2016

BLENDED LEARNING CASE STUDIES

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Digital stories for nursery design

Faculty of AgriSciences | Department of Horticultural Science

Module: Crop Production 214
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Context

Background overview

Crop Production 214 is an introductory plant propagation module taught to students in the Plant and Soil Sciences programme. The first year of this programme consists almost entirely of Science modules; this module is one of the first that exposes students to the process of using scientific principles and concepts in the applied agricultural environment. Crop Production 214 is presented by the Department of Horticultural Science, with approximately 60 students enrolling each year, although these numbers are rising. Learning takes place through lecture periods (three per week) and through practical sessions. Many of the practical sessions involve field trips to plant propagation nurseries in and around the Stellenbosch area.

Subject area

Crop Production 214 focuses on the general principles of plant propagation. This includes underlying plant physiology, clonal versus sexual plant propagation, the development of cultivars, the use of chimeras and the process of grafting. Most commercial plant propagation takes place in nurseries, where soils and potting mediums, temperature, watering regimes and pest control can be carefully managed by the plant breeders. Nurseries and their environments therefore form an important part of this introductory course.

The challenge

One of the learning outcomes of this course is that, by the end of the course, students should be able to use their knowledge of plant propagation to make decisions about plant breeding processes, such as which potting medium to use and whether to use clonal or sexual propagation. However, there is so much technical information to learn regarding the nursery environment that students were getting lost in the details and not engaging with the content in a critical and problem-based manner. The decision was therefore made to present the plant nursery content in such a way that students would be required to engage with the content and practise going through the information in order to make decisions about the propagation of certain crops.

Advantages associated with the integration of technology

Instead of the lecturer giving lectures on the plant nursery, the students were asked to use the information available in their textbooks (and elsewhere) to design a nursery for the propagation of three different crops using three different plant propagation techniques. To make the learning more authentic, the students were told that there was an investor wanting to invest in a start-up plant nursery and they were asked to present their nursery design as a business proposal to this investor in the form of a digital movie.

Digital movies were chosen as digital literacy is becoming increasingly important in the agricultural sector and asking the students to create and produce a movie was a good way to teach a number of computer skills. Furthermore, the format of a digital movie required condensing a large amount of information into a concise and interesting script, which supports the learning outcome of being able to sift through large amounts of technical information to make plant propagation decisions.

The lecturer now uses a practical session to teach the basics of making a digital movie and to show students how to find help for technical problems using Google and YouTube. Students also readily help each other with some of the technical movie making. The Department invested in a few microphones and video cameras that the students can use, so that lack of access to devices is not a barrier in this project.

The students are encouraged to use their practical visits to nurseries to engage with plant breeders and nursery managers and to find information and experience that the textbook does not provide.

**Figure 1: Student creating a digital story

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Learning and assessment activities

Educational approach

The project was initially designed to engage students with some of the graduate attributes, such as critical thinking, group work and digital literacy. The process of gathering information, making decisions about the nursery and presenting and creating a video also takes students through the levels of Bloom's taxonomy. In recent years, the project has been refined to meet the criteria of authentic learning, such as having broad, fuzzy guidelines, having a real-world setting and being open to the students' interpretations. The elements of digital stories played an important role in the development of this activity, although the emotional aspects were replaced with more scientific and professional elements.

Learning activities

The students are asked to design a plant propagation nursery and to present their design as a business proposal in the form of a digital movie. They work in groups of four to five throughout the project and are given almost the entire semester to work on it. Instead of listening to lectures on nursery design, the students are asked to read the information in the textbook themselves. The groups then choose three different crops to propagate using three different techniques and design a nursery that allows for the propagation of these crops. In this design stage, the students need to make decisions regarding the layout of the nursery, the light, temperature and water control systems, and which potting mixes and nutrients should be used for each crop. They then need to present their design as a business proposal, which includes basic marketing and sustainability. Ultimately, by the end of the semester, each group needs to present its business proposal as a 10-minute digital movie. The groups are expected to create a movie that is professional and interesting but also that clearly and concisely shows their nursery design and explains the decisions that they made regarding the nursery design and environment and how these decisions influence their crop breeding strategy.

Assessment activities

The final movies are marked using a rubric that is available to the students throughout the semester. As the content is vital to the project, content counts for 60% of the mark. The movie elements, including script (i.e. the filtering of information and its presentation), interest, pace and rhythm, make up the other 40% of the mark.

As this assignment comprises group work, once the video is submitted, the members of each group are given the opportunity to mark their fellow group members on contribution. If more than half a group marks an individual down, that individual's video mark may be reduced after consultation with the group.

Figure 2: Example of a nursery layout and design by Crop Production 214 students

Feedback practice

The students receive feedback through their marked rubrics. In the final practical session of the semester, they are invited to watch all the videos that have been submitted, giving them an opportunity to see what their peers have created and to have brief discussions about each video.

Learning environment

Learning setting

Although this project is done mostly in the students' own time, some of the practical sessions are also set aside for the students to work on the project. One of the first practical sessions of the semester is used to teach students some basic video creation and editing techniques and to show them how to find more help online. Subsequent practicals are used for field trips to plant propagation nurseries, where students can see examples of plant

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propagation techniques and technologies, observe a variety of nursery designs and interact with experts to find out more information.

Content resources
The prescribed course textbook is the primary source of information for the students and can be used as a framework for their project. Additional resources are also made available on the module's SUNLearn page. The students are also, however, expected to find information online and through the nursery field trips. The lecturer is available throughout the semester to help and guide students if needed.

Technology resources
Devices such as microphones and video cameras can be borrowed from the lecturer throughout the semester, who also gives additional technical support if needed. Most students, however, create their videos using cell phone cameras and ask for help from fellow students and online.

Student experience
Student feedback on the learning experience
The students are asked to give feedback on the project using questionnaires that are divided into questions about the learning experience (content engagement), the group work and the technical aspects (the movie). Overall, students agree that they learn more about nurseries through this project than they would by listening to lectures on the topic. They also indicate that they find making the movie technically difficult but that they are all able to create a movie by the end of the semester. And, although they complain about the group work and often work alone, they do also say that they can see the value of working together in groups.

General
Opportunities
Although digital stories have not yet been used extensively in scientific fields, with some modifications, the digital movie format is an effective way to take students through the process of engaging with content and presenting it in a concise way. The students do engage with the information and find the process more interesting than traditional lectures, feeling that they learnt more about the topic than they expected. The movies that are produced are highly creative and diverse and students who are not academically strong can do well in this project. Many students go beyond the scope of the project guidelines, adapting the project to their own interests. The project is also very authentic in terms of the way that the question is asked, the requirement for a business proposal and the presentation of the work in a format that is interesting.

Challenges
Students do not always want to work in groups, although this has been alleviated by the introduction of the final peer-marking stage. It is somewhat surprising that providing more technical training and support resulted in lower quality projects and the students are now given only very introductory training and then left to make the movies on their own. Many students leave their projects until the last week before the video is due, which does not allow enough time for the learning to take place, and this needs to be monitored more carefully in the future.

Advice
Digital movies can be very valuable in scientific contexts and can be adapted for a variety of uses, including getting students to engage with highly detailed information. Giving students a real-world question and broad guidelines that they need to struggle through increases learning and content engagement (authentic learning). Students require less technical support than expected and often help each other even though technical support from the lecturer is also available.

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Learning activity:
Blended learning approach

Learning technology:
Paradigms Master Pro, Anki & Logos Bible Software

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Context

Background overview

The Department of Ancient Studies is responsible for studies of the ancient cultures and languages of North Africa, the Mediterranean and the Near East (West Asia) and offers modules in Ancient Cultures, Biblical Hebrew, Ancient Greek, Latin and Classical Legal Culture. The cultures studied include those of regions like Egypt, the Sudan, Ethiopia, the Levant (Syria, Jordan and Palestine/Israel), Anatolia (Turkey), Mesopotamia (Iraq), Persia (Iran), Greece and Rome.

Set against the background of the Biblical world, Biblical Hebrew 178 introduces students to the language and culture of the Old Testament. Students are given a brief introduction to the geography, peoples and general history of the Ancient Near East. Next, the module concentrates on the study of the Biblical region within its historical context. Initially, students are given insight into Biblical Hebrew as a written language. This is followed by the teaching of basic Biblical Hebraic vocabulary and grammar and the visual illustration of this with examples taken from the world and text of the Hebrew Bible. Finally, the aim is not only to promote among students a firm grasp of the nature of Biblical Hebrew as a language rooted within the Biblical world but also to enable them to utilise dictionary, grammar and electronic resources for the optimal reading of basic Biblical Hebraic narrative.

The challenge

Teaching ancient languages (i.e. languages that are no longer spoken) poses unique pedagogical challenges. Lecturers have to take into account that students may lack the very basis for learning a complex new language, such as a basic understanding (even in their mother tongue) of how language and vocabulary are constructed. Furthermore, the historical context of these languages is critical for constructing meaning with regard to understanding languages such as Biblical Hebrew.

In the lecturer's experience (and based on the literature on language acquisition teaching), learning a new language is highly dependent on student motivation. He therefore feels that he needs to support his students by taking a very pragmatic approach by helping them to practise, to access and to use available (including online) resources and by engaging with them – from the very start of the module – as a facilitator and coach who is vested in their success.

Advantages associated with the integration of technology

The use of online platforms affords students with the opportunities to practise key skills at their own pace, whilst getting continuous feedback on their level of understanding. Rich media (audio, visual and videos) help students to understand the vocabulary and language construction within their historical (i.e. Biblical) context.

