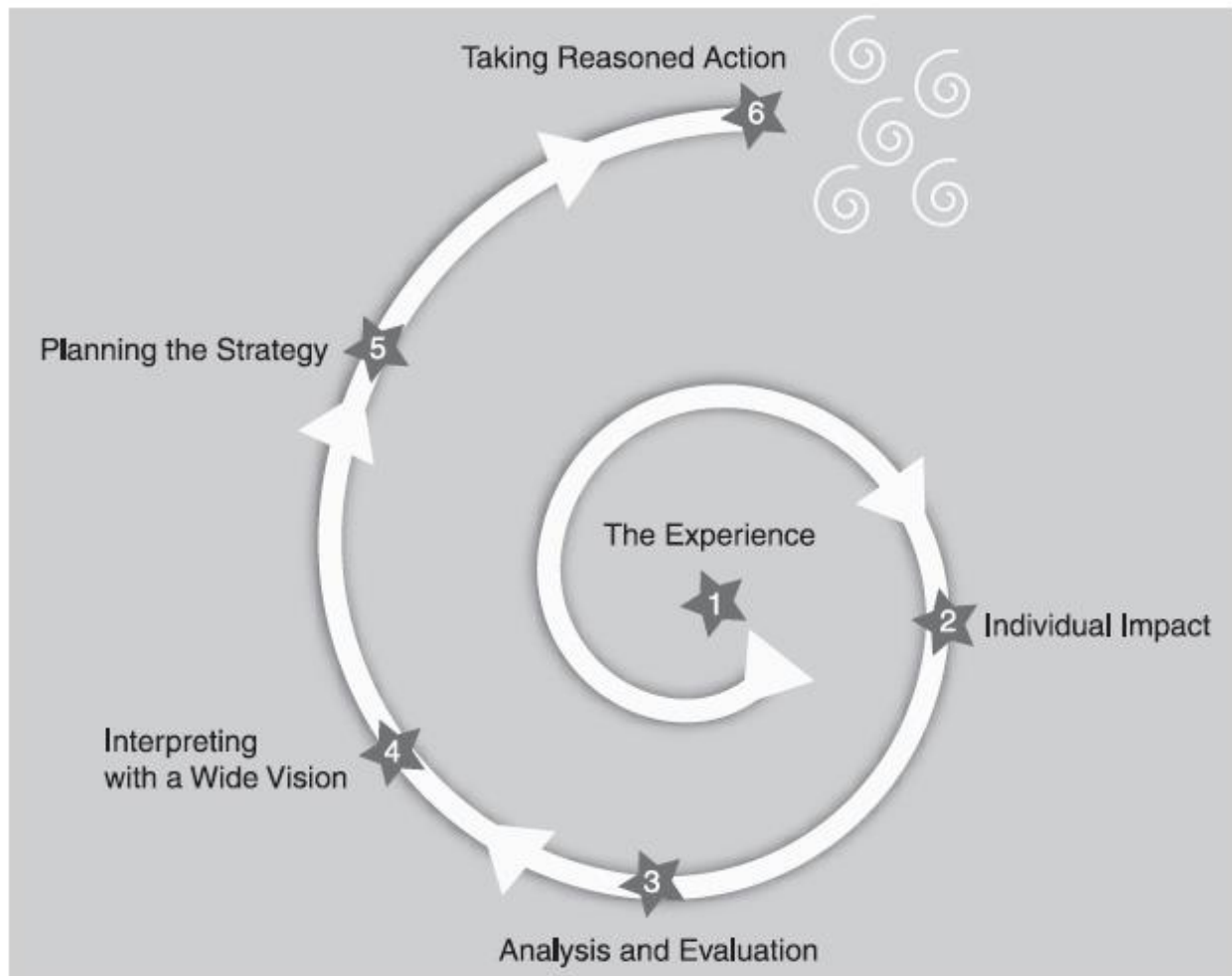

Figure 14.1 Reflective task: Six step spiral for critical reflexivity
Source: Mitchell (2013)

The obstetrics class activity is described below in terms of the tasks, resources and support implemented in the environment. The time frame incorporates three stages: a brief introduction with the students in the computer centre, an online element, and a face-to-face interactive classroom activity. At the obstetrics introductory session, an environment of trust and respectful sharing is created. The facilitator introduces the task with motivation that students' voices are being valued. Students then post prior insights online, initially on the institutional LMS course forum (but now Google Drive is the preferred option). Comments include personal narratives heard from colleagues including some difficult situations. Expressions of emotion are encouraged. This is an exciting curricular moment when students often feel they are becoming real doctors.

