

Teaching and Learning with Technology: Reframing traditional understandings and practices



RHODES UNIVERSITY
Where leaders learn



RHODES UNIVERSITY

Where leaders learn

Teaching and Learning with Technology: Reframing traditional understandings and practices

Case Studies: Tracey Flemming; James Gambiza; Chris Upfold; Mark de Vos;
Maxine Diemer; Carol Thomson; Pedro Tabensky; Paul Wessels; Jen Snowball;
Andrew Todd; Sioux McKenna; Kevin Barnard; Mutsa Chinyamakobvu;
Hans-Peter Bakker; Sunitha Srinivas; Steffen Büttner; Sally Hunt; Kirstin Krauss

Editor: Nompilo Tshuma

Cover photo: Nompilo Tshuma, edited using WordFoto

2016

Teaching and Learning with Technology: Reframing traditional understandings and practices

CONTENTS

INTRODUCTION	4
Techonology and Transformation	4
What is TPACK	4
Context	5
Curriculum	5
Technology	5
Conclusion	5
CASE STUDIES	
Podcasting to improve students' reading of academic texts	7
Self-directed knowledge creation using glossaries	9
Connecting virtually with industry experts	11
Developing student writing through peer review	13
Using videos for deep engagement	15
Encouraging collaboration through online reading groups	17
Using student-generated content to improve participation in a large class	19
Encouraging participation through social media	21
Building a doctoral community of practice	23
Enriching students' background knowledge through Just-In-Time learning	25
Using video lectures to build statistical research skills	27
An integrated system to scaffold student learning	29
Using Skype to connect students with international change agents	31
Students learning at their own pace	33
Collaborative peer feedback	35
Engaging students using a flipped classroom	37
Using questionnaires to grow a body of knowledge	39

Introduction

The proliferation of online and institutional technologies has given them a pervasive and elevated status in higher education. However, despite the belief by many that technology can transform teaching and learning, its use is still mainly low-level: uploading lecture resources and keeping track of student assignment submissions. In the high-pressured and performance-based university environment, not all lecturers are able to find the time to explore the potential of educational technology to engage students while enhancing learning, assessment of students' work, and evaluation of teaching and courses.

By Nompilo Tshuma

This publication is a collection of case studies outlining examples of how lecturers at Rhodes University have carefully considered and selected technologies to address a range of teaching and learning challenges. In each case, the selection of the learning technology has been driven by a particular learning challenge, with student engagement and enhancement of learning as the main goals. The lecturers have utilised technology as one of several tools in the learning process. Each case study emphasises that even with students' technological abilities and the masses of information readily available online, the teacher is still indispensable (Laurillard, 2013) for planning, facilitating, guiding and scaffolding learning with technology. For the sake of clarity, some of the details in the case studies may have been omitted or slightly changed.

Technology and transformation

Technology has ubiquitously invaded the academic, business, government and private spheres. It has transformed – some would say revolutionised – the way we do business, communicate, work and manage our personal lives. It is now easier and faster to purchase airline tickets online, find research literature, communicate instantly with people across the globe and manage our daily schedules.

Unfortunately, this transformation through the use of technology tools has not had the same far-reaching and sustainable effect on higher education. Instead, there have been isolated pockets of success and good practice, low-level and often administrative usage, as well as the lack of an educational rationale in most educational technology integrations (Conole & Culver, 2010; Kirkwood & Price, 2014; Selwyn, 2014). The range of names used to refer to the field – teaching with technology, digital learning, technology-enhanced learning, computer-mediated learning, e-learning, and many others – are evidence of the complex and contested nature of the field.

In South African higher education, the challenges of educational technology use are further compounded by its economic status as a developing country, as well as the “the damaging legacy of colonialism and apartheid” (Grant, 2014, p. 522). This legacy, which threatens to impede the effective and sustainable use of

educational technology, is evidenced by poor internet access in some universities, scarce educational technology support expertise, the lofty aspiration to use educational technology to open up access for previously marginalised groups (Ssekakubo, Suleman, & Marsden, 2011) and a lack of an educational technology policy at the national level (Czerniewicz, Ravjee, & Mlitwa, 2006).

How do we move beyond these challenges? How can we, in a volatile higher education environment that is struggling to come to grips with transforming an oppressive system, move beyond using technology as an “incidental adjunct” (Pratt, 2014, p. 89) that perpetuates the existing power dynamics? How do we cater for an increasingly diverse student population with varying levels of technological ability, while overcoming our fear and frustration with “technologies that become obsolete as quickly as they arrive” (Mishra, Koehler, & Henriksen, 2011, p. 23)?

A possible first step is to recognise that although technological skills are important, we need to go beyond these and begin to understand technology's “affordances and constraints both for representing content and identifying pertinent teaching approaches” (Mishra, Koehler, & Henriksen, 2011, p. 23). We also need to critically reflect on the constraints of our context and the historical legacies that may be perpetuating past inequities through the use of technology in our teaching.

Mishra and Koehler's (2006) TPACK framework offers a useful model to guide the interrogation of some of these elements in the educational technology integration process.

What is TPACK?

Technological Pedagogical and Content Knowledge (TPACK) is a framework that outlines the different types of knowledge a teacher needs in order to successfully integrate technology into teaching. It was developed by Mishra and Koehler (2006) as an extension to Shulman's PCK framework (which excluded technology knowledge). As shown in Figure 1 below, TPACK involves the integration of “knowledge of student learning, knowledge of the subject matter, and increasingly, knowledge of technology” – Pedagogic Knowledge, Content Knowledge

and Technology Knowledge, respectively (Mishra, Koehler, & Henriksen, 2011, p. 23). The interaction and intersection of the three areas of knowledge takes place within a particular context.

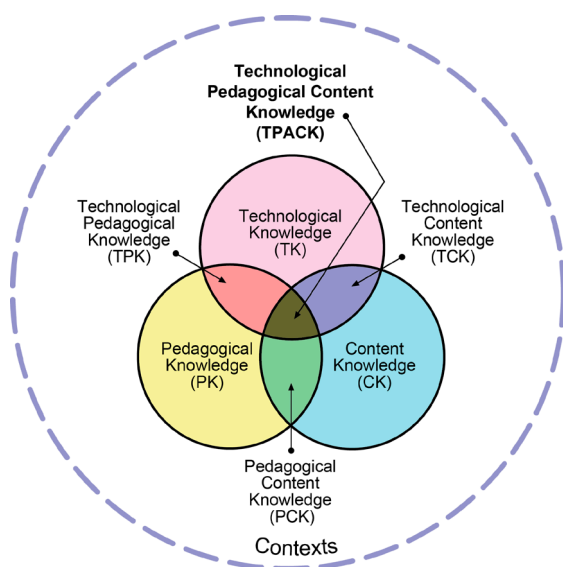


Figure 1: TPACK framework (source: www.tpack.org)

As indicated in Figure 1 above, the intersection of the three areas of knowledge in the TPACK framework results in seven different types of knowledge. Following is a brief discussion of how the main concepts of the framework, i.e., Context, Content Knowledge, Pedagogic Knowledge and Technological Knowledge, are significant to educational technology integration.

Context

The South African higher education context has recently been rocked by student protests calling for a transformation of the culture, curriculum and costs of being a student in higher education. The protests were driven by the need to counter the effects of apartheid and colonial legacies and enable previously marginalised economic and racial groups to access higher education – financially, epistemologically and socially. Considering its ubiquitous nature and widespread acceptance as a positive enhancement to teaching, technology has to be subservient to this context.

Therefore, before integrating technology into the curriculum, the first step should involve a critical reflection on the national, institutional and departmental contexts. This process will enable teachers to broadly understand the impact of South Africa's colonialist and apartheid legacy on higher education, the power dynamics at different levels (particularly in the classroom), and the (un)intended oppression of students. For successful technology integration, it is imperative that this critical reflection is a continuous process. It should be informed by self-reflection, student and peer feedback, and extant literature (Brookfield, 1995).