Student overview

Approximately 40 undergraduate students enrol for this course. The study of Biblical Hebrew is available through either a BA in Language and Culture or a BTh with the original languages.

Other relevant role-players

Tutors are appointed to present the tutorial sessions. A student assistant administrates the written tests. Only the lecturer is responsible for the upload, update and management of the study material on SUNLearn.

Learning and assessment activities

Educational approach

The lecturer follows a cognitive approach to teaching language (Holme, 2009; Tyler, 2008). This implies that meaning is considered to be at the centre of any linguistic enterprise (in this case, the learning of a text-based language like Biblical Hebrew). It is assumed that lexical and grammatical constructions have a semantic potential. Typically, one dimension of that potential is construed in a particular context. At the initial stages of learning a language, students are expected to learn only the most prototypical usages. They are, however, sensitised to the fact that linguistic expressions can have a range of senses.

Cognitive linguistics (CL) makes the functional assumption that form is motivated by meaning. CL also analyses form-meaning pairings as products of how cognition structures perception. CL thus helps teachers to fit language to the nature of the cognition that learns whilst devising modes of instruction that are better attuned to the nature of the language that has to be learnt.

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Learning activities

Students are expected to prepare for lectures by closely consulting the course booklet (module outline). The booklet outlines the activities that they are expected to complete for each week (Figure 1). They can further prepare by using the external online tools Paradigms Master Pro, Anki and Logos Bible Software.

WEEK 2: 6–10 FEBRUARY

MONDAY

Theme

Class assessment 1

Content

BHW §1–3

TUESDAY

Theme

The Hebrew alphabet I

Assignment

Read *Biblical Hebrew reference grammar* (BHRG and BHW) §4.1.
Memorise the consonants of the alphabet.

WEDNESDAY

Theme

The Hebrew alphabet II

Assignment

Read *Biblical Hebrew reference grammar* (BHRG and BHW) §4.1.
Memorise the consonants of the alphabet and **write down** the alphabet.

THURSDAY

Theme

The Hebrew alphabet III

Assignment

Read BHRG §4.2 (note it is not only BHW §4.2)
Prepare BHW §4.3.1-2

Figure 1: Example of a guide for lecture preparation

Assessment activities

The module follows a continuous assessment model. Students are given marks for class tests and class participation (20%), an oral assessment (5%), six semester tests (5%, 5%, 15%, 10%, 15% and 20%) and a revision test (5%).

Small, informal, written class tests on sets of vocabulary are given weekly. These are not necessarily graded but are often used at the beginning of lectures and tutorials as a roll-call tool. There are also weekly vocabulary tests. These are graded and the feedback is shared with students throughout the course.

Learning environment

Learning setting

A weekly cycle is followed in the module (Figure 2). It commences on a Tuesday and ends on a Thursday. Mr Ruan Etsebeth (tutor and co-lecturer) and Prof Van der Merwe (lecturer) are responsible for the formal lectures on Tuesdays, Wednesdays and Thursdays. An assistant sees to the tutorials on Fridays and the tests on Mondays.

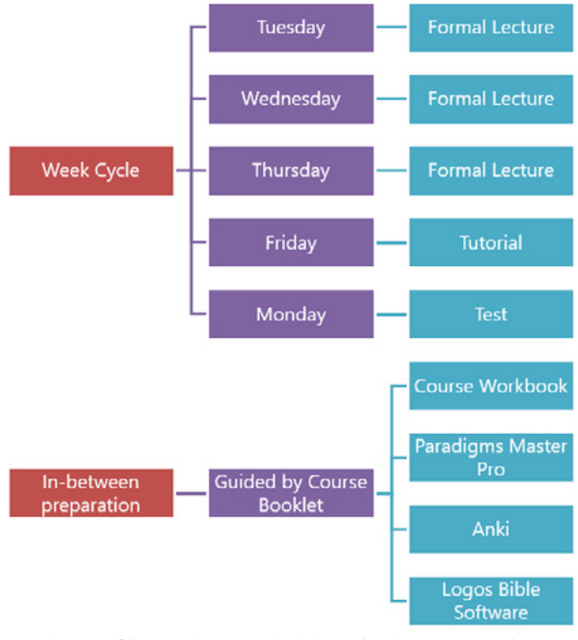

Figure 2: Structuring of learning activities during a week

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Students are expected to come to lectures prepared; a class test can be given at any time and the mark will form part of their final results. They should consult their course outline booklet every day so that they know exactly what is expected of them in every lecture.

The lectures are presented partly in a question-and-answer format, i.e. partly in the form of formal lectures and partly in the form of discussions. Participation in the classes by students is taken into account in the determination of final marks.

During the tutorial sessions, the content covered during the week is revised and exercises are done. On Mondays, a test is written on the content covered during the week. In their own time, students can use the course booklet, course workbook, Paradigms Master Pro, Anki and Logos Bible Software to prepare for lectures.

Content and technology resources

Online, interactive tools (i.e. language learning platforms) are recommended to students for language practise. These tools are the heart of the module and are seen as instruments that they will be able to use for the rest of their lives. These software tools are electronic libraries and resources focusing on Bible information that is continuously updated.

Paradigms Master Pro is a software program that quizzes users on word forms in various languages (Figure 3). It shows the user a form and the user has to tell the program what that form is, morphologically. The intended outcome is to learn the morphology of a language and to retain what has been learnt.

According to the website, "'Repetition is the mother of all learning,' the ancients said. PMP gives you repetition to help you really learn the forms, while also using technology to give you variety, so it doesn't get boring."

The course workbook is therefore supplemented by the use of the program Paradigms Master Pro. It provides students with a general introduction and overview of Hebrew grammar and treats only the most basic and frequently occurring constructions. As far as irregular (weak) verbs are concerned, Paradigms Master Pro has proved to be very helpful for practising the parsing of these verbs. It has been licensed to be used by students and staff of Stellenbosch University; it is available free of charge from the lecturer or it can be downloaded from SUNLearn.

Figure 3: Screenshot of a Paradigms Master Pro activity

Anki is a program that places emphasis on remembering (Figure 4). Various packs of flashcards focusing on certain topics, such as Hebrew, are available. The app can be accessed free of charge on Android and via a web browser.

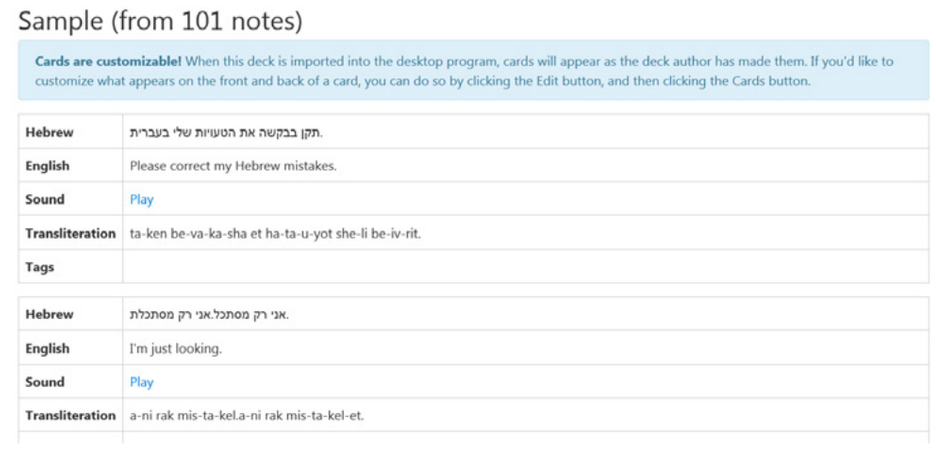

Figure 4: Screenshot of an Anki flashcard exercise

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Logos Bible Software is a complementary resource to the Bible that allows students to explore cultural and historical contexts, do in-depth exegesis and study original Hebrew with interactive tools (Figure 5).

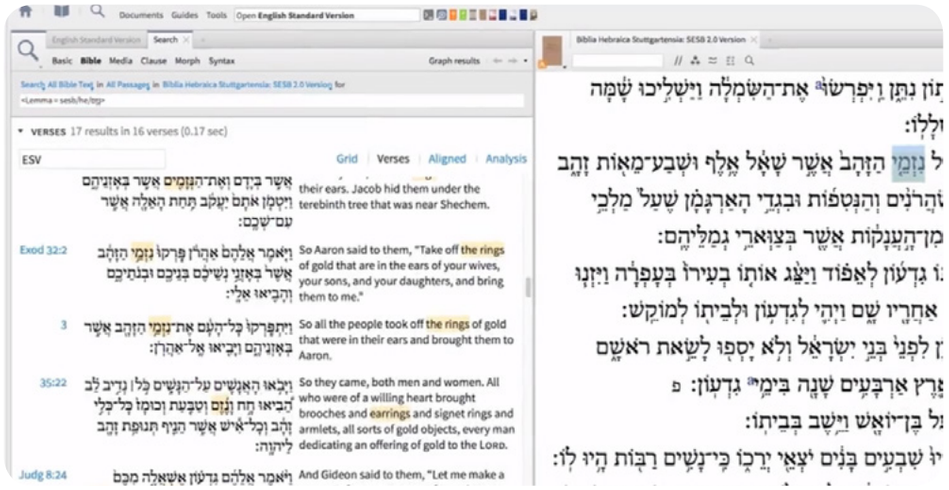
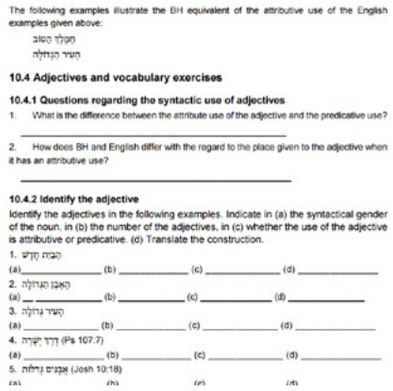


Figure 5: Screenshot of a Logos Bible Software learning activity

Offline resources consist mainly of the course workbook developed by the lecturer (available on SUNLearn, to be printed as hard copy) (Figures 6 and 7). The workbook includes scaffolds for students learning to grasp the historical and geographical context of the language, followed by relevant exercises related to weekly themes and vocabulary.