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Students are then introduced to the Six Step Spiral for Critical Reflexivity (SSS4CR) available on the LMS, the Google Drive folder and the Faculty Open Content repository. Students explore this new multi-layered visual tool with its probing questions (see Figure 14.1). Students are requested to choose an incident during their practical block, to then 'unpack' it using the probing questions connected to the spiral, and to post their text online.

At the end of the learning block, subgroups of approximately 12 students present a component of their reflections to the rest of the group as a role-play, multimedia presentation or case discussion. Preparation for this final presentation is crucial. It involves students sharing their experiences with each other, towards producing a meaningful message or enquiry to present to their colleagues, the facilitator and an outside expert.

The resources develop incrementally as students post their personal narratives and unpack their delivery experiences online. Guided by the spiral, their comments create the resource material, co-constructed knowledge which also acts as feedback from the curricular task. The LMS Forum and the sharing of Google documents enable a collaborative approach, as insights are visible for other students and educators to read and to respond to where appropriate.

Support and scaffolding are offered at key points. For instance, in the introductory session, an appreciation of students' vulnerability within the institutional hierarchy and with online postings is acknowledged. Later, uploading a previous student's reflection contributes to the scaffolding. Students are invited to interact with their clinical partner as a critical friend. This fosters shared insights enabling students to compare and contrast their experiences, ideas and actions. Students may submit their reflections individually or as partners. Some students choose the privacy of sending the facilitator their reflective commentaries by e-mail. These are acknowledged with encouraging responses.

Findings and discussion
The creative inclusion of technology has effectively drawn the students into the process with favourable outcomes. This curricular task has been valued particularly in terms of the authentic learning elements of articulation, reflection and collaboration.

First, articulation occurs across several layers of interactions. In the introductory session, students glimpse the real world of obstetrics in Cape Town clinics where their taken-for-granted expectations are questioned. By engaging online and face-to-face at the different stages during the block, a collective approach is fostered promoting students' capacity to become change agents. Students are expressing and sharing their tensions in their postings and conversations. Clearly, "responsibility for learning rests with the learner" rather than the teacher (Herrington, Reeves, & Oliver, 2010, p. 190). Students' online engagement has encouraged them to explore beyond their individual boundaries of meaning-making.

Progressively more students have shared their comments in the collaborative spaces. When students prepare for the end-of-block presentations, they draw on each other's experiences and explore the Internet to explain the legal, social, political and personal realities that play out in the local clinics. Technology enables their enquiry and sharing. Multimedia presentations include video clips where students present scenarios. Issues such as inequality, vulnerability and discrimination are illuminated. A special guest is invited to these presentations, contributing expertise and critique to the dialogue.

Second, feedback indicates that the SSS4CR introduces a novel structured approach for debriefing and making sense of experiences. It promotes reflexivity referred to as "looking for the social in the individual account, asking how particular events, categories and assumptions might have been produced through discourse, culture, political affiliations, and/or social practice" (Bozalek et al., 2010, p. 1026). Originally the spiral aimed to assist students debrief from abuse witnessed in the workplace. Later editing introduced new questions to also probe positive practices. This iterative approach demonstrates how design adaptation and improvement have furthered teaching, a necessary element of authentic learning (Herrington, Herrington, & Mantei, 2009).

Third, the collaborative element of the task is evident and continues to play an important role in giving value to the students' voices. Beneficial consequences beyond the students' engagement include reports by the departmental head to the Health Department and to facility managers leading to workshops for midwives, and to policy changes towards creating a formal Code of Practice. The website published on UCT OpenContent is an Open Educational Resource (Mitchell, 2013).

Recommendations for future use/advice for practitioners
A trusting environment is needed for students to develop their capacity to overcome their vulnerability in critiquing observed practices. Encouragement, support and openness assist the process. For educators, willingness to take risks and traverse uncertainty and discomfort is required. Departmental buy-in facilitates shifting the pedagogy away from a linear predictable approach.