Curriculum

It is assumed that a teacher in a particular subject has a deep understanding of the disciplinary knowledge (Content Knowledge) and more often than not, is actively involved in

expanding that knowledge through research or professional development. However, it is not always the case that the teacher has a nuanced understanding of how best to teach the disciplinary knowledge by taking into consideration the knowledge structures of the discipline and the kind of learning they engender, as well as the type of students and what they bring to the course (Pedagogic Knowledge).

Before planning what technology to use and how it will be integrated into a course, there has to be a curriculum plan, which includes both Content and Pedagogy. This curriculum plan will encompass the teacher's philosophical outlook, disciplinary knowledge, how this knowledge is taught and assessed and who the students are (Rhodes University, 1998). The students' experience of the implementation of the planned curriculum and the integration of educational technology should be used to inform subsequent curriculum plans.

Technology

Despite the range of new technologies released every year, Dexter points out that: "Educational technology does not possess inherent instructional value: a teacher designs into the instruction any value that technology adds to the teaching and learning processes" (Dexter, 2002, p. 57). Hence, for technology integration to be valuable, useful and effective, there should be a planned curriculum that takes into account the context, the disciplinary knowledge and pedagogy, as well as the assumed knowledge and experiences of the students in the course.

This method of integrating technology is contrary to the norm, where teachers "...begin with technologies' affordances and constraints and the skills needed to operate them, then later attempt to discern how they can be integrated successfully into content-based learning..." (Harris, Mishra, & Koehler, 2009, p. 395). Rather, there should be a need, a problem, an educational rationale that prompts the selection of the technology – allowing it to be used as a tool or resource that is fully integrated into the planned course curriculum.

Conclusion

The range of educational technology tools used in the case studies in this publication showcase the variety of teaching and learning activities that can be accomplished using educational technology – from course delivery and student support, to assessment and feedback, and evaluation of teaching and courses. Their integration, however, has to be foregrounded by a critical reflection on the context as well as a discipline specific curriculum (content and pedagogy). This is particularly pertinent if teachers want to move beyond using technology as an appendage or accessory, to selecting the technology based on its suitability for the context and curriculum. My hope is that readers of the case studies in this publication will be challenged to be critically reflective about their use of educational technology and take into consideration not just their contexts and curriculum, but the power dynamics perpetuated by the use of technology in teaching and learning contexts.

Reference list

- Brookfield, S. D. (1995). *Becoming a Critically Reflective Teacher*. San Francisco: Jossey-Bass.
- Conole, G., & Culver, J. (2010). The design of Cloudworks: Applying social networking practice to foster the exchange of learning and teaching ideas and designs. *Computers & Education*, 54, 679-692.
- Czerniewicz, L., Ravjee, N., & Mlitwa, N. (2006). *Information and Communication Technologies (ICTs) and South African Higher Education: Mapping the Landscape*. Pretoria: Council on Higher Education.
- Dexter, S. (2002). eTIPs - Educational Technology Integration and Implementation Principles. In P. L. Rogers (Ed.), *Designing Instruction for Technology-Enhanced Learning* (pp. 56-70). Hershey, PA: IIR Press.
- Grant, C. (2014). Leading for social justice in South African schools: Where have all the activists gone? In I. Bogotch, & C. M. Shields (Eds.), *International Handbook of Educational Leadership and Social (In)Justice* (Vol. 1, pp. 521-539). Dordrecht, Netherlands: Springer.
- Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' Technological Pedagogical Content Knowledge and learning activity types: Curriculum-based technology integration reframed. *Journal of Research on Technology in Education*, 41(4), 393-416.
- Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: What is 'enhanced' and how do we know? A critical literature review. *Learning, Media and Technology*, 39(1), 6-36.
- Laurillard, D. (2013). Foreword to the Second Edition. In H. Beetham, & R. Sharpe (Eds.), *Rethinking Pedagogy for a Digital Age: Designing for 21st Century Learning* (2nd ed., pp. xvi-xviii). New York, NY: Routledge.
- Mishra, P., & Koehler, M. J. (2006, June). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Mishra, P., Koehler, M. J., & Henriksen, D. (2011, March-April). The seven trans-disciplinary habits of mind: Extending the TPACK framework towards 21st century learning. *Educational Technology*, 51(2), 22-28.
- Pratt, D. D. (2014). Effective integration of information communication technology in blended learning programmes: A morphogenic approach. *The International Journal of Learning in Higher Education*, 20(2), 89-103.
- Rhodes University. (1998). *Rhodes University Policy on Curriculum Development and Review*.
- Selwyn, N. (2014). *Distrusting Educational Technology: Critical questions for changing times*. New York, NY: Routledge.
- Ssekakubo, G., Suleman, H., & Marsden, G. (2011). Issues of Adoption: Have E-Learning Management Systems Fulfilled their Potential in Developing Countries. *SAICSIT '11* (pp. 231-238). Cape Town: ACM.

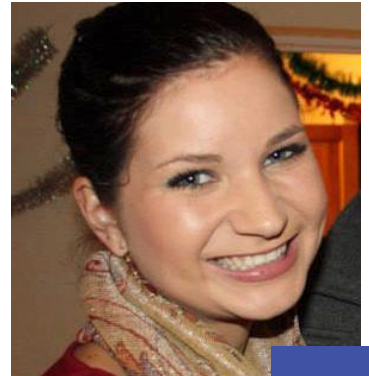
Podcasting to improve students' reading of academic texts

After a bad performance during the June exams, Tracey was tasked with holding a workshop with the second year Psychology students to obtain feedback on their experience of the exam and their perceptions of why their marks were low. In this workshop the students expressed that they felt there was a big power distance between them and some of the lecturers, making it difficult for them to approach these lecturers. They were also unhappy about some teaching styles and admitted to not working consistently throughout the term. On the other hand, the lecturers felt that these students were not coming to lectures, not engaging during lectures and not reading. Tracey also felt that the power distance was hindering students' access to the lecturers, who were in turn desperately trying to access the students.

Taking into cognisance these issues, Tracey re-structured her course to help students work consistently and read more widely. Firstly, she decided to forego the formal lecture on Thursdays and designate that as the reading day. In order to motivate her students to read on that day, an online MCQ test was run on Friday. Although the test was timed from the moment each student started writing it, the students had the whole day on Friday to take the test which counted towards their course mark.

Tracey opened the test on Friday morning and concurrently released a *podcast* on Thursday's reading. This podcast was a recording of her screen and voice narration, and it drew out important aspects from the readings that might not have been obvious to the students. Hence the podcast was a tutorial on how to read the assigned text academically, as well as drawing important points from lectures and linking these to the reading. Additionally, the podcast helped the students link the reading to a practical case study.

Student feedback on the use of the podcasts was generally positive, with students highlighting the 'anytime, anywhere' accessibility and flexibility as important to them. The students further indicated that they 'wish more lecturers would use them', with one student declaring that 'podcasts are the future – embrace them!' Other student comments indicated that they took 'extensive notes' while listening to the podcasts and the podcasts helped them 'interpret the readings and taught me to interpret them



Tracey Flemming
Psychology

Goals of this aspect of educational technology:

- Encourage students to read more
- Provide students with practical skills on how to read academic texts and apply them to practical case studies.

How the task worked:

- Setting aside a reading day
- MCQ test on the following day, concurrently released with a podcast which explained the reading and related it to the week's lectures and to a practical case study.

properly so I can apply the theories learned.'

Tracey noticed a number of positive effects of the interventions. During class discussions, students would refer back to readings they had engaged with independent of her. Additionally, the students' exam, practicals and assignment marks were higher than they had been in previous years. In terms of lecture attendance, the podcasts did not affect this at all, mainly because the podcasts were not replacing, but supplementing, the teaching that happened in lectures.

Tracey used *Camtasia* to record her podcasts. This software records the screen together with an audio narration from the presenter. If a camera is available, the presenter can add video as well. Tracey found that this software has a steep learning curve, and it takes time to record the narrations perfectly and edit the final podcasts.