The following examples illustrate the BH equivalent of the attributive use of the English examples given above:

חֹתֶלֶת הַשּׁוֹב

הַשִּׁיר הַגְּדוֹלָה

10.4 Adjectives and vocabulary exercises

10.4.1 Questions regarding the syntactic use of adjectives

1. What is the difference between the attribute use of the adjective and the predicative use?

_____

2. How does BH and English differ with the regard to the place given to the adjective when it has an attributive use?

_____

10.4.2 Identify the adjective

Identify the adjectives in the following examples. Indicate in (a) the syntactical gender of the noun, in (b) the number of the adjectives, in (c) whether the use of the adjective is attributive or predicative. (d) Translate the construction.

1. הַבַּיִת קָדֹשׁ
(a)_____ (b) _____ (c) _____ (d) _____
2. הָאֲבָנִים הַגְּדוֹלָה
(a) _____ (b) _____ (c) _____ (d) _____
3. הָעִיר גְּדוֹלָה
(a) _____ (b) _____ (c) _____ (d) _____
4. דֶּרֶךְ יְשָׁרָה (Ps 107:7)
(a) _____ (b) _____ (c) _____ (d) _____
5. אֲבָנִים גְּדוֹלוֹת (Josh 10:18)

Figure 6: Example of a typical learning exercise included in the workbook

Figure 7: Screenshot of resource available in the offline content

Students can access the Anki tool only via Androids and tablets but, since they are a small group, they help each other to access the computer desktop version as well. They find the other online tools and exercises easy to use and are clearly guided on the outputs expected from them by their course workbook.

Student experience

Student feedback on the learning experience

Students indicate that they enjoy the use of the various blended tools and that the weekly quizzes motivate them to keep abreast of course material.

Assessment impact

Students receive continual feedback on their level of understanding by writing weekly tests (Monday vocabulary tests) and can then rely on the

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online tools and workbook to further their learning.

General

Opportunities

• Overall: The course is designed to incorporate student-centred pedagogical techniques by making the course interesting (with, for example, a range of interactive, blended learning opportunities), by motivating students to keep taking responsibility for their own learning at the prescribed pace (with written class tests as a roll call activity) and by the lecturer engaging with students as a language coach. The lecturer aims to facilitate the learning of students as much as possible.

• Rich visual media further help students to link content (vocabulary and grammar) to context. All learning resources (including PowerPoint presentations) are designed to convey language meaning as opposed to pure form.

• The online tools recommended to students are pedagogically sound and user-friendly and the students can continue to use them after they complete the course to further their lifelong study and translation of the language.

• The element of gamification embedded in the course (small-stake challenges, such as quizzes, to start a class or interactive online exercises) should serve to motivate students. This could be further enhanced in the future by exploring ways to monitor, assess and provide feedback on the students' use of the relevant online libraries and language software platforms.

Challenges

• Students cannot be assessed via the external platforms, which means that their learning cannot be analysed or tracked. The use of workbook and regular quizzes therefore has to be carefully monitored.

• Hebrew fonts are hard to access and use on SUNLearn, which makes the use of external tools a necessity.

• Logos content (e-books) have to be acquired as a package but students all have access to the full e-library developed for the Department.

• The lecturers involved in this module feel that there is still room for improvement with regard to how the use of important online platforms and software can be taught in a structured way and how students' skills in terms of using the required software can be assessed.

Advice

• Students can be supported and motivated by leveraging active learning opportunities, gamification techniques, rich media and interesting historical context, where applicable.

•For online TLAs to be effective, students need to know exactly what is expected of them and how to use the various tools (i.e. students need to be taken on board). Their learning needs to be scaffolded carefully while their time and available resources need to be taken into account at the same time (i.e. they should not be overburdened).

•Providing continuous feedback to students builds trust with lecturers and teachers. Small-stake assessments help students to understand how and where they can improve and to view these as opportunities to advance their learning.

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Holme, R. 2009. *Cognitive linguistics and language teaching*. New York: Palgrave Macmillan.

Tyler, A. 2008. Cognitive linguistics and second language instruction. *Handbook of Cognitive Linguistics and Second Language Acquisition*, 456–488.

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Context

Background overview

The course intends to provide students with the skills and insights needed to engage with and interpret a wide variety of texts, including film and other media, to introduce students to the rich diversity of literatures written in English, both locally and globally, to develop an awareness of and sensitivity to the English language and its uses, to promote discussion and debate, to stimulate intellectual curiosity and to open up areas for further enquiry and research.

Topic and intended learning outcomes

English Studies 178 aims to develop students' ability to read texts critically, whether these are literary texts (novels, poems or plays) or other texts (films, news reports or advertisements). The study of literary and other texts requires both a sensitivity to language and an understanding of genre and context and of conventions such as realism.

Students' awareness of language (what it is and how it influences us) is developed in a variety of ways through all the courses offered. A key skill is the close, interactive reading of texts, together with the ability to formulate one's own response clearly and coherently.

Writing skills are also developed and students are required to submit written pieces in each of the terms based on the work done in a particular component.

The challenge

By 2010, the Department of English had 40 tutorial groups for a total of 1 500 students and a pool of 28 tutors. There were two tutorials a week focusing on different streams of English Studies. The tasks of the Department's tutors included the responsibility of the larger portion of first-year teaching, with the tutors as the prominent figures in small-group teaching. They were responsible for the grading of all assignments submitted in the classroom, including class exercises and essays. In some cases, individual tutors were asked to assist in the marking of term test scripts under the guidance of a lecturer. All tutors partook in essay moderation sessions, mid-year assessment and end-of-year final marks moderation. They were also all available for consultations with their students.

The tutors met once a week with their stream's resource coordinator to prepare for classes, discuss lesson plans and exchange ideas. In addition to the resource meetings, all tutors also attended a general meeting once a week, led by the tutor programme coordinator. In general meetings, administrative and pedagogical issues were discussed and tutors had the opportunity of making their individual contributions to the tutoring programme through suggestions and ideas. At the time, the previous learning management system, WebCT, was useful as a repository where students could access work, mostly readings.

Tutors were responsible for the pedagogical consistency of their classes, maintaining the intellectual vision of the Department, monitoring student behaviour, attendance and progress and enforcing controlled discipline, such as excluding students who did not attend class regularly. They were to adhere to lesson plans and ideas as discussed and imparted in resource meetings but to do so in a way that was compatible with their unique manner of teaching, keeping in line with the required professionalism and decorum that the University expects its teachers to display and ensuring that the necessary learning outcomes were met. Tutors were evaluated on their performance by their students at the end of each semester.

In 2017, not much has changed. Tutors are still the backbone of first-year English Studies and they still have to carry out all the tasks described above; they still outnumber the lecturers, heroically busy elsewhere. The difference is that now, in an austere climate, the tutor pool is smaller even though the student intake is roughly the same. There are fewer tutorial groups, meaning that most tutors have to manage four or five groups, depending on their own level of study activity.

Advantages associated with the integration of technology

In spite of the above-mentioned factors, the English Studies 178 module is in a healthy place. With the integration of technology, however, the key difference has been better leveraging the functionalities of SUNLearn (as opposed to merely using it as a repository). The Department of English has been able to make the changes demanded by the austere financial climate and to keep ahead, managing its average intake of 1 300 students. One tutorial per week has been replaced with online interaction, the first time in over 10 years that the Department has offered only a single English

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Studies 178 tutorial, thereby minimising the strain on its tutors and making the average week more manageable for the average first-year student. For the tutors, this means fewer tutorial classes to facilitate and a more manageable workload.

The online tutorials and SUNLearn activities were painstakingly crafted but are paying off handsomely: they have become self-regulatory mechanisms that hold down an important end (still controlled) but that allow the Department to cull one tutorial and add to the assessment effort (example in Figure 1). The current blended teaching approach was piloted in 2016, with the online tutorials and SUNLearn activities crafted by two then-postgraduate students, now both working for e-learning companies.