This case explains how technology has provided a mediating vehicle for an authentic learning initiative in obstetrics. By constructing knowledge online drawn from students' own social networks, perspectives and experiences, the students have engaged in dialogue on difficult issues expanding their understanding of practice dilemmas. Through online interaction relating their real-life events, students are acknowledging the complexities of their roles and responsibilities. Moreover, the collaborative sharing of students' experiences has acted as a collective vehicle to catalyse policy changes in the health system. The take-up of these messages is demonstrating the beneficial impact of moving towards curricula for relevance and change. In essence the outcomes from this authentic learning task have proved beneficial to students, facilities and women in labour.

Case study 14.2 using google drive to facilitate a blended approach to authentic learning

Michael Rowe

While technology has the potential to create opportunities for transformative learning, it is often used simply to reinforce teaching that aims to control access to expert knowledge. Instead, educators should consider using technology to enhance communication and provide richer, more meaningful platforms for the social construction of knowledge. By using technology to engage in shared learning experiences that extend beyond the walls of the classroom, we can create opportunities to develop the patterns of thinking that students need to engage with complex, real-world situations.

An authentic task framework was used to guide the design and implementation of a case-based learning module in a South African physiotherapy department. Google Drive was used as a collaborative online authoring environment in which small groups of students used clinical cases to create their own content, guided by a team of facilitators. This case describes an approach to healthcare education using authentic learning as a guiding framework, and Google Drive as an implementation platform. This approach led to the transformation of student learning practices, altered power relationships in the classroom and facilitated the development of critical attitudes towards knowledge and authority.

The study was conducted in a physiotherapy department at the University of the Western Cape, South Africa. Following feedback indicating that final year students displayed a lack of critical thinking during clinical exams, the department moved to address these problems. A second-year module was selected, in which students learn the pathology, clinical presentation, and therapeutic management of common health conditions found in the South African healthcare system. In the past, they had been given course readers that covered the major concepts, and a lecturer went through the concepts with the students, using a lecture-based format.

We made a series of changes to the module, including a move from lectures to case-based learning to promote critical thinking and problem-solving, as well as using technology to facilitate different forms of communication. Both of these changes were informed by social constructivist and situated theories of learning. We also moved from having one lecturer in the classroom to having 6–8 facilitators, with students working collaboratively in small groups.

Background
One of the challenges in higher education is to create an environment that does not separate the "learning" from the "doing", and where students are not constrained in the activities that would lead to personally meaningful learning opportunities. When knowledge and context are separated, knowledge is seen by learners as a product of education, rather than as a tool they can use (Brown, Collins, & Duguid, 1989).

While technology has the potential to create opportunities for transformative learning, it is often used simply to reinforce didactic teaching that aims to control access to

knowledge. In contrast to authentic learning spaces that are informed by learning theories, the predominant use of technology in higher education emphasises teachers generating content, gathering resources, grouping and sequencing information, and then passing that information on to students (Herrington, Reeves, & Oliver, 2010). Such an emphasis on higher education as a content delivery mechanism has the potential to damage the perception of the use of technology in education, as well have a negative influence on student learning.

Educators should therefore consider using technology to enhance communication and provide richer, more meaningful platforms for the social construction of knowledge rather than use systems that envision higher education as closed-off silos of content.

Question

How can we use a collaborative online environment to create an authentic learning space that aims to facilitate the development of critical thinking in undergraduate physiotherapy students?

Approach

This case employs an innovative approach to healthcare education using authentic learning as a guiding framework, and Google Drive as an implementation platform. We used ten characteristics of authentic tasks (Herrington, Reeves, Oliver, & Woo, 2004), as a framework to guide the module design, and students used Google Drive to create their own content, assisted by a team of facilitators.

A description of how each element of authentic task design aligned in the course is given below.

1. *Have real-world relevance, matching as nearly as possible the tasks of professionals in practice.* The cases provided to students were based on common conditions that they would encounter in the clinical environment, and were designed to encourage ways of thinking that would be necessary for the management of patients. Instead of simply giving students the content to learn, conditions were presented in the classroom in the same way they would be found in the clinical context.
2. *Are ill-defined, and problems are open to multiple interpretations rather than easily solved by the application of existing algorithms.* The cases were complex, requiring students to find associations between variables that were not explicitly related. They needed to create research questions after identifying gaps in their knowledge, conduct research and then collaboratively create their own notes in Google Drive, summarising and synthesising the information they had found.
3. *Comprise complex tasks to be investigated by students over a sustained period of time.* Each case ran over a three-week period, with students and facilitators meeting in class for face-to-face contact three times a week. Interaction on Google Drive was used to supplement these classroom discussions. The clinical case was not an isolated activity, with Google Drive being used both in class while students engaged in research and content creation, and afterwards when facilitators and peers gave feedback on the students' notes.