Although most of the students were accessing the podcasts (more students were accessing the podcasts than were coming to lectures), Tracey cautions against making technology resources compulsory in face-to-face courses. This is because some students may not have the level of technological accessibility assumed by the teacher. The technology should therefore add value and supplement the face-to-face and offline teaching and learning activities in order to address issues of accessibility.

Points to ponder:

In what ways would you be able to use technology to improve students' critical thinking and academic reading skills while engaging with disciplinary knowledge in your course?

Self-directed knowledge creation using glossaries

In James's second year Land Degradation course, he integrated constructivist learning using technology. Constructivism views the lecturer as a facilitator and students as active participants in constructing their knowledge. This approach also encourages social or collaborative learning and reflection on the learning process.

James' aim was to design an activity where he would act as facilitator and advisor as students were actively engaged in developing their own knowledge. He also helped students develop critical thinking skills by challenging and asking them to defend this knowledge.

In James's knowledge creation activity, he had each student research any concept related to land degradation and cite four journal articles explaining this concept. These definitions, together with the references, were uploaded by the students onto the *glossary* in the RUconnected course page. The RUconnected glossary is an activity that allows either the teacher or the students to collaboratively develop definitions which are listed in alphabetical order or by categories. Each student was required to come up with a term and the glossary ended up with 35 definitions. The glossary activity counted towards class participation, which in turn counted towards the course mark.

The next task involved a debate using either the RUconnected discussion forums or in class, where other students challenged the definitions in the glossary. The students would then argue and give evidence to support their position. References to some of the definitions were included in the final examination.



James Gambiza
Environmental Science

Goals of this aspect of educational technology:

- Help students view themselves as active participants in constructing knowledge
- Develop critical thinking by challenging and defending this knowledge.

How the task worked:

- Students selected and researched one concept related to the course
- They uploaded the definition together with four references onto the online course glossary
- Their definitions were challenged by their peers and they had to argue and support their positions

The benefits for the students in taking part in this activity included the realisation that there is no single correct source of knowledge and that all knowledge can be contested. For James, it helped him put into perspective that he was not the primary source of knowledge, instead students directed and challenged their own learning. The process helped to form a type of community of practice in the module with people interested in the module's main topic and involved in discussing, sharing ideas and debating them. The students also found sources and articles that the lecturer had not seen before. And because students had to critique each other's definitions, they were "forced" to prepare in advance and asked sharp questions which stimulated class and forum discussions.

One of the biggest challenges with this method of self-directed learning was guiding students to filter appropriate articles from the Internet and to develop valid arguments supported with evidence. Sieving through the masses of information on the Internet proved difficult for students who were learning how to construct their knowledge and arguments. There was also diversity in terms of students' academic and computer literacy.

Points to ponder:

Teaching students not just for exams but for their professions involves encouraging self-directed learning and critical thinking. What self-directed learning activities would you consider incorporating into your teaching and learning activities?

Connecting virtually with industry experts

In an Information Systems (IS) Honours module, Chris wanted to find ways of exposing his students to virtual collaboration. The ICT sector is characterized by professionals who find themselves communicating virtually across local, regional and international borders while grappling with the demands of client requirements, at the same time integrating complex technologies, cultural diversity and outsourcing. Chris's module was designed to give students practical experience of the type of communication they would need to engage with in the workplace.

Chris facilitated the two-week module through a virtual classroom environment supplemented by industry experts. These experts provided an industry perspective across specific topics. Chris used Blackboard Collaborate – an online web conferencing platform designed specifically for educational purposes – to provide the synchronous learning environment. RUconnected, the university's Moodle-based learning management system, was used for asynchronous support. Chris supplied each of his honours students with a web camera and a set of headphones for the duration of the module.

The technology was implemented incrementally over four consecutive years, 2011 – 2014. The module was improved and revised over the years until 2014 when the entire module was delivered online synchronously. During that year, students attended lectures from their residence rooms, digs and the IS Honours lab using the Blackboard Collaborate virtual classroom. In fact it did not matter where they were located as long as they had a reasonable Internet connection and a computer with a web camera and headphones. Chris facilitated the module from his office with the virtual participation of guest lecturers and industry practitioners from their respective provinces in South Africa attended.

Chris noted that the main benefit for the students was the practical experience of taking part in and facilitating a virtual session – a skill that they would need in the workplace. The students interacted with, and received support from a range of industry experts who were enthusiastic and keen to contribute to their learning. The virtual sessions averted the logistics and costs of transporting them to, and accommodating them in, Grahamstown. An unexpected outcome was that there were industry practitioners wanting to join multiple sessions to contribute and listen to other experts in the field, a kind of extended learning community.



Chris Upfold
Information Systems

Goals of this aspect of educational technology:

- Expose students to virtual communication used in the workplace
- Connect students to industry experts.

How the task worked:

- Each student was provided with headphones and a web camera
- Information, resources and schedules uploaded on RUconnected
- Connected for live virtual meetings during class time.

With increasing bandwidth availability in most South African universities, the virtual classroom environment is becoming increasingly viable. Although there were no major problems experienced during this case study, load shedding held the potential to disrupt sessions. In some instances, latency did creep in requiring patience and understanding. Latency in this case refers to the length of time it takes for the audio to be transmitted from the sender's computer to the receivers' computers. The higher the latency, the longer it takes for the audio to reach its recipients.

The success of this environment is dependent on pre-planning of the module structure and expert coordination of the virtual sessions. A comment from a student who claimed to enjoy the

module suggested that Chris had not lectured nearly as much as they might have expected. The key issue is that the lecturer becomes the learning facilitator coordinating presentations from industry experts and student engagement.

Points to ponder:

The challenge of providing students with practical industry experience and connecting them with industry experts can be overcome through the use of virtual learning environments.

In what ways would you address the challenges of moving away from traditional teaching to a facilitator role?

Developing student writing through peer review

'Writing' and the ability to express oneself well academically has been identified as an important factor in whether a student thrives in higher education. While writing academically has always been a difficult challenge for students, the changing nature of the student cohort in the South African context makes developing academic literacies particularly important: in the context of poor levels of secondary schooling; the multilingual realities that our students interact in; the possibility that English acts as an artificial threshold to limit students; the fact that students are highly literate in social media but may have less practice in traditional writing forms, etc.

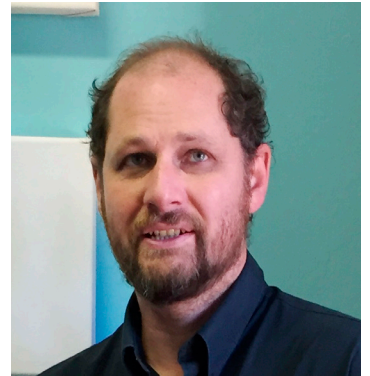
For these reasons, the Department of English Language and Linguistics chose to take part in the Writing Intensive Project initiated by CHERTL in order to create an explicit system of academic writing development to address these issues. A decision was made to focus an intervention at first year level with approximately 180 first year students from diverse social and linguistic backgrounds.

Students were required to submit a draft version of their essays for formative feedback. The workshop module on RUconnected was used to set up a sustained system of student peer review for essay assignments. The workshop module allows students to submit a draft of their essay online; the drafts are then distributed randomly and anonymously to peer reviewers; the reviewers work with an online rubric to provide qualitative feedback. Submission dates were carefully planned to allow students a fair amount of time to write their draft essays, provide feedback, revise and resubmit their essays.

Importantly, the use of technology was implemented in the context of an explicit 'ideology' informing the writing intervention that determined the ways in which the technology was framed. Writing interventions are often structured in linear and hierarchically structured ways which can be expressed as a house-building metaphor e.g., first put in a foundation, then build walls, and add a roof at the end. This reflects the ways many writing interventions focus on grammar, linking words, plagiarism and small, incremental skills. In contrast, those collaborating in this intervention adopted a hut-building metaphor to frame their intervention. To build a grass hut, one places thatch, working around the perimeter, cyclically doing the same thing over and over again. Writing was thus conceptualised as an integrative activity depending on a variety of complex skills which cannot be easily linearized but rather developed through practicing each skill.