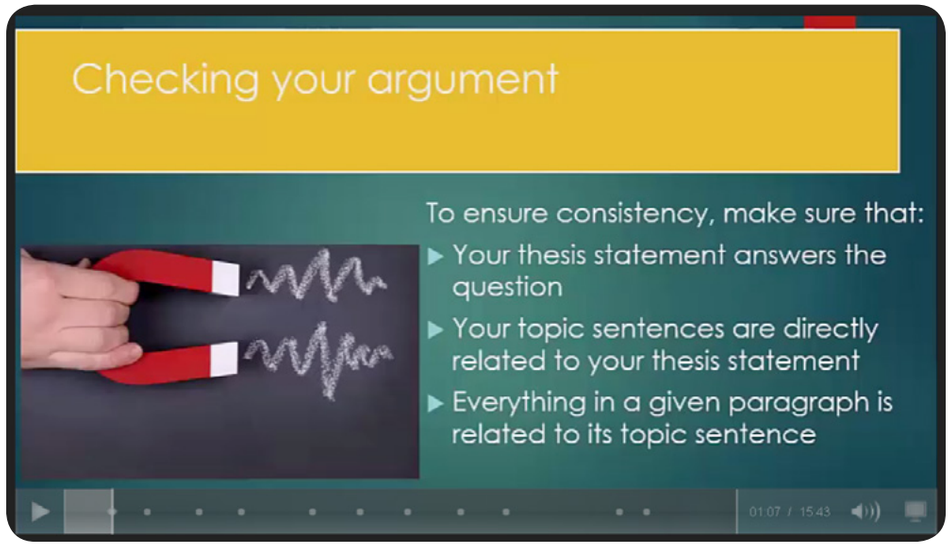

Figure 1: Screenshot of an online tutorial on essay writing

By replacing one of the weekly face-to-face tutorials with an online tutorial, valuable resources, such as lecturers' and tutors' time and capacity, are now applied to contact sessions intended to convey more complex material and actively to engage student participation.

The online quiz component further helps the Department to assess students' knowledge and understanding of basic, key concepts and helps students to practise applying what they have learnt (Figure 2).

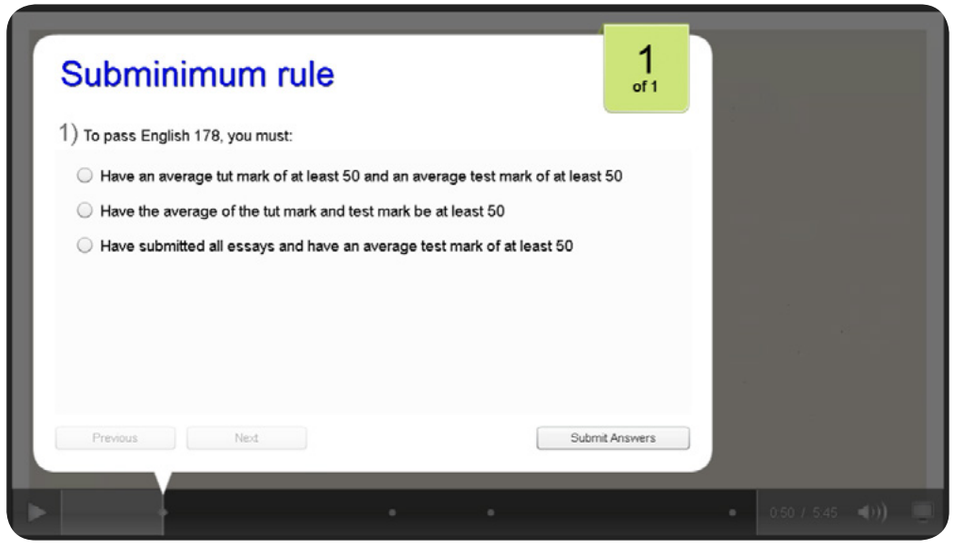

Figure 2: Examples of quiz questions embedded within the online tutorials

Student overview

English Studies 178 takes in a large cohort of undergraduate students from diverse backgrounds. Most students, at the start of the course, have been exposed to only a secondary education environment and therefore require academic literacy and critical thinking skills to be developed in order for them to meet course outcomes.

Other relevant role-players

Dr Daniel Roux (tutor coordinator) coordinated the creation of a tutor training platform and arranged a full-day workshop for both tutors and departmental lecturers. These training initiatives are intended to enable more tutors and teaching staff to leverage the appropriate software and SUNLearn activities, creating further opportunities for online learning, online assessment, self-paced exercises and flipped classrooms or tutorials as the design of the English Studies 178 course is further developed. At the same time, Prof Shaun Viljoen played a vital role in the design of the course structure for 2016, since he was in charge of the programme for that year.

The senior tutor and the rest of the English Studies 178 group of tutors

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were engaged in the learning technologies. Video tutorials were created by a tutor familiar with the relevant TechSmith (i.e. Camtasia) software, the content based on the PowerPoint presentations and course material provided by the relevant lecturers. The senior tutor embedded quizzes in the video tutorials before sending them back to the lecturers for review and approval. He also responded to any technical queries of students and teaching staff on either the use or the design of these learning objects.

Learning and assessment activities

Educational approach

As outlined in the course description and outcomes, English Studies 178 requires students to engage in a number of "ways of learning" (Laurillard, 2013). They have to acquire knowledge of basic theories and practices relevant to the discipline, typically by reading texts, watching informative videos and listening to narrations or lectures. They then have to develop critical thinking skills, typically by discussing course material and collaborating in small groups, writing skills, such as practising responding to a text in verbal or written format, and producing a written analysis or critique of a text, play or film.

It became apparent that some of the knowledge acquisition components of the course lend themselves to online learning, which would afford a diverse student cohort with self-paced learning opportunities (i.e. allow them to review and process new information, help them to develop basic academic literacy skills and help them to prepare for tests).

The online tutorials engage students in authentic learning and meaningful tasks that are relevant to their interests and goals (Dabbagh, 2005). The tutorials further provide the opportunity for a thoughtful and intentional approach to assessment (e.g. reserving online assessment for low-stake assessments and formal tests for high-stake assignments) (Taylor, 2013). Throughout the module, a learner-centred approach is followed by providing flexibility for students and scaffolding the introduction of independent learning skills.

Learning and assessment activities

The course schedule reflects how each learning activity and assessment opportunity build on the prior teaching and learning activity, a thoughtful approach intended to scaffold students' learning experience.

Students have four periods per week: one lecture, one face-to-face tutorial (also called a group tutorial), one online tutorial and one SUNLearn activity (Figure 4).

As of Week 2, students are required to complete one online tutorial per week. These are interactive videos that contain new course content and short questions to guide students' thinking about core concepts, methods and theories relating to the course. Online tutorials are compulsory for the successful completion of English Studies 178; students do not receive any marks if they miss an online tutorial. Completing online tutorials comprises watching all the video content and answering the questions correctly. Students may reattempt answering the questions as many times as desired by replaying the tutorial, as long as they do so before the deadline.

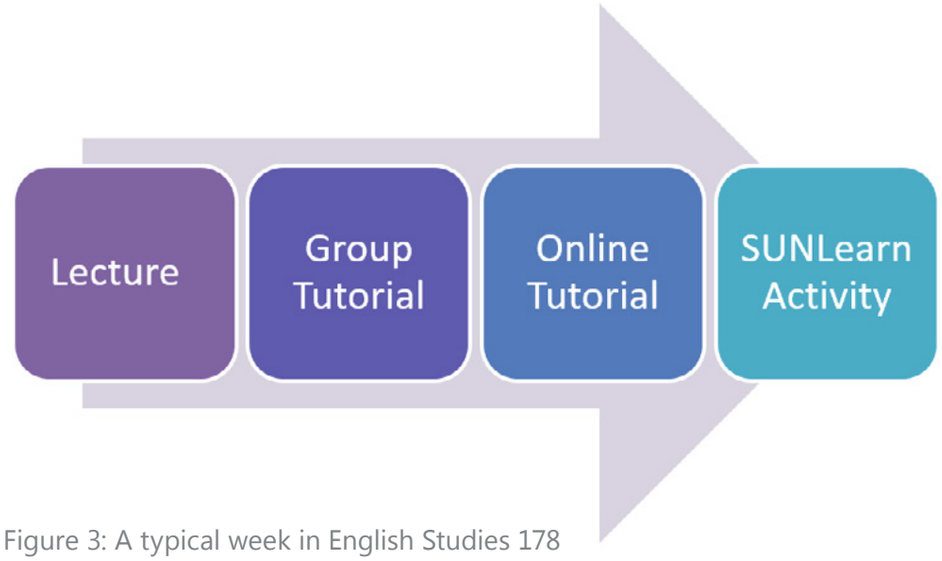

Figure 3: A typical week in English Studies 178

The SUNLearn activity component entails weekly online activities consisting largely of quizzes seeking to consolidate aspects of both the lecture and the tutorial components (Figure 4). In this section, students are required to think through principles in essay writing and research and are introduced to some core concepts in English Studies applied to prescribed and other texts. This section is compulsory and successful completion requires

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Learning activity:
Blended learning approach

Learning technology:
Camtasia SCORM packages and SUNLearn quizzes

BLENDED LEARNING
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2016

students to follow the component dates as indicated in the course outline.

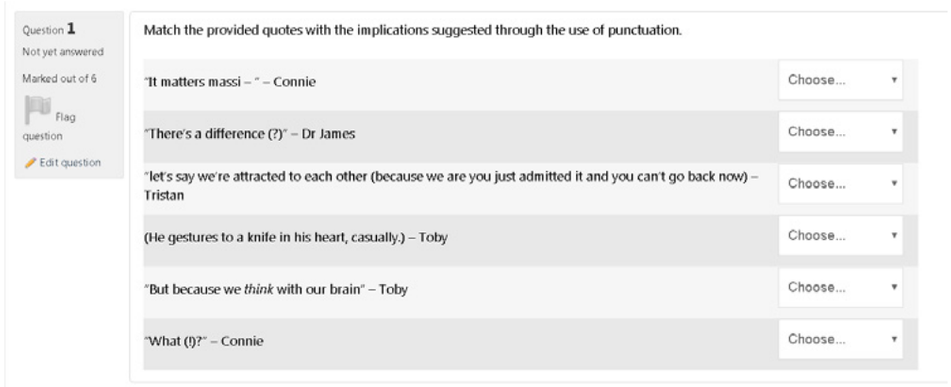

Figure 4: Screenshot of a SUNLearn quiz question

Feedback practice

Students receive instant or gradual feedback for almost all the activities and online tutorials. With instant feedback, students can immediately see their mark and the correct answer. Gradual feedback shows suggested answers and shows when students get only half a question correct.