4. *Encourage students to examine the task from different theoretical and practical perspectives, using a variety of resources that require them to critically evaluate information.* Facilitators reviewed students' online case notes weekly, providing feedback by asking questions about missing information, unsubstantiated claims, and dubious sources. Students were able to respond within the comments, asking their own questions or clarifying their understanding.

5. *Require collaboration, which is integral to the task, so that success is dependent on it.* Case notes were developed collaboratively by the student groups, and all notes were available to all other groups, as well as to facilitators. Each week, students created summaries of their case using the slideshow component of Google Drive, presented this in class, and then shared the summary with everyone. Google Drive also features an instant messenger, which allowed students to discuss aspects of the case notes while working on the document together, even when they were in different locations.

6. *Provide the opportunity to reflect on learning, both individually and with others.* Facilitators provided feedback to students within their case notes in the form of comments and questions, encouraging them to reflect on their assumptions and reasoning. Students were challenged on their statements and encouraged to articulate their understanding, as the questions were not asked to elicit information, but rather to stimulate further thinking.

7. *Authentic activities can be integrated and applied across different subject areas and lead beyond domain-specific outcomes.* Each case was designed to integrate research, ethical reflection, legal aspects of healthcare, and knowledge from other modules such as anatomy. The case was designed so that it was not an isolated activity that was separate from other modules.

8. *Are seamlessly integrated with assessment in a manner that reflects real-world assessment.* Formative assessment was an inherent part of the activity, with peers and facilitators regularly challenging statements and assumptions that arose during the classroom sessions, and in the online notes. This is more like the kind of formative assessment and learning that happens in the real world of clinical practice.

9. *Create polished products valuable in their own right rather than as preparation for something else.* The notes that students created in Google Drive constituted their learning content for the module, making them an important product of the task. The questions for the tests at the end of each term were derived from both the students' notes and the facilitators' guides, which meant that the student notes had real value as they were used as the foundation for their work in the clinical context.

10. *Allow multiple solutions and diversity of outcome, rather than having a single correct response obtained by the application of rules and procedures.* Each groups' online case notes were different, reflecting the questions they answered after exploring their own understanding of the case. While facilitators ensured that the major concepts were addressed, students could take their own routes to achieving the case objectives.

The adapted module was implemented and focus groups were held at the end of the first semester. All 61 students in the second-year class were asked if they were prepared to participate in a focus group, and 22 responded positively. Twelve students were invited to

participate and were selected from both high and low ends of scales measuring their age, levels of online participation and their average marks in the module, in order to include as diverse a sample as possible. Based on the major changes in the module, participants were asked to discuss the move from lectures to case-based learning in small groups, and the use of Google Drive for students to collaboratively develop content. The discussions were recorded and the audio fi les sent for independent transcription, and then sent to participants for verification. The transcripts were analysed inductively to determine themes that emerged from participant responses (Elo & Kyngas, 2008). Words and phrases with similar meanings were identified, coded and then organised into categories that best represented the emergent themes.

Findings and discussion

The major themes that emerged during the analysis included: changes in student perceptions of their roles in the learning process, personal empowerment through self-directed learning, the development of critical thinking, and the changing of power relationships in the classroom.

Changing perceptions of learning roles (personal empowerment and self-directed learning)

The use of authentic task elements to develop cases that we implemented in Google Drive enabled us to help change how students perceive their own role in the learning process. As part of this process, students had to create their own research questions after identifying gaps in their understanding, through discussion with peers and facilitators. Rather than being given content and told what to learn, the process required them to evaluate their own needs and respond appropriately, thereby empowering students to take control of their learning (Veletsianos, 2011). Using Google Drive afforded students a platform to develop the processes and skills they needed for the independent exploration of concepts and facts (Justice et al., 2009). This critical interaction with information helped them to move towards autonomous learning, empowering them to control where, what and how they learn.

Development of critical thinking

This approach enabled students to change how they think about learning, relationships and content, in ways that led to critical thinking. If teaching is about "moving minds" to develop independent thinkers who will not bend to the will of teachers (Laurillard, 2012, p. 5), then these students did not simply accept the voice of authority. They grasped that knowledge is distributed and that the teacher is not the sole source of information (Veletsianos, 2011).