Outcomes have been generally positive with student peer reviewers perceiving their marks as improving over time. The coordinators noted that quite often, students start the process with negative perceptions of the peer review process but these would become more positive as they progressed. Students also felt they became more confident in giving feedback and 'gave constructive advice that also helped me with my own academic writing'. Some students reflected that the process had been useful 'in all my courses' as they sometimes utilised the Linguistics resources 'as a general outline for my other essays too.'

The coordinators found that there were a number of technical issues with the workshop module however, including anonymity, the learning curve required for the workshop function, and how easy it is to make mistakes with significant consequences (e.g. reallocating reviewers after initial allocation). It is therefore critical for the course coordinator to have sufficient familiarity with this function and, if possible, run a pilot of the workshop module.



Mark de Vos
English Language and Linguistics

Maxine Diemer
English Language and Linguistics

Carol Thomson
CHERTL

Goal of this aspect of educational technology:

- Support students through sustained peer review in developing writing and critical reading skills.

How the task worked:

- Students submitted a draft of their essay online
- The drafts were then redistributed randomly and anonymously to student peer reviewers
- The reviewers worked with an online rubric to provide qualitative feedback.

Although the technology allows for peer review, one consistent issue was how to ensure the quality of the peer review. A way of approaching it is to recognize the ideological nature of this critique: it comes from a particular way of viewing teaching and learning. An important task is to help students understand that the quality of the peer review received is not the primary reward for doing peer review. The reward was two-fold. Firstly, writing an essay knowing it will be peer reviewed is important because it provides writers with a sense of audience. This is central to meaning-making and in developing a sense of voice.

Secondly, formulating a peer review is much more significant than receiving one; giving a peer review requires students to read a text closely, evaluate different perspectives, provide critical yet measured feedback, think critically, etc. It also provides students with a sense of alternative ways of accomplishing a complex communicative task through exposure to different samples of writing.

Points to ponder:

Would you consider using student peer reviews in your course, and in what ways could you encourage your students to value this process?

Using videos for deep engagement

Pedro coordinates the course iNtetho zoBomi (formerly Existential Conversations), which has a transformative function, seeking to engage students in a way that allows them to think about their lives and direct them differently as a result. In order to do this, students need to understand themselves intimately and their relationship with society. In interrogating and understanding themselves, issues of values, morality, culture, justice, duties and social responsibility are examined in an interactive, safe environment.

One of Pedro's challenges with this course was finding a way for students to engage with knowledge deeply enough to encourage interrogation and transformation. However, he felt that although students are literate, most of them do not engage with the written text at that level. Therefore, he selected a medium that he thought would be much easier for students to engage with and would touch their emotions more directly.

Pedro used selected short videos and longer movies to motivate students to engage with a range of personal and societal issues. The short videos were uploaded on the course's YouTube channel while the movies were watched one evening each week in a designated lecture venue. The movies were advertised and open to the university community. The videos and movies were carefully selected to motivate students to interrogate their own lives, including the manner in which they engage with others. The themes from the weekly videos and movies spoke to the kind of concerns that were discussed in the face-to-face conversations (small groups of about 15 students each with a facilitator) in order to encourage deep and sustained interaction.

Pedro notes that the main benefit of using this type of media was students' familiarity and engagement with it. He also notes that most of the students had easy access to the videos and were able to attend the evening movie sessions. The videos and movies encouraged students to deeply reflect on their own experiences and the social milieu, and how they could be agents of change.



Pedro Tabensky,
Allan Gray Centre for
Leadership Ethics

Goals of this aspect of educational technology:

- Finding a technology that the students in the course are familiar with
- Using the technology to deeply engage students and help them understand themselves and their society.

How the task worked:

- Selecting movies and videos that spoke directly to the issues that would be discussed in the weekly sessions
- Watching videos and movies prior to or during face-to-face group sessions
- Using themes from the videos and movies to encourage student-led interaction and dialogue during the face-to-face sessions.

Pedro cautions that in choosing a particular technology (i.e. videos), the lecturer makes assumptions about the students' technological abilities and access to certain types of technology.

Points to ponder:

With calls for transformation of curricula and pedagogy, how might you utilise technology to adapt to students while seducing them into the world of ideas in a way that speaks to their own reality?

Encouraging collaboration through online reading groups

Paul is a facilitator for the MA in Creative Writing (MACW) course. This intensive course relies on high numbers of contact hours between teachers and students in both group and individual settings. After it was decided to run full and part time streams of the course in parallel, Paul and his colleagues required a virtual technology platform for the part time students which could replicate the seminar room, small reading group units, and the one-on-one sessions provided to full timers, in a virtual way. In addition, many of the teachers were not based in Grahamstown and so a solution to the potential expense of bringing teachers physically to Grahamstown was needed.

The coordinators of the MACW decided to use Blackboard Collaborate, an online conferencing technology offered by CHERTL. It is based on self-extracting Java-based software which does not require financial outlay for software, and the footprint left on computers is practically non-existent. The only requirements on the part of the students are an ADSL connection and a headset with microphone.

In February/March 2012, when all teachers and the first intake of part time students were resident in Grahamstown for one week, pilot tutorials were run on the use of this technology. Based on feedback from those teaching the course, these proved to be very successful and have since been implemented every year. The intensive week-long tutorials were followed up by guide sheets on the basics of running the software on different browsers and operating systems. From this pilot, Paul and his colleagues decided to add technical support by requiring the presence of the course coordinator, in addition to the teacher, during the weekly evening sessions. The coordinator's role was to resolve all problems behind the scenes, e.g. by being in telephonic contact with the students who were experiencing problems. A requirement was that students log in 30 minutes before the start of each session so as to pre-empt any disruptions to the session proper caused by technological challenges.



Paul Wessels,
Institute for the Study
of English in Africa

Goals of this aspect of educational technology:

- Using technology to replicate the full-time participants' seminar, reading group units and one-on-one sessions
- Eliminating the expense of transporting teachers residing in other towns and cities.

How the task worked:

- During face-to-face sessions, tutorials and guides to support and develop proficiency with the technology and troubleshooting were provided
- Weekly reading group sessions which required longer setup time initially
- Two moderators during the weekly sessions, for facilitating the discussions and for technology support.

The coordinator found that the dominant positive outcome is much better student contact for the part-time stream of the course. By the end of the year strong bonds had developed between students, and between students and teachers. A strong indication of this is that for three years now the part-time students have elected voluntarily to continue reading group sessions into the second year of their study and only reluctantly end them when work on their theses becomes too demanding.

Paul notes that while there have been no significant challenges with the implementation, the technology is susceptible to failure for a minority of those who connect via mobile phone

networks. This is primarily due to network congestion, and the resulting audio glitches cannot be overcome via the software. However, he points out that only two out of twenty-eight students over the past four years have had to give up on the technology altogether and rely on telephonic contact.

Following the recent dramatic drop in the cost of ADSL connections, and the availability of this software for online collaboration, it has been possible for all the students in the MACW to make use of an ADSL connection for their participation in online sessions.

Points to ponder:

Would you consider using a similar technology to allow your off-campus, part-time students to collaborate and build connections with their fellow students?

Using student-generated content to improve participation in a large class

Jen teaches an Economics 1 class with about 600 students. The challenge of a large class is that a small number of student voices are heard during the lecture. Very few students have the courage to comment or ask questions in this environment. Jen was looking for a way to include student experiences and voices as part of the lecture.

About two weeks into the course, the students were given two options for one of the tutorials. They could either complete the normal paper-based exercise, or record a video illustrating or explaining any economic concept. The students could use any technology to make this podcast, which was not to be more than 30 seconds long. Jen emphasised to the students that she was interested in their explanation or pictures of the concept and not in the quality of the editing. Sound was also not a requirement as students could write a paragraph explaining what the recording was about. The recordings were uploaded onto RUconnected either as individual or group submissions of up to three. Group work was allowed in order to avoid excluding anyone who did not have a smart phone to record the videos.