Learning environment

Learning setting

The integration of online tutorials requires redesigning learning activities and assessments for a student-centred, blended course delivery. The 2017 course prospectus describes students' learning activities as follows:

The English Studies 178 course is designed as an integrated whole….

1.) **The lectures** communicate key concepts, and demonstrate the ways in which texts can be read and analysed.

2.) In addition to the lectures, each student will be placed in a group tutorial for a component of the programme. These group tutorials cover texts dealt with in the lectures and texts which are not covered in lectures. Tutorials are structured to encourage cooperative learning and **active participation**: the more you participate, the more you will learn and benefit from these classes.

In this department, 'English' is not only a field of study and our medium of communication, but also a set of (speaking, writing, reading and listening) skills which we try to cultivate in our students.

3.) Every three weeks, by yourself and at a time of your choosing, you have to complete, by the Sunday midnight of the final week, an **online tutorial** as well as a **SUNLearn activity**. These contribute to your final mark and are also **compulsory**.

Support challenges

It is recommended that students attempt the online tutorials in HUMARGA (the computer usage area for the Faculty of Arts and Social Sciences), where there is reliable WiFi connection. There are still some technical issues, most on access and connection. Some issues included the online tutorials not loading completely, the tutorials crashing halfway through or students not being able to access the online tutorials. Using the land-line connections in HUMARGA remedied these issues.

Student experience

Student feedback on the learning experience

Students are given a week to complete the online component in addition to their other coursework. Student feedback shows high satisfaction rates with the standard of the online tutorials. Students particularly like the open access to the online tutorials, affording them the opportunity to view material repeatedly, take notes in their own time and break their learning sessions into manageable chunks.

In the first semester that these online tutorials were implemented, students were also given a week to complete the online component in addition to their other coursework, the teaching staff involved expecting them to have more than enough time to complete all their required tasks. However, the most common student complaint was that the first semester SUNLearn activities were taking up too much of their time; final quiz questions were often essay-type questions requiring a lengthy paragraph response. As a result, some students dedicated a disproportionate amount of time to this section, while others wrote little to nothing at all. Some students raised the concern that the written component (paragraph responses) of their

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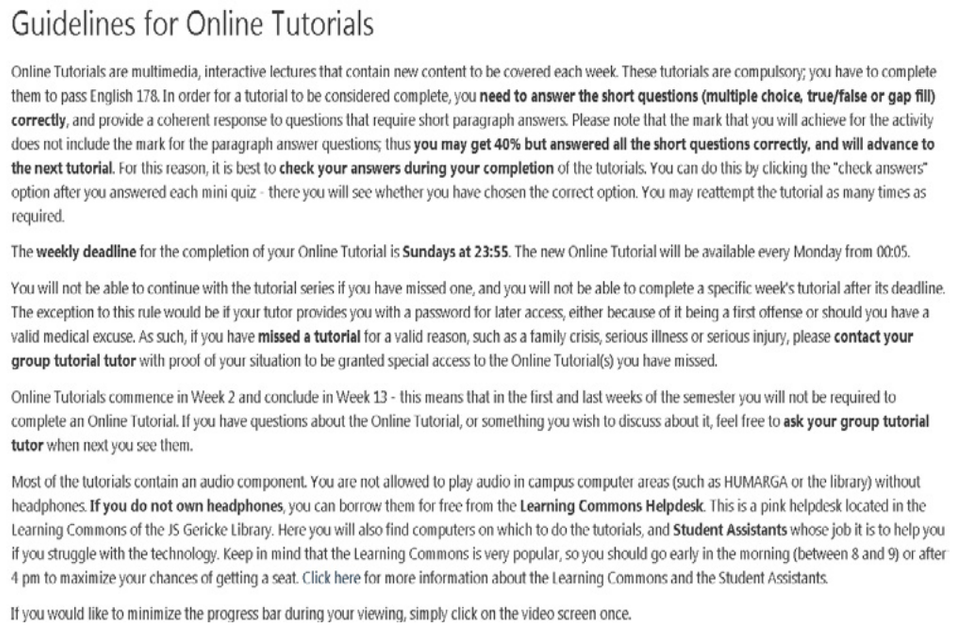
SUNLearn quizzes served no feedback purpose and therefore did not justify the amount of time that they spent on their responses. This was addressed in the following year's online quizzes, which now require less online writing.

General

Opportunities

A thorough guideline (made available on the SUNLearn course page) was drawn up as a step-by-step guide for students to understand better how the SUNLearn online activities have to be completed.



Guidelines for Online Tutorials

Online Tutorials are multimedia, interactive lectures that contain new content to be covered each week. These tutorials are compulsory; you have to complete them to pass English 178. In order for a tutorial to be considered complete, you **need to answer the short questions (multiple choice, true/false or gap fill) correctly**, and provide a coherent response to questions that require short paragraph answers. Please note that the mark that you will achieve for the activity does not include the mark for the paragraph answer questions; thus **you may get 40% but answered all the short questions correctly, and will advance to the next tutorial**. For this reason, it is best to **check your answers during your completion** of the tutorials. You can do this by clicking the "check answers" option after you answered each mini quiz - there you will see whether you have chosen the correct option. You may reattempt the tutorial as many times as required.

The **weekly deadline** for the completion of your Online Tutorial is **Sundays at 23:55**. The new Online Tutorial will be available every Monday from 00:05.

You will not be able to continue with the tutorial series if you have missed one, and you will not be able to complete a specific week's tutorial after its deadline. The exception to this rule would be if your tutor provides you with a password for later access, either because of it being a first offense or should you have a valid medical excuse. As such, if you have **missed a tutorial** for a valid reason, such as a family crisis, serious illness or serious injury, please **contact your group tutorial tutor** with proof of your situation to be granted special access to the Online Tutorial(s) you have missed.

Online Tutorials commence in Week 2 and conclude in Week 13 - this means that in the first and last weeks of the semester you will not be required to complete an Online Tutorial. If you have questions about the Online Tutorial, or something you wish to discuss about it, feel free to **ask your group tutorial tutor** when next you see them.

Most of the tutorials contain an audio component. You are not allowed to play audio in campus computer areas (such as HUMARGA or the library) without headphones. **If you do not own headphones**, you can borrow them for free from the **Learning Commons Helpdesk**. This is a pink helpdesk located in the Learning Commons of the JS Gericke Library. Here you will also find computers on which to do the tutorials, and **Student Assistants** whose job it is to help you if you struggle with the technology. Keep in mind that the Learning Commons is very popular, so you should go early in the morning (between 8 and 9) or after 4 pm to maximize your chances of getting a seat. Click here for more information about the Learning Commons and the Student Assistants.

If you would like to minimize the progress bar during your viewing, simply click on the video screen once.

Figure 5: A guide for students on how to complete online activities

Students have the option to attend a contact information session where the course coordinator and the senior tutor demonstrate how to access and use the online tutorials and how to complete the online quizzes.
SUNLearn analytics show high engagement and completion rates for the online tutorials and high quiz scores. The teaching staff agree that the online materials and activities are well designed, the team involved ensuring that the online tutorials serve to build on lecture material and support the intended outcomes of the face-to-face contact tutorials.

Challenges

In 2016, tutors had to manage frequent requests for extensions for online work and some students repeatedly fell behind. This may have been due to the fact that students were not accustomed to taking responsibility for their own learning, that they did not read the course outline and instructions carefully or that a one-week cycle allowed too little flexibility. In 2017, the deadlines were adapted and students are now provided with a three-week window to complete each online tutorial. This has resulted in more successful completions and better learning.

The Department is taking steps to train its tutors and teaching staff to understand and manage the online activities better. It is expected that, if the tutors and lecturers are enabled to engage actively with the online platform, they will be better equipped to monitor their students' progress and work ethic. A possible outcome could be the ability to perform spot checks (either in person or by using SUNLearn data) of students' marks for weekly activities to identify and support struggling students earlier.

Alternative software packages and online tools are being explored for the creation and editing of online tutorials. The current software is costly (requiring a software licence per computer) and possibly not as user-friendly or flexible as other alternatives.

Other concluding thoughts

"I am increasingly more attuned to the concentrations of pedagogical practice we invest in blended learning and how those of us more old-school can use it without being overly dependent on it. It's a meeting ground where we interact with our students rather than trying to keep up with them. It's a workshop where our tutors interact in a transparent manner. We can keep an eye on things and see the system run itself while still ensuring the machine does not take over. Rather than the system running our classrooms, I find that it helps us run our classrooms better, and saves paper into the bargain". – Dr Riaan Oppelt (lecturer and course coordinator), April 2017

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A spring in your step: iSpring for e-assessment

Faculty of Arts and Social Sciences | Department of Music Technology

Module: Music Technology 112/142/171/181
Lecturer: Ms Leonore Bredekamp lbrede@sun.ac.za
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Context

Background overview

The Department of Music Technology offers an array of undergraduate courses, postgraduate diplomas and master's degree programmes. The Department offers a unique learning environment through which students can facilitate in the development of award-winning productions. This includes everything from international film scores to Grammy-awarded tracks for rock bands. Students are even afforded the opportunity to develop their own sound equipment.