Changing power relationships

We used interaction in the online and physical space to intentionally change power relationships between teachers and students, guided by principles of authentic learning. Power relationships are well established in medical education, with teachers often using their power to "motivate" students with fear and shame (Jarvis-Selinger, Pratt, & Regehr, 2012). By intentionally changing these relationships we created a safe space, where both students and facilitators could normalise "not knowing" the answer. By liberating students from the necessity of being "right", they could explore their own understanding

without fear of being exposed and shamed. The changing power relationship and reduction of authority can play a role in changing students' beliefs about who controls their learning, with an open environment helping them take on that responsibility (Bergstrom, 2010). This movement of authority away from the facilitators led to the development of personal empowerment among the students, enabling them to direct their own learning.

The major findings of the case were that students' perceptions of teaching and learning changed as a result of the approaches used in the module. Many acknowledged their own roles in learning, as well as showed evidence of a critical view of content, the profession, and authority figures in the course. It was clear that the power relationships in the module had changed, with students taking more responsibility for learning, and were moving towards independent thinking and self-directed learning. This move towards thinking about learning is significant in that it represents a departure from traditional conceptions of learning, where students simply get on with it, without putting much thought into what it means to learn (Ovens, Wells, Wallis, & Hawkins, 2011).

The use of Google Drive was therefore demonstrated to fundamentally change teaching and learning practices in ways that went beyond simply increasing the efficiency of information distribution. However, it should be noted that this approach required more time to develop and implement, and suggests the need for increased resources. Attempts to modify teaching practices in this way may have far-reaching consequences for other staff members, and should be approached with the understanding that they may resist the process. In this respect, educators considering innovative approaches to teaching and learning may need institutional support in order to drive the process (Bozalek & Dison, 2013).

Recommendations for future use/advice for practitioners
We used Google Drive as a collaborative authoring platform to implement authentic learning tasks in the form of clinical cases, and used features of the online service to encourage interaction and discussion in order to develop critical thinking. We demonstrated that students' ways of thinking about learning were transformed during the module. This was evident in their changing perceptions of their own role in the learning process, a movement of power away from teachers as students took control of their learning, and the emergence of critical attitudes towards knowledge and authority. If clinical educators aim to develop critical thinking within their students, they should consider the use of authentic tasks that are integrated across physical and online spaces, using appropriate technology platforms that are informed by sound theoretical perspectives.

Case study 14.3 using wikis and blogs to mediate authentic learning: a case of teaching sport science education

Simone Titus

Context

Student engagement as a predictor of student success can be defined by two key components (Kuh, 2007). First, "what students do (the time and energy they devote to educationally purposive activities) and second, what institutions do (the extent to which they employ effective educational practices to induce students to do the right things)" (Strydom & Mentz, 2010, p. 3). Given the diverse nature of students in South Africa, student engagement may differ across cultures. Nagda and Zuniga (2003) proposed that cross-group interactions, when structured with a collaborative process, can play a role in building multicultural communities. To this end, the classroom reflects the multicultural diversity of the country, which should provide a space for meaningful engagement. However, fruitful engagement is hindered because students gravitate towards peers of the same cultural background and do not always engage with peers from other cultures.

This study reports on an authentic task that was designed to enhance student engagement. In 2011, when a new academic first offered the module, students submitted an online assignment as a Word document. At this time, the module only used the learning management system (LMS) to support downloading class notes, uploading assignments, posting announcements and using the discussion forum. In 2012, the assignment was redesigned as an authentic learning task that students had to complete in the form of a wiki, using the Wikispaces platform.

Authentic learning typically focuses on real-world, complex problems and their solutions within a learning environment similar to real-world disciplines (Herrington & Oliver, 2000; Lombardi, 2007). The authentic task for this module was designed to represent sport psychology activities that they would encounter in the real world. Students also had to contribute a reflective summary on the class blog using the Blogger tool.

The course included 14 weeks of instruction and 14 weeks of tutorial assistance split by a mid-term break. In both terms students attended a one-hour lecture and a one-hour tutorial. Sixty per cent of their final mark was comprised of their coursework marks obtained over the 14 weeks. Over the past four years, the number of students who registered for this compulsory module increased from 65 in 2009 to 83 in 2012.

This case study explores how emerging technologies were used to complete a collaborative authentically designed task in sport science education in order to foster student engagement.