The student-generated videos included some of the following content: a student walking through Pick 'n Pay and commenting on the change in prices of different items; another student recording those unemployed and looking for jobs in Grahamstown; several students acting out a job interview; cartoons cut together from the Internet and voiced over; a photo collage of the economic situation in a particular country.

Jen now has a growing library of mini-movies on a range of Economics topics that she uses during lectures to bring in the student voice. She plays them when there is a discussion around a particular topic or at the end of a lecture if there are a few minutes to spare. Jen has also used the mini-movies to kick off discussions around difficult and sensitive topics. This library with diverse student voices has shifted the large class dynamic of a traditional lecture to draw on student-generated resources. It can also potentially be used in other courses.



Jen Snowball,
Economics

Goals of this aspect of educational technology:

- To include student voices and experiences in the lecture
- To mitigate against the challenge of student participation in a large class.

How the task worked:

- Optional tutorial assignment offered for students to record a video illustrating or explaining an economic concept
- There was flexibility in the devices and forms in which students could make the videos
- Student generated content then used as part of the lecture.

Jen found that the major challenge was the time it took to grade the videos, although this was balanced out by the rich and diverse library that she has put together. Although most of the students found the videos entertaining, a few of them highlighted that they would not use these videos to study or prepare for tests.

Points to ponder:

Student-generated content was used in this course to include student voices in an otherwise traditional lecture.

What types of student generated content would you consider using in your course?

Encouraging participation through social media

Andrew teaches both undergraduate and postgraduate courses in Biomechanics. The challenge Andrew faced in his classes was that only a small number of students were contributing, sharing and asking questions during lectures. The other students were accustomed to traditional teaching and learning strategies where the teacher tells and expects students to listen, learn and regurgitate during tests. A further reason for the lack of student participation was that many of the students did not perceive the class as a safe space to share ideas.

The decision to use social media was prompted by Andrew's understanding that technology has changed the way students learn. There is now less need for grey matter recall, and far more need for the ability to find and assess how valuable a piece of information is, as well as the ability to construct an argument around it.

During lectures, Andrew uses social media tools such as Twitter for a couple of learning objectives. Firstly, he has observed that Twitter provides an excellent timeline of academic activities in the field by making available to students a stream of relevant information when they follow relevant appropriate academics and journals on Twitter. Academics often tweet the link between the work they are doing and real world events, which allows students to start to see the importance and relevance of what they are learning, thereby bringing the content they are learning alive. Secondly, following Twitter discussions allows students to see the contested space that is the world of academics. There are numerous debates and 'academic arguments' that occur on Twitter between experts in the field (in Human Kinetics & Ergonomics at any rate). By pointing to these and discussing them with his students, Andrew is able to facilitate the shift towards critical, evidence-based thinking. He also asks the students to share what they found interesting on Twitter overnight, which he has found to be very useful in framing the discussions in the classroom to ensure that they are aligned with what the current cohort of students find stimulating.

Andrew introduced Facebook for students to use outside of class time because he wanted to engage the students beyond the confines of the face-to-face contact time and using a technology they were already immersed in every day. He did not want them to access a separate platform in order to find out what was happening on the class forums. Whatever was posted on the class's Facebook group page would show up in their news feed without any effort on their side, unlike forum and discussion posts on Uconnectd.

Facebook was initially used by Andrew to share articles and ask questions to guide students' understanding. What he found of interest was that students who would not normally speak out in class were the most active in responding to the teacher's



Andrew Todd,
Human Kinetics and Ergonomics

Goals of this aspect of educational technology:

- To encourage students to participate in class discussions and ask questions
- To utilise an environment that the students were already familiar with and that was readily accessible to them.

questions and in responding to each other. They also began posting journal articles and news around the topics they were covering in class. Andrew was able to gauge students' understanding based on their comments to these articles.

Using social media has benefited Andrew's teaching in a number of ways. Firstly, it has promoted peer-to-peer learning, where students use the online platform to share, comment and direct other students' understanding. Secondly, it has allowed the teacher to follow students' engagement both during and outside the formal lecture. Thirdly, this process has enabled an additional platform for the active participation of those students who do not normally contribute in class. The online space gives them time to think through their responses, and

time to make connections between what they are learning in class and what is happening in the world.

Andrew cautions that it is important, particularly with Facebook, to initially share explicit guidelines with students for what is appropriate to be posted and how to respond to posts. The teacher needs to look out for offensive or inappropriate comments or posts and remove them before communicating privately with the student about why the comment was removed.

Points to ponder:

Can you think of how you could use social media to encourage participation in your course, particularly the kinds of articles and questions that would engage students and prompt them to respond?

Building a doctoral community of practice

Sioux coordinates a PhD programme in Higher Education Studies. The roughly 30 scholars in the programme work full-time across South Africa and further afield. Sioux's main goal for using technology was to ensure that the PhD programme firstly formed a sense of community among the scholars and supervisors and, secondly, exposed scholars to issues, theories and debates pertaining to higher education studies beyond their own topics.

Her choice of technology was based on availability, and she used a combination of *RUconnected*, *Blackboard Collaborate* and *Skype*.

The PhD programme uses an *RUconnected* site for sharing of topical news items, discussions of pragmatics around topics and methodologies, and sharing of readings and other information. It is also used for sub-groups of scholars, including those engaged in related research topics or working together on a funded project. Sioux shares information about Doctoral Weeks via *RUconnected*. Doctoral weeks occur four times a year and are week-long scheduled contact sessions with group interaction, lectures and presentations. She generates participant feedback on these doctoral weeks for evaluation purposes via *RUconnected* as well because this platform allows for customised questionnaires.

Blackboard Collaborate is used for team seminars which, she has found, work really well once the group understands the software and gets used to uploading content. However, she has noticed that it does not seem to work for larger groups beyond about 12 people because of connection issues and the difficulty in facilitating the discussion while addressing technical issues for the participants. *Skype* is used for smaller seminars, discussions and supervision sessions because most of the participants are familiar with this software.

Sioux found that the use of technology had a positive effect on the goals of the doctoral programme. She now believes that the ability to maintain contact, interest and



Sioux McKenna,
CHERTL

Goals of this aspect of educational technology:

- Build a community of scholars and supervisors
- To expose scholars to issues in higher education beyond their own topics.

How the task worked:

- Scholars are introduced to *RUconnected* during Doctoral weeks
- *RUconnected* is used to share information, news and resources around higher education, and prompt engagement and debate
- *Blackboard Collaborate* and *Skype* are used to connect groups and for smaller seminars or sessions.

engagement over a long period of time between face-to-face contact is only possible because of the technology.

With regards to the discussion forums, Sioux has found that very few of the PhD scholars take part in the general forum. They prefer to email Sioux to discuss articles and resources that she has posted in the forum. This could be because there is no clear sense of who the recipients of the open forum messages are. But the smaller project team forums seem to encourage much more interaction because all participants know exactly who will read their deliberations.

The doctoral scholars find the online platforms challenging at first with many expressing that it involves an initial steep learning curve. However, they soon become comfortable in this environment with sustained use. In order for the online space to work as an engaged, vital community, there needs to be very regular input by the course co-ordinator. The online space also needs to be a place in which high-level theoretical deliberations take place while fostering a sense of 'safe-space' for all participants.

Points to ponder:

Technology can help build and sustain a community that is geographically dispersed, while engaging them in issues beyond their PhD research.

Can you think of ways you could use technology to engage part-time postgraduate scholars?

Enriching students' background knowledge through Just-In-Time learning

Kevin taught a diverse group of third year Financial Management 1 students in the Department of Accounting. The diversity of the class was represented by four different racial groups, five countries and more than 13 home languages. The challenge, therefore, was to support their varying levels of background knowledge (sometimes termed “content schemata”) of the subject. Because background knowledge plays an important role in learning, Kevin wanted to find a way to enrich background knowledge amongst his students at the beginning of each of the course's modules.