The module has a strong practical component focusing primarily on the use of information and communication technologies (ICTs). The lecturer felt, however, that, in certain instances, the practical component was not congruent with the theoretical component of the module. Additionally, she felt that her traditional teaching and learning methodologies were constraining the development of students, as they were not being scaffolded effectively in their progression of the module. She therefore concluded that adopting a blended learning approach could address her recognised concerns.

Subject area

This is a combined module that consists of students studying for diplomas (Music Technology 171), a higher certificate (Music Technology 181) or degree programmes, such as BMus, BAMus or BSc (Music Technology 112 and 142). Students who articulate from Music Technology 171 and 181 to degree programmes receive the credits for the module but have to enrol for the module again when they register to complete their degrees. The content in the above-mentioned modules is exactly the same and students attend the same contact sessions. Only Music Technology 171 and 181 differ, since they are year modules. These students often struggle with academic writing and they therefore have a chance to improve their first semester work during the second semester.

Aspects covered in the module include basic knowledge of sound and acoustics, music instrumental digital interface protocols, notation software, the early history of electronic music, the history of sound recording and sound in film, aspects of sound in film, the manipulation of audio recordings using basic audio software, the different types of hardware and software in audio production and the skills required to set up a basic home studio.

Established practice

The module in question is a continuous assessment module. Previously, the lecturer presented one lecture and one tutorial per week. As student numbers increased, the lecturer had to repeat the tutorial, since the technology lab has space for only 16 students at one time. This continued until the lecturer had to repeat the tutorial seven times in one week. It was then decided that this was not practical. For assessment, students completed three to four big assignments (contributing mostly 25% to their mark).

The challenge

One of the challenges identified by the lecturer was that, due to the course traditionally having four written assessments, providing meaningful feedback was a challenge, especially since students used the feedback in their development as music technologists. Additionally, written assessments were not able to incorporate rich media, videos or audio. Given the nature of the subject, these assessments, lacking such media, were not as authentic as envisaged.

Advantages associated with the integration of technology

Through the meaningful integration of various technologies, the lecturer felt that she could create more authentic assessments that incorporated different forms of media, such as audio and video. Additionally, through the use of the learning management system SUNLearn, she could create automated assessments with the ability to provide students with timely feedback.

The lecturer also adapted her contact sessions. She now presents one lecture and one practical session per week. All students attend the practical session at the same time. During these practical sessions, they are shown basic demonstrations, YouTube videos and other resources that can assist in their learning. There are still two to three bigger assignments (contributing 25% each) and now also a few smaller assignments. The students furthermore receive a class attendance mark.

A spring in your step: iSpring for e-assessment

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Student overview

Approximately 75 students are enrolled for this undergraduate module. They all have access to computer usage areas to complete assessments. As mentioned, the module in question is a combined module and students are typically enrolled for the module as part of degree and certificate courses.

Other relevant role-players

Support in terms of blended learning was provided by the blended learning coordinator (BLC) and the blended learning advisor of the Faculty of Arts and Social Sciences. During the Blended Teaching and Learning Short Course of the Centre for Learning Technologies, the lecturer scheduled a follow-up consultation with the BLC to help her create and upload an iSpring SCORM package as one of the course assignments. The SCORM was then used in the module itself. Two follow-up consultations were set up to address technical issues (see the relevant details below) before and during the assessment period. Additional support was provided by the SUNLearn support person, Mr Morris Samuels.

Learning and assessment activities

Educational approach

After enrolling for the Blended Teaching and Learning Short Course, the lecturer decided to adopt a blended learning approach. This involved the meaningful integration of ICT to augment and enhance her existing teaching and learning practices. As blended learning capitalises on the strengths of face-to-face and online learning environments, the lecturer decided on using iSpring and SCORM packages to create a number of interactive quizzes.

Learning activities

Through the use of iSpring and SCORM packages embedded within the learning management system, the lecturer was able to create more authentic assessments by incorporating rich media experiences through the utilisation of videos and audio (Figure 1). Additionally, these activities are self-paced, allowing students to learn at their own pace.

The SCORM packages serve a dual purpose. Firstly, their content introduces students to basic key concepts with regard to film sounds, such as 'A brief history of film sound', 'Synchronised sound', 'Direct sound' and 'Dialogue overlap'. Students can navigate through all the slides as many times as required, going back to specific slides to reread the content and to view the rich imagery – in other words, they are given complete control in terms of self-paced knowledge acquisition.

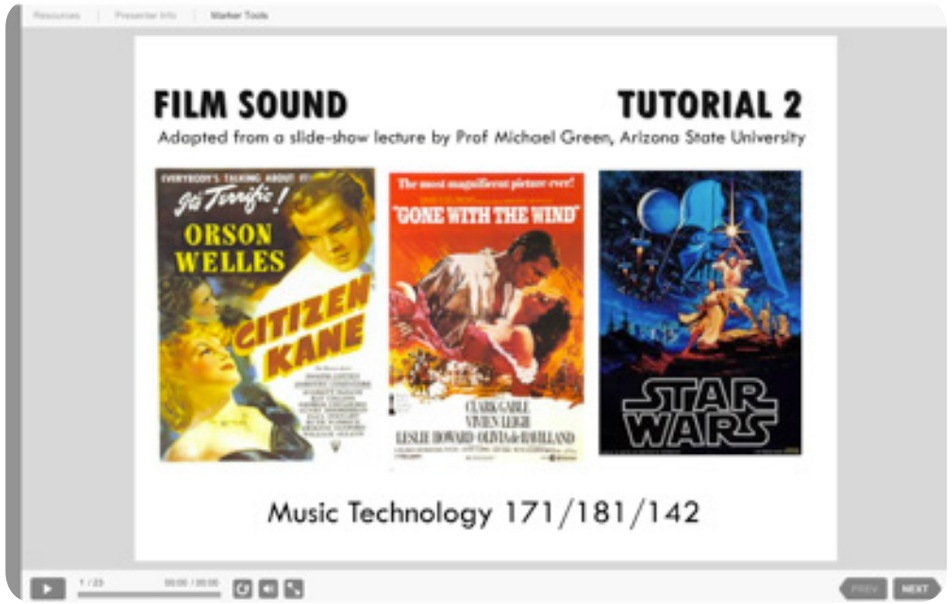

Figure 1: Screenshot of an iSpring activity making use of rich media experiences

Secondly, the SCORM packages serve as a summative assessment activity. Once students feel that they understand the content and have a grasp of the basic concepts, their knowledge is tested by the students completing the quiz at the end of the SCORM (Figure 2).

The quiz instructions remind students that they can revisit the lesson content before the assessment attempt but, once they start the quiz, they have only one opportunity (within a lenient 30-minute timeframe) to complete the quiz and they cannot navigate back to the content slides.

Feedback practice

When students complete the interactive quiz, they receive their results immediately. This therefore allows them to identify gaps in their learning and consequently adapt their understanding for future assessments.

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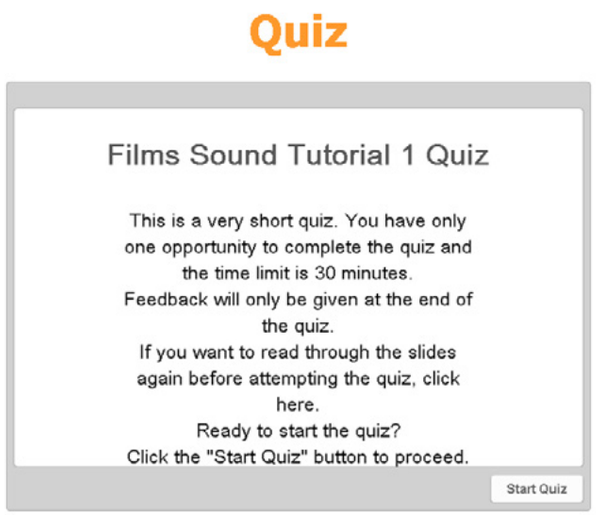

Figure 2: Quiz instructions within the iSpring learning activity

Learning environment

Learning setting

As students complete the activities on the learning management system (LMS), they can complete the quizzes on any device with Internet connectivity. Some students choose to complete the activity in the Department's electronic classroom, which is recommended, as the Internet connection is reliable. Students who choose to complete the activity off campus are advised to ensure that their WiFi connection is stable. If they lose connection during their quiz attempt, they have to retake the quiz (i.e. their attempt is not saved on the LMS).

Technology resources

The lecturer was first exposed to iSpring during the Blended Teaching and Learning Short Course. She was attracted by the software since it was an opportunity to combine a lecture and a test opportunity in one. It allowed her to bring together basic information regarding the topic and to present it for self-study, while giving a small mark for assessment.

Support challenges

The lecturer found the process of re-uploading the SCORM package (which requires a number of steps) every time that an edit had to be made to the lesson quite cumbersome. Often, small issues were detected only once the lesson was uploaded to SUNLearn. For example, as a default iSpring setting, there was a 'Back' button at the end of the quiz as opposed to a 'Finish' button, which confused students. Once the lecturer and the BLC managed to replace this with a 'Finish' button, they found that clicking on it did not close the iSpring window in SUNLearn. As a result, students were not sure whether their attempt would be saved once they clicked 'Finish', as nothing happened.