Background

Over the past few decades, it has become increasingly challenging to teach using only didactic methods (Moll, Adam, Backhouse, & Mhlanga, 2007; Scott, Yeld, & Hendry, 2007). In many university faculties, this method of instruction is slowly fading as technological innovations are changing our teaching approach in health science education

(Rowe, Frantz, & Bozalek, 2013; Republic of South Africa, 2012). Health science education includes practical activities infused into modules to demonstrate techniques that should be used in the workplace. Sport science education is no different. In order to demonstrate practical competence, students should be critically engaged with theoretical and practical content.

This study argues that activities can be designed by taking a constructivist approach to teaching and learning practices using educational technologies to foster engagement by facilitating meaningful collaboration. Vygotsky and Piaget contributed remarkably to constructivist and social-constructivist schools of thought (Ilyas, Rawat, Bhatti, & Malik, 2013). The focus of social constructivism is the attention placed on the social arenas within which knowledge is created.

Therefore, the aim of a constructivist approach is to understand particular issues through the application of prior knowledge and experience using reasoning and critical thinking skills (Ilyas, Rawat, Bhatti, & Malik, 2013). Thus, for this study students were able to construct knowledge through their personal experiences being engaged in emerging technologies and personal interaction with peers.

Vygotsky (1978) believed that objects are meaningless unless perceived socially. This means that students are able to give meaning to content through their interaction with their peers by designing a task that allows for meaningful engagement. Therefore, for the purposes of this study, Engestrom's (1987) activity theory was used as a heuristic to examine whether wikis and blogs can explicitly mediate authentic learning in sport science education in order to improve student engagement.

The mediating tools used in this study were wikis and blogs. While explicitly, these technology tools were used to complete an authentic task as a means to an end, the implicit mediation was far more meaningful. The implicit mediation allowed for the manifestation of the nine elements of authentic learning to be realised. To this end, implicit mediation allowed for collaboration, engagement, co-construction of knowledge, meaningful interaction and reflection. For many learners, wikis are particularly appealing, providing instant, any time, any place access to a dynamic and ever building a digital repository of user-specific knowledge and a voice in a live community of practice (Wheeler, Yeomans, & Wheeler, 2008).

In line with social constructivist thinking, wikis support collaboration among peers where they can work together to construct knowledge and share ideas (Neumann & Hood, 2009). This bodes well for this study where students were able to construct knowledge by doing a wiki task and contributed to a blog for reflective learning.

Question
How do wikis and blogs mediate authentic learning in sport science education in order to foster student engagement?

Approach

Using emerging technology tools like wikis and blogs has the potential to transform student-learning experiences (Wheeler et al., 2008). Wikis, as an emerging technology tool for educational purposes, have been used for the purposes of knowledge building, teamwork and increased participation (Calabretto & Rao, 2011). These techniques promote student learning, understanding, student engagement and knowledge construction. Blogs allow for the co-construction of knowledge on specific topics (Boulos, Maramba, & Wheeler, 2006).

For the purpose of this study, an authentically designed sport psychology wiki task, based on the nine elements of authentic learning outlined in Chapter 5, was completed by students to assist with student engagement, content and knowledge generation and collaboration with peers. The authentic tasks entailed students developing a psychological profile of a student athlete (in their own class) and developing or recommending activities these athletes could use to enhance their performance. The task was completed in the form of a wiki using the Wikispaces platform. Alongside this, a blog was used as a reflective tool in order to document students' experiences with using emerging technologies. Blog posts were used to allow students to reflect on their learning experiences and to engage in discussions about sport psychology topics.

Such an approach to learning is not overtly practised in sport science education and is worth academic scrutiny, as engagement through active collaboration is not easily achieved. Using a qualitative methodological approach, this case study draws on students' reflective experiences of completing an authentic task using emerging technologies in an attempt to improve student engagement and collaborative construction of knowledge. To this end, 67 student blog posts were analysed using a thematic analysis.

Findings and discussion

An analysis of the reflective summaries as posted by students on the class blog revealed that all nine authentic learning elements as outlined by Herrington, Reeves and Oliver (2010) were manifested in the learning activity (Figure 14.2).

As a result of the implementation of an authentically designed wiki-based assignment, the use of these technology-mediated tools transformed students' learning experiences in a number of ways.