Kevin designed a learning intervention that utilised multiple technologies to achieve the goal of enriching students' background knowledge in the subject area. As a collective, these tasks formed what is known as Just-In-Time learning, which allows students to access the resources they need when they need them. In this approach, Kevin assigned tasks for the students to complete as preparation work soon before the start of lectures.

For the first task, Kevin recorded screencast videos with Camtasia which were uploaded on to RUconnected. These videos had introductory information on each module and were designed to explain how it was interlinked with other modules and how it fitted into the bigger picture of financial management. For the second task, he linked students to online resources, such as video clips and reports which were meant to highlight real-world examples relevant to the module. Thirdly, students were given an online quiz on RUconnected as formative assessment of the preparation work they had completed.

On the whole, feedback from student participants was positive. Students recognised that preparation for lessons can improve learning with over 90% of respondents to a questionnaire on the Just-In-Time intervention indicating that they either agreed or strongly agreed that it helped them to prepare for the lessons that followed. Interestingly,



Kevin Barnard,
Accounting

Goals of this aspect of educational technology:

- To bridge the gap between assumed knowledge and students' actual knowledge
- To encourage students to prepare for their lectures.

How the task worked:

- The lecturer prepared a screencast video for the students to watch
- Students then accessed a number of online resources related to the topic
- Finally, students completed an online quiz to test their understanding of the video and other online resources.

very few students indicated having had trouble with using the technology to learn.

There were a number of challenges associated with the Just-In-Time learning intervention. In a few cases, students reported that while they were busy with a quiz, loadshedding commenced and interrupted them. Others had to switch Internet browsers in order to watch certain online video clips.

The setup and administration of the intervention was time consuming and Kevin notes that when he first implemented this intervention he had not foreseen that he would need to set aside as much time to attend to that work. He also notes that the quiz question bank needs to be updated and expanded in future courses.

Points to ponder:

The increasing diversity of students in higher education has implications for the background knowledge that students bring into a course, and consequently how the gap between assumed and actual background knowledge can be reduced. Using Just-In-Time learning can be used to enrich students' background knowledge.

In what ways would you consider using technology to bridge the gap between students' actual and expected background knowledge?

Using video lectures to build statistical research skills

The introductory Statistics course for students in the Science Faculty is a semester credit where the main performance indicator is the final written exam. As such, the teaching, learning and assessment methods are geared to adequately prepare students for the written exam.

Following the traditional way of teaching such numeracy-based introductory courses, emphasis is put on a student's ability to execute calculations using applicable formulae. However, Mutsa realised that this did not sufficiently accentuate the imperative interpretation of results that is based on understanding the context of the problem. This issue was made apparent by how often students returned to the Statistics department to seek help with basic concepts they were expected to have retained on completion of the course. In addition to poor retention, students regularly sought help with applying statistical knowledge using technology as its advancement has enabled data analysis to now be carried out more accurately and timeously using various statistical software.

Upon request from a department that requires its students to take introductory statistics as a pre-requisite to their research module, Mutsa included a technology component in the course that would encourage the students to engage with the course content more holistically. The introduction of a technology component was a further attempt to solve the afore mentioned issues, and a pursuit of an idea to 'ingrain' knowledge in the specific context of mandatory introductory skills courses such as Statistics.

Given that Mutsa was mainly interested in engaging students' by focusing on the reasons behind selecting particular methodology and the interpretation of results, STATISTICA was best suited as it has a user-friendly interface. STATISTICA is a suit of statistical analysis and data mining tools suitable for quantitative research. However, because STATISTICA was an additional component in her course, Mutsa had to find alternative ways to teach her students how to use this practical tool in a project-based scenario. She selected to use recorded lectures which students had to watch before completing each section of their assigned projects. The recorded video lectures demonstrated how to use



Mutsa Chinyamakobvu,
Statistics

Goals of this aspect of educational technology:

- Help students engage with statistical concepts more holistically during the course
- To ensure that students have learnt to interact with statistical software before they embark on research-based activities in other courses.

How the task worked:

- Students watched recorded video lectures
- Students then applied the STATISTICA skills taught in the video lecture to an assigned project.

the relevant tools the students needed to know in STATISTICA using a sample data set. Students were required to watch the video lectures and complete the projects on their own. A test covering all sections was given at the end of the semester to give the added pressure of a summative assessment task.

One of the main benefits of recording the lectures using Camtasia was that these became a resource for the students which they could access anytime. They also allowed Mutsa to present a range of topics almost simultaneously, allowing the students to easily build links between different parts of the course. Considering that STATISTICA was an additional component to the course, recording the lectures also allowed Mutsa to increase her contact time with students, albeit asynchronously.

Unfortunately, because the video lectures were linked to formative assessment projects which did not carry numerical weighting or incremental deadlines, it led to students

postponing their project completion until they were nearing the test. This meant that they came flooding in for help just before the test and were not able to get all the assistance they needed. The results of the test showed that students had barely grasped the “big ideas” that link topics together in the course, and had therefore struggled to decide how best to present and interpret their findings.

In future Mutsa would like to explore the possibility of having compulsory contact lectures to enable the students to ask questions regularly in order to better facilitate the formation of the “big idea” framework that she seeks. The video lectures would be kept, but rather used as a revision resource. She also aims to formalise the practical sessions by having them scheduled on the course timetable, allocating demonstrators, and ensuring that assignments contribute marks towards obtaining the credit for the course.

Points to ponder:

What technologies would you use to help students better apply their skills to practical projects or new contexts?

An integrated system to scaffold student learning

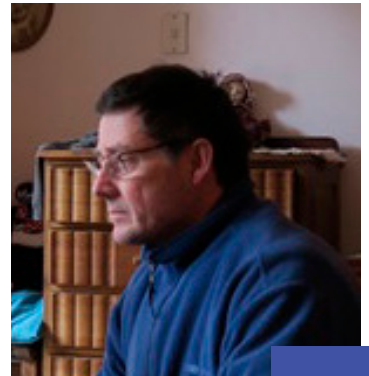
Hans-Peter was the course coordinator for a first-year Management class with about 500 students. Because of the large class size and the varying levels of students' academic and computer literacy, Hans-Peter implemented an integrated support system for students through the use of meaningful engagement, assessments and scaffolding. He integrated four different platforms to support his students. RUconnected was used as the principal interface for the course, together with Turnitin. Connect and Learnsmart, which are both platforms provided by the prescribed textbook publisher (McGraw-Hill), were accessed from the RUconnected interface. A Twitter feed was also integrated with the RUconnected platform.

RUconnected was the main course site, which served as the principal interface between students, lecturers and tutors. Lecture and readings schedules as well as tutorial instructions and writing task instructions were published on the site. Tutorial attendance was monitored on RUconnected. The general forum and various group forums were used for out-of-class interaction. The site and in particular its various Reports also allowed Hans-Peter to monitor both the tutor and student engagement with the course. RUconnected was also used extensively for the submission of student writing tasks and for feedback from the tutors.

The Learnsmart facility, which enables student-specific quizzes that adjust to students' strengths and weaknesses, were a required assignment for students every week. The "Connect" site provided significant opportunity for various interactive assignments and provided resources for students to engage with the textbook in their own time.

The Twitter feed on RUconnected was used by the lecturer and the students to post relevant news articles, which were then used in class and allowed for lively interaction between the textbook material and the real world. Turnitin was used for the key assessment project: portfolio of writing tasks. Students were encouraged to submit a draft before the due date and use Turnitin as a developmental tool.

The use of RUconnected as the principal course interface allowed Hans-Peter to administer the course effectively. It made it possible to link theory and practice quite seamlessly and allowed Hans-Peter and his colleagues to teach (and monitor) plagiarism more effectively. The integration of different platforms also provided significant support to student engagement with the textbook and he believes that this contributed significantly to generally good results by forcing students to engage with the textbook material throughout the course, rather than 'cramming' just before tests and exams. Besides providing lecturers with a large repository of support material for their lectures and assessments, the integrated environment provided students with many tools to engage with the course material in their textbooks.