These small glitches led to the iSpring having to be deleted from SUNLearn and the editable version changed in the iSpring quiz maker and re-uploaded to test the new version on SUNLearn. Not being able to edit the iSpring activity directly on SUNLearn was therefore quite time-consuming.

Another problem that students experienced due to unreliable Internet connections was faulty results. For example, the SCORM package registered submitted answers as individual attempts if the Internet connection dropped during the attempt, which implicated the final mark. Fortunately, however, all the data on the students' attempts were saved on SUNLearn. The lecturer could therefore access this data, view which answers were correct and then manually override the final quiz results. She used the SUNLearn forum to respond to students' queries and asked them to be patient with the technical issues that many of them experienced.

Student experience

Student feedback on the learning experience

The students report that they prefer the rich multimedia experience of the online assessments. The traditional assessments prior to the use of SUNLearn and iSpring simply encouraged the regurgitation of knowledge. They feel that they are able to develop their practical skills better through the use of the online assessments.

General

Opportunities and challenges

The lecturer would like to use iSpring and SCORM packages more to assess practical skills and create more authentic assessments. It was a big challenge, however, that the iSpring activity could not be edited on

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SUNLearn but had to be reloaded after any changes. In the future, the lecturer wants to include audio clips and short videos. She feels that one should allow oneself more time to design and test these learning activities.

Kinderkinetics: Teaching tomorrow's skills today

Faculty of Education | Department of Sport Science

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Learning activity:
Enhancing student engagement

Learning technology:
WhatsApp, Google Suite and Socrative Learning

BLENDED LEARNING
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Context

Background overview

Kinderkinetics is an honours course in the Department of Sport Science. Only 10 to 12 students are selected for the course every year. During the Professional Practice module, students are required to complete a minimum of 300 practical hours in different settings, such as Virgin Active, preschools, the community, primary schools, the disabled population and clients in the Kinderkinetics Centre.

In the past, lecturers relied on hard copies of each student's lesson plans but this resulted in large amounts of paperwork. To remedy this, the e-portfolio project was implemented in 2016, which allows students to use tablets and submit lesson plans online to be marked and evaluated. Students can now also video-record their lessons and upload these so that supervisors can give feedback. This reduces the cumbersome filing and paperwork.

Subject area and topic

The Professional Practice module in the Honours Kinderkinetics course (Department of Sport Science) entails mostly practical lessons and experiences in different settings and environments. The module requires students to be evaluated on each lesson.

Intended learning outcomes

The intended outcome for this tablet project is to move to an entirely paperless activity. Whereas previously students had to engage in and gather endless amounts of paper and document their findings, the introduction of the tablets allows for information to be recorded and stored electronically. Furthermore, the students, lecturer and supervisors are afforded extra time to focus on more pressing issues within the practical sessions. This innovative practice improves students' confidence to record and question the lecturer and supervisors about concerns that they may be experiencing. Ultimately, the students learn invaluable skills, such as better time management and the collating, storing and sharing of information, especially while out in the field. Through this electronic interaction, information gathering and support building, it eventually provides all participants with a database of references to work from in the future.

Established practice

In the past, both the theoretical and the practical modules of Kinderkinetics were presented in traditional ways of teaching, where the responsibility of teaching and learning was mainly that of the lecturer. This did not allow enough room for students that progress more slowly through the module to catch up and grasp certain key concepts. There was even less opportunity for students to engage critically with each other and learn from each other's work.

Students were required to attend lectures at the Department of Sport Science and complete their practical hours at various schools in surrounding communities. During the practical module, students had to present their lessons at schools with interns watching and giving them marks.

**Figure 1: Student in classroom

The challenge

We live in a time of change and challenges. Contemporary students are "digital natives" (Prensky, 2001) – they are growing up in a digital world where technology is everywhere and changes at a fast pace. These "digital natives" have almost no need for traditional resources required by "digital immigrants" (Prensky, 2001) to get by. Learning styles are changing rapidly and it is time for lecturers to change their teaching styles accordingly.

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The lecturer was confronted with two main questions: "What does the future hold?" and "Will there be a complete change in infrastructure infiltrated by technological interventions?" The future is all about anywhere access, learning and collaboration, where students can learn anywhere and anytime and lecturers can teach from everywhere. The world will be their classroom! The future of Kinderkinetics is theirs to create collaboratively.

Advantages associated with the integration of technology

Students are diverse and have different learning styles. The advantages of using a blended learning approach are twofold: it can provide that extra challenge to more talented students and it can be used to target students who find the work more challenging. It can thus serve as a platform where the lecturer engages with students at different levels. This approach also allows students to learn from each other's successes and failures. It can be the best of both worlds and can benefit both the lecturer and the students. However, it remains important to recapture the basics of traditional ways of teaching, learning and building relationships.

Integrating technology into the course and specifically into the Professional Practice module entails various advantages. It gives students the opportunity to participate in conversations and ask questions about each other's and their own work (also via an informal channel such as WhatsApp). It furthermore enables them to practise and learn skills in their own time and at their own pace. Students have continuous access to shared resources on Google Drive. Integrating technology gives students the freedom to work anywhere and anytime and attend class for engaging face-to-face discussions. Students save money on printing because, in the past, the nature of this course was very paper-heavy. They also receive immediate feedback on their assignments through the use of Skype and sharing their lesson plans.

The integration of technology minimises has paperwork for the lecturer as well. In addition, it allows the lecturer to access student portfolios effortlessly whenever necessary. The lecturer can furthermore communicate, observe and give feedback immediately.

Student overview

In order to be accepted into this selection course, a three-year undergraduate degree in Sport Science or Human Movement Science is required. All students currently enrolled in the honours programme were students last year.

Other relevant role-players

Interns act as supervisors and are there to assist students at all times. They evaluate and give feedback immediately after a lesson plan has been uploaded, monitor and assess progress and assist when students are stuck. The interns are qualified Kinderkineticists who finished their degree in the previous year and are doing internships to gain more experience.

Learning and assessment activities

Educational approach

Constructivism is a learning theory that focuses on active participation and applies to this module. This process incorporates students' old knowledge as a point of growth for new knowledge. The lecturer is still the designer of the learning environment and takes the role of a guide or consultant. Students become active participants in their own learning journey through real world examples (Jia, 2010).

One of the many facets of constructivism is cognitive flexibility (Chieu, 2007). Spiro and Jehng (1990:165) state: "By cognitive flexibility, we mean the ability to spontaneously restructure one's knowledge, in many ways, in adaptive response to radically changing situational demands . . ." The theory is concerned mainly with the transference of knowledge and skills beyond the initial learning situation. The theory also emphasises that effective learning is context-dependent, so instruction needs to be very specific. This is the case for Kinderkinetics. Due to the complexity of working with a variety of children, students tend to grasp content more readily when presented with multiple representations of similar information in different environments. It is for this reason that students work at different schools, in the community and at Virgin Active.

According to Laurillard (2012), learning and teaching require constant conversation or interaction between the students and the lecturer; the inclusion of online activities gives countless opportunities for interaction. Laurillard's approach is considered part of constructivism because it allows students to discover knowledge as they develop their own understanding

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of certain concepts (Danver, 2016). The conversational framework of Laurillard (2012) examines different ways of learning and shows which cycles within the conversational framework one would typically use.

Learning activities

At the start of the year, students create a single folder on Google Drive to upload and share relevant documents, such as lesson plans. This folder contains subfolders for each different school. The single folder is shared with the interns once and everything uploaded by students into this single folder is then easily accessible for the interns to read through and give feedback.

Each time that a student presents a lesson, another student helps the presenter with the lesson. The helper is required to have the lesson in her or his own folder as well and the presenter therefore shares the lesson with the helper via Google Drive (Figure 2). This is done by clicking on "Add to Drive".

Students are also required to video record their lessons and testing sessions for the interns to watch afterwards to provide feedback and allocate marks. These videos are transferred to the interns via a dual USB that inserts into both a tablet and a computer, which allows for the easy transfer of the videos.

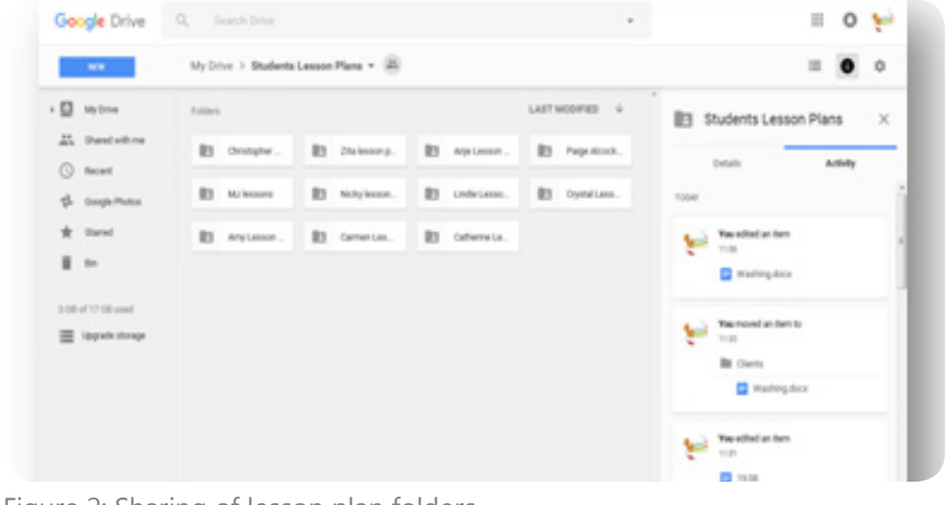

Figure 2: Sharing of lesson plan folders

Throughout the year, students are required to blog about their experiences at the different schools and with the different children whom they encounter along the way. This allows students to think about and process what they see and describe these actions in context with the background theoretical knowledge. This also provides an opportunity for students to learn from each other and to gain understanding about the same situations from different perspectives.