Students reported that while this task (object) had real-life relevance, emerging technology tools used in this educational exercise provided a valuable space for them to voice their opinions while interacting in an online space. What became even more relevant was that within the online space, students were able to interact with peers with whom they would not normally interact within the classroom setting. By interacting in the online space, students were able to engage (outcome) with one another in a rich and flexible space and learned from one another while collaboratively completing a task.
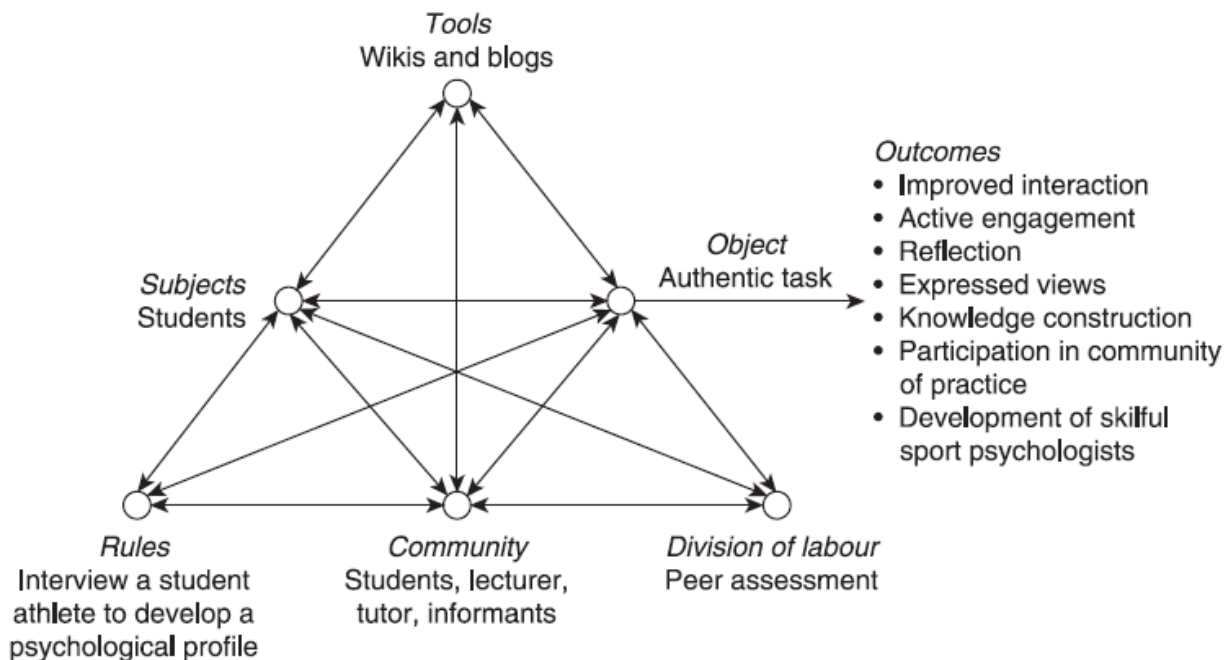
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Figure 14.2 Activity of students' participation in a blogging and wiki activity

Previously, students would sit through face-to-face instruction and submit individual assignments. Through this process students moved from being passive recipients of learning to being active participants in a live community of practice.

This implicit transformation allowed students to move from a space of discomfort when using these tools, because it was the first time they had received an assignment of this nature, to a space where they felt comfortable in doing so. Students were able to rely on expert performance from peers where more knowledgeable students assisted their peers through the exercise.

What can be concluded from this is that the design of the task provided a space for interaction with each other. This led to more meaningful engagement within an online space. As a result of this engagement, students became active participants in their own learning and were open to learning from one another. In turn, this led to better engagement through active collaboration.

Recommendations for future use/advice for practitioners
The use of technology tools such as wikis and blogs have been successful in mediating an authentic learning task as it had transformed student learning. Irrespective of discipline, task design is crucial if specific outcomes are to be met. Furthermore, keeping in mind both the elements of authentic learning and the affordances of the technology tools is of utmost importance in facilitating the development of successful and engaging learning activities.

Conclusion
The cases described here demonstrate that authentic learning environments and tasks require the investment of significant time and effort by students. They result in the creation of meaningful and polished products, as students translate their learning into visible constructs. Designing learning environments and tasks that enable often

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substantial parts of course curriculum is no easy task. Some educators question whether such an approach could be detrimental, by encouraging students to focus solely on the completion of the task and ignore the rest of the curriculum. However, a well-crafted task in a well-supported authentic learning environment can help to ensure that the completion of the task becomes the curriculum. A complex task can indeed form the focus of a meaningful learning experience, as is demonstrated so well in the cases presented in this chapter.

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