Hans-Peter Bakker,
Management

Goals of this aspect of educational technology:

- Coordinating a range of activities for a large class
- Scaffold student learning through meaningful engagement and assessment.

Hans-Peter found that the forums were generally effective, especially when students started responding to student queries themselves. There was also easy communication with students and monitoring of their engagement with the course.

The benefits of using various technology platforms was that firstly they served to initiate first year students into the online learning environment, many of them for the first time. Secondly, they made it possible to turn textbooks into far more interactive and therefore topical mediums which, when used properly, made the material come alive for students.

Hans-Peter experienced a number of challenges posed by the use of a range of technologies and the large class size. The start of the course required a significant investment in terms of support because it was difficult to introduce the different technologies and set the tone for the course. Furthermore, different course lecturers and tutors applied the technology differently, leading to some confusion and discontinuities. And lastly, although support for the integration between RUconnected, Learnsmart and Connect was generally very good, any bugs or dysfunctionality caused tremendous confusion and stress for students and lecturers.

Points to ponder:

How would you consider using technology to support and engage under-prepared students?

Using Skype to connect students with international change agents

The Pharmacy seminar period is a 45-minute session run for all students in the faculty from first year to postgraduate level. Sunitha was interested in discussing the role of student advocacy organisations like Universities Allied for Essential Medicines (UAEM) in countering the unavailability of essential medicines for the majority of the population in developing countries. These student advocacy groups are set up in the global north in order to assist African countries, but South African Pharmacy students have not been as active in the social mobilisation and advocacy-related campaigns as medical students globally.

In order to expose her students to the significant work done by student advocacy groups and the contribution that the students could make as members of such groups, Sunitha organised seminars presented by a range of international experts. These included members of the UAEM who are doing their medical residency at Yale University and Harvard University; a former director in the World Health Organisation Essential Medicines Program in Geneva; and an alumnus of Rhodes. In order to avoid the associated logistics such as cost of their transportation, as well as the time commitment for them to come to Rhodes University, she made their participation possible via Skype during the Pharmacy seminar sessions. The connection was made using equipment available in the lecture venue with assistance from the Facilities office and the Edtech unit.

In addition to the cost and time savings, Sunitha selected Skype because she was already familiar with the technology, as were many of the presenters with whom she connected. Students were also provided with learning opportunities that would not have been otherwise possible. The synchronous nature of Skype connections gave students the opportunity to ask questions and interact with international experts actively involved in making a difference in providing essential medicines to Africa.



Sunitha Srinivas,
Pharmacy

Goals of this aspect of educational technology:

- Motivating students to join or form student advocacy groups for health advocacy
- Connecting students with key players in these groups without the associated cost and time commitment.

How the task worked:

- Downloading and testing Skype ahead of time
- Connecting with presenters a few minutes earlier before 'going live'
- Moderating interactions between the students and the presenter.

Sunitha has found that the synchronous nature of Skype can be problematic if issues are experienced during connection. There is no time to fix the technology as there are always time constraints. The presentation has to go on despite the difficulties. If there is a bad connection, as was the case with one of the presenters, then two-way communication becomes difficult. In that particular case the presenter was unable to see or hear the students, and had to rely on Sunitha's text comments, which is a possible alternative communication to facial and audio capture via Skype. Despite these difficulties, student feedback indicated that the students still benefited from this presentation as Sunitha posted their comments and questions via text messaging to which the presenter responded live.

In order to use Skype effectively in a large venue, the screen should be large enough for the students to see the presenter clearly. There should also be a camera far enough from the students so that the presenter will be able to see them all during the presentation. It is advisable to run a test call prior to the actual presentation in order to test that the hardware and connection are clear.

Points to ponder:

Are there opportunities in your context for you to use a technology like Skype to connect your students to prominent international scholars, authors or experts in your field without the constraints of finding funds for the logistical costs of bringing global perspectives when internationalising your curriculum?

Students learning at their own pace

As a lecturer for Geology 1, the main issue Steffen had been facing over several years was that students increasingly struggled to cope with multitasking obligations in lectures. The difficulties included balancing a number of simultaneous activities, including meaningful note taking, listening, processing of information, understanding, and relating the information to what had already been learned or discussed. These activities had become challenging to an extent where class attendance had dropped. As a result, particularly at junior undergraduate levels, pass rates and class averages became a concern.

Steffen was concerned that the lack of good quality notes from class made it difficult for the students to revise the course content and to engage in deep learning. In addition, the work overload, particularly at first year level, made it difficult for students to mitigate the effect of poor notes by spending extra time engaging with textbooks, where the relevant material can be found.

In order to reduce the multitasking burden, and help students learn at their own pace, Steffen used Camtasia software to record all lectures. The lectures were pre-recorded partly because he felt that recording them live in class produced too much background noise. The resulting audio-video files containing PowerPoint slides with spoken text were made available to the students in mp4 file format before the lecture. A video file in the mp4 format is versatile and can be played across a variety of mobile and desktop platforms.

The results of this intervention were positive: student engagement increased dramatically; class and exam marks went up; and retention of knowledge seemed to improve. Students regularly used the audio-video files for revision and to understand complex content by repeated review of the related parts of the lecture. Student feedback concerning the usefulness of these files has been very positive. The intervention proved so useful that Steffen extended it from just the first year class in 2013, to all his undergraduate courses.

Steffen found that over and above the initial time invested for recording and editing the lectures (about two to three hours to record and edit one 45 minute lecture) he experienced no challenges with this intervention.



Steffen Büttner,
Geology

Goals of this aspect of educational technology:

- To help students learn at their own pace
- To help students balance the multiple tasks involved in the learning process.

How the task worked:

- Lectures were pre-recorded using Camtasia
- Students engaged with recorded lectures prior to class time
- Class time used to address questions and engage students.

He argues that the improved summative assessment results and positive student feedback justify the time investment. The mp4 files can be used for several years, and because the original files are saved in Camtasia before converting them to the mp4 file format, they can be edited and amended if parts of the course change. Extensive changes however would require new recording. Recording of live lectures produces a lower file quality than an offline recording (in an office or studio environment). Offline recordings allow for explanations and recordings to be redone until the lecturer is satisfied with the wording and the audio quality.

Points to ponder:

First year students are often overwhelmed with the volume of work they need to learn, and this intervention shows that it is possible to ease this pressure by allowing them to slow down the pace.

Would you consider using recorded lectures as a teaching tool in your courses?

Collaborative peer feedback

In a second year Linguistics course, Sally teaches a module on the analysis of spoken interaction. The course presented a number of challenges, including student resistance to group work, readings for the whole course done just before exams, no formative feedback on student work and students finding it difficult to source relevant and quality literature for research. Sally decided to run the course online where she found ways to scaffold and encourage her students to overcome the above challenges.

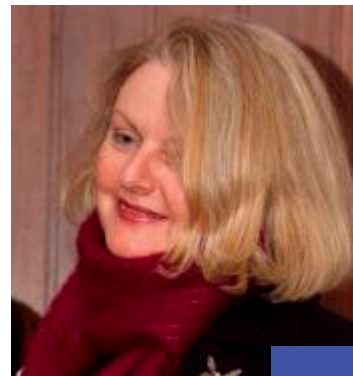
Sally elected to use Google Docs, a text-based online collaboration platform, to implement online group work and peer feedback. She also ran two workshops, the first one was an introductory workshop designed to orient students to the technology, while the second workshop was on finding relevant, credible sources of information.

Students were encouraged to research real knowledge gaps, in this case how particular 'speech acts' are realised in African languages. The students chose which speech acts would be investigated and then each group was assigned one of these to research by the roll of the dice. Each group developed an online document on Google Docs which was comprised of theory and analysis. The group documents evolved and expanded with each week's assigned tasks.

Most of the weekly online group work was done during class time in a computer lab; although the Library lab has been the most ideal venue, it is not always available. Sally, with the assistance of a tutor, was able to use these lab sessions to monitor and scaffold the development of the documents. Students were then required to give feedback to other groups on the work that they had done. The Google Docs were shared with other students using their Gmail addresses.

The students responded well to the use of technology and online modalities. Formally elicited student feedback suggested that they view this as familiar, and found it useful to develop skills such as finding relevant information and assessing the credibility of sources in that context. Locating the group work online meant that both Sally and the tutor could access the students' work at any point in its development, and not just at fixed submission dates, to gauge how well students were dealing with the task, offer helpful comments and adjust other input appropriately e.g. lecture content.

Student feedback over the three years that the course has run in this format has mostly been positive and constructive. While students still dislike group work, the first two years in particular, when the Library's computer lab was available, seemed fairly



Sally Hunt,
English Language and
Linguistics

Goals of this aspect of educational technology:

- Encourage group work
- Scaffold the acquisition of information literacy skills by providing timely and formative feedback
- Research real knowledge gaps.

How the task worked:

- Introductory workshops
- Weekly tasks for groups to tackle a research problem
- Peer feedback on the developing document.

successful in making it more palatable. The breakdown of the project into weekly tasks was well received, as was the facility for lecturer and tutor to provide formative feedback. Improved independence in sourcing readings has been reported by both the students and the writing assistant who worked with these students on individual research projects the year after the intervention.

The change of venue for group work from the Library to Jacaranda B in year 3 of the course undermined the academic literacy goal somewhat, in that students could not incorporate the library's print resources easily, only those online.

Sally cautions that group work still results in resistance in some students, largely due to unevenness in group members' contributions. In order to offer individual rewards for effort, student comments on others' work are mark-bearing, however this is only a small proportion of the final mark. Each year one group has withheld their work from the online Google drive until it was required for assessment, which suggests that they judged the risk of having their work copied to be greater than the benefit they could derive from peer feedback. All the other groups, however, commented positively on the comments they received.

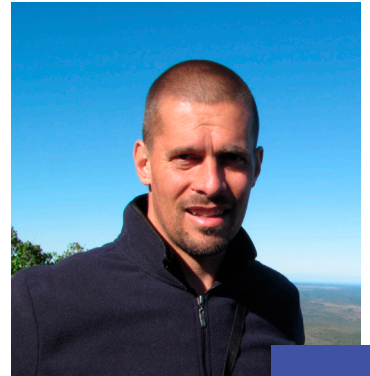
Points to ponder:

Considering the University's adoption of Google Apps for Education, would you consider using similar applications to scaffold students' academic and research skills?

Engaging students using a flipped classroom

Business Systems is an introductory 2-week course for second year Information Systems (IS) students. Historically the course developed from the need to introduce students to the IS major. The content-heavy course is considered boring by most students. Therefore to create some motivation, enthusiasm and interest, Kirstin used Kahoot to flip the classroom and to get feedback in a playful manner in the class from students on whether they understood the content discussed during lectures. Flipping the classroom involves using lecture time for discussions and assessment while course content is covered using other methods, i.e., lectures, videos, readings, research, etc. Kirstin articulates a principle that underpinned this approach as “If I don’t get to talk about new and interesting things, then at least let me make the teaching and learning interesting”.

In order to motivate students and gauge their learning, Kirstin uses the Kahoot to run online and interactive multiple choice questions (MCQs). Kahoot is a game-based online learning platform which allows lecturers to create game-based MCQs. The lecturer sets up a ‘kahoot’ – which is a game comprised of up to four questions or prompts. Students then access the kahoot during class time and respond on their own devices. The login key, the questions and the results of student responses are displayed using the data projector. The collated responses give both Kirstin and the students immediate feedback indicating the level of understanding and engagement with the content. If there is a problem or lack of insight, Kirstin can immediately respond and address the knowledge or issue.



Kirstin Krauss,
Information Systems

Goals of this aspect of educational technology:

- Motivate students to engage within a content-heavy course
- Gauge students’ understanding of the discussions.

How the task worked:

- Setup the quiz on Kahoot
- Using a projector, provide students with the access code and then display each question
- Students respond using their available devices, with results displayed on the screen.

Kirstin has found that there are a number of limitations with using Kahoot. The first is that only four MCQs can be presented at a time, and each question is limited in terms of the number of words. Secondly, because some students do not have smartphones, Kirstin cannot make this a compulsory activity or use it to replace formal tests, hence some responses are formulated in pairs or groups. Thirdly, as the process requires wireless connectivity, it is sometimes difficult for students to access eduroam (the university's wireless network), or when they do have access, they may be disconnected before completing the kahoot.

Points to ponder:

Kahoot provides a way to motivate students and get an immediate indication of whether learning is taking place. Would you consider using a similar tool to get feedback on student learning in real time?

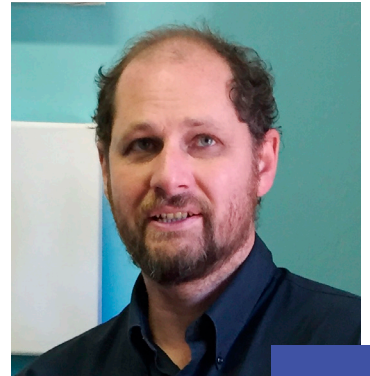
Using questionnaires to grow a body of knowledge

Mark teaches Language in Society to about 180 first year students. The students' backgrounds are very diverse, and between them they have experience of up to 50 languages spoken in their respective homes. Quite a large proportion of the class speak isiXhosa or a language closely related to it.

The class consists mostly of students in their first year who still have expectations that university equates to high school. The Language in Society course is their first course in the first year. Mark has found that students are often a little overawed by University and its expectations and are also very reliant on authoritative sources for knowledge: the lecturer and books.

Mark wanted his students to simultaneously explore their linguistic environments and start to think like researchers, to realize that knowledge does not come in books but is uncovered and created by ordinary people. Just as importantly, he wanted them to realize that they could be active agents in the knowledge creation process.

Mark used RUconnected questionnaires to support this process. Students were given a questionnaire to elicit data about a particular language phenomenon. In previous years it was focussed on 'agreement' phenomena; but in 2015 it involved an exploration of isiXhosa and Zulu dialectal forms. After practising in tutorials, students were asked to collect data by interviewing their peers and then to input the data directly into an RUconnected questionnaire. Since students were able to 'see' the results of the questionnaire as data were added, they were able to see a body of knowledge grow quite literally. This generated a fair amount of excitement. In addition, Mark was then able to take this data and to lecture on it the following week. When doing so, he was quite honest that this was 'cutting edge', that nobody had seen the data before and that they had helped create knowledge.



Mark de Vos,
English Language and
Linguistics

Goals of this aspect of educational technology:

- Help students explore their linguistic environments
- Assist students to think like researchers and participate in the knowledge creation process.

How the task worked:

- Generate data about isiXhosa and isiZulu dialectal forms by interviewing their peers
- Input data into an RUconnected questionnaire enabling students to see the 'database' of responses grow
- Lecture presented on this 'cutting edge' data the following week.

Mark found that one of the outcomes of this project was that it placed African languages at the centre of the learning project. Instead of using mainly English and Afrikaans, Mark was able to draw directly on additional indigenous languages, on multilingual repertoires, on the valuable language resources that students brought into the classroom. Mark felt it important that by emphasizing isiXhosa and isiZulu, he also 'sent a message' to English and English-monolingual students about the reality of the multilingual and African character of their spoken environment.

Most of the student feedback was positive, with the assignment described as 'super interesting,' 'enjoyable,' as well as 'enriching and fulfilling.' Students' positive experiences in this course centred around the following aspects: the use of

'dialects and norms' 'relevant and in use in our own country'; being able to apply their knowledge; and 'analyze and discuss in detail newly discovered data/research which we as a class had collected'. One student's feedback indicated that the assignment could have been challenging for international students who learn about the existence of these languages for the first time in this first year course.

Mark cautions that in order to coordinate online and offline activities, one needs to ensure that students are sufficiently prepared and that their concerns are addressed before the task starts.

Points to ponder:

In what ways could you use technology to develop your students' research skills while engaging with diversity in the classroom?