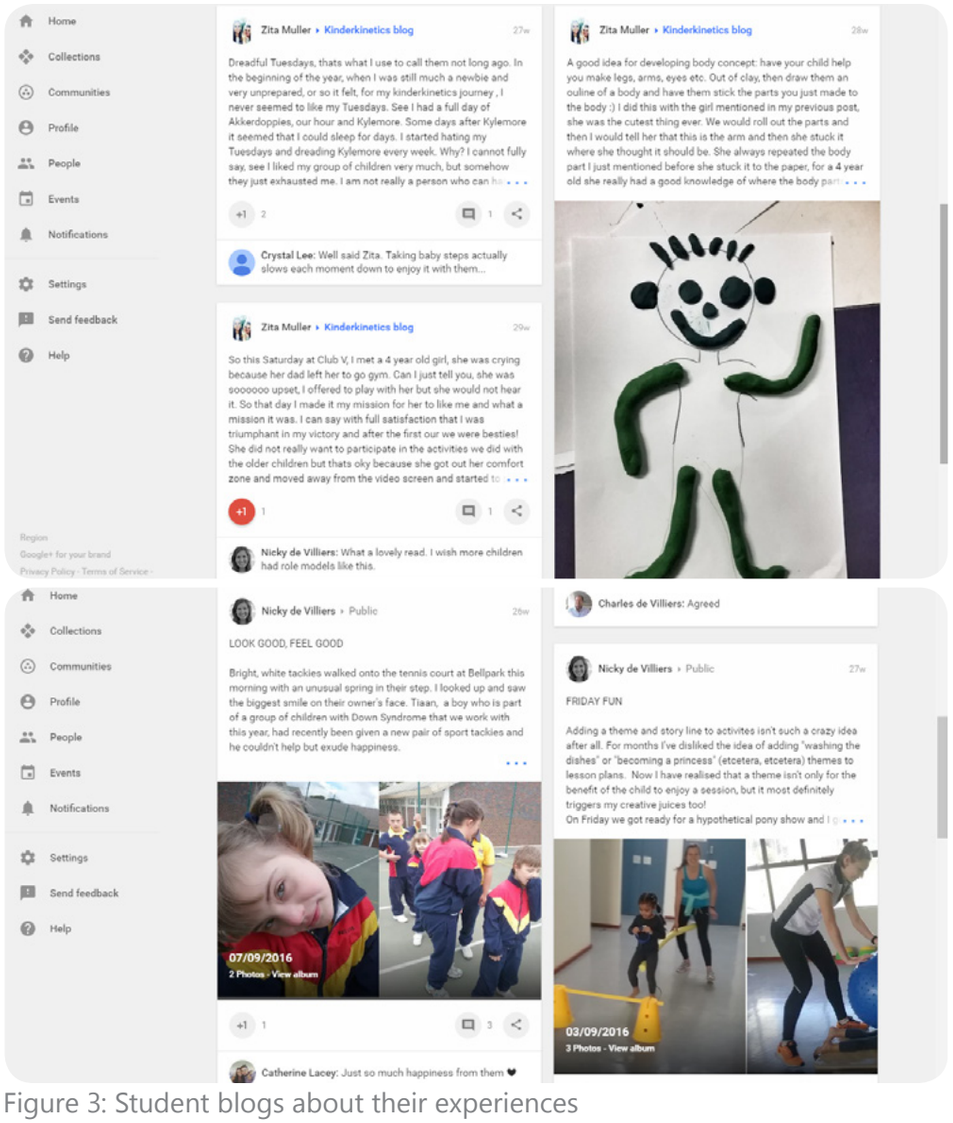

Figure 3: Student blogs about their experiences

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Assessment activities

Students complete both the face-to-face components and the online feedback and activities of the module. The face-to-face components are done in the lecture rooms and at the various schools and interns are there to provide answers if students have questions.

Students complete short quizzes on Socrative Learning, which is an online app that allows the lecturer to track the progress of students as they answer each question. This is a fun and interactive way to get students involved in the classes, as they are usually split into groups and the groups then compete against each other. Peer assessment also takes place by means of Google Forms for the specific presentation.

Feedback practice

Feedback on lesson plans is given directly. Interns can comment on individual activities and overall lessons and on how students performed. As feedback is given while students work on their lessons, students can view their feedback immediately after the lessons simply by opening up the lessons in their own Google Drive folder (Figure 4).

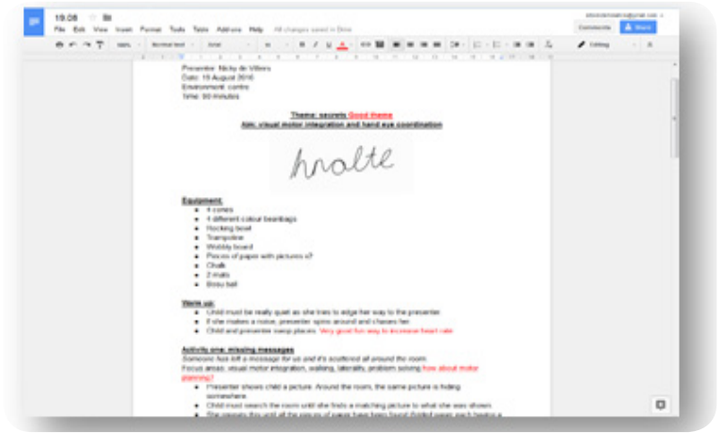

Figure 4: Feedback on a lesson plan

After completing tests on Socrative Learning, students can immediately see their results and where they went wrong. This allows them to ask the lecturer immediately about why they answered incorrectly, therefore enabling them to learn further before making more mistakes (Figure 5).

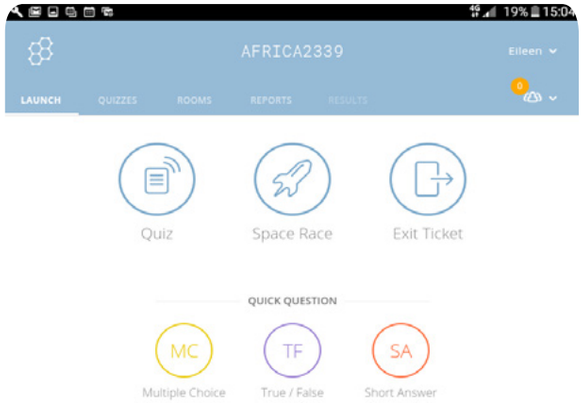

Figure 5: Starting screen of Socrative Learning

Student self-regulation

As students can view their feedback immediately, they can ask interns any questions that they have. Interns are also always available in the office if students have questions or are seeking guidance. Students themselves can give feedback during the weekly meetings and in a Google Forms sheet that they can fill out in the middle and at the end of the year. This form is anonymous and students are therefore free to state anything that they feel they need feedback about.

Learning environment

Learning setting

Students use their tablets at the various schools and Virgin Actives and during class sessions. They use the tablets to read through lessons and view video sessions and to blog about their experiences, prepare articles and complete tasks in the classroom.

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Collaborative settings

During class settings, students use the tablets to complete activities and to work in groups when answering short 10-question speed quizzes on Socrative Learning. They do these quizzes in groups of three or four and 'race' against each other to see who finishes the quizzes first with the most correct answers. This allows for a fun and competitive way to test students' knowledge after theory classes and keeps them interested during class, as they know that they could be doing speed tests afterwards.

Students can use Google Forms to peer-assess each other on tasks done in the classroom and on each other's lessons when necessary. They can also comment on each other's Google blogs, allowing each other to provide feedback and give their own thoughts on the situation experienced.

Content resources

Students can access their PowerPoint directly during class sessions. They also have quick and easy access to YouTube videos when needed during class to watch educational videos. They can access each other's blogs, which allows them to learn from each other. The easy access to the Internet also allows them to research more and encourages them to be more inquisitive, since they are more willing to look up information because the process is painless.

Technology resources

Before students start the module, which includes practical experience, they spend a session familiarising themselves with their tablets. During this session, the use and the reason for the use of the tablets are discussed, outcomes are explained and examples and demonstrations are provided. Some students are familiar with technology, others not at all.

Google Drive is used to upload, share and view lesson plans and allows interns to give feedback to students on each lesson.

The videoing of lessons is done at the schools and the videos are then given to interns at the end of the week for them to watch and give feedback and marks. The videos are recorded on the tablets, transferred to flash drives and given to the interns. This gives interns more time in the office to focus on other areas of their job while still viewing students' progress and presenting. This method also helps when only one intern is available to go to a school, which often is the case. In the past, interns could view only part of the lesson of each student, as they had to look at all the students' lessons within a certain timeframe. Videoing now allows interns to view students' entire lessons without interruption.

Students use Google Plus as a platform to blog about their experiences at the schools, their interactions with the children and their overall experience of being a Kinderkineticist-in-training. They can also access and read each other's Google blogs, which allows them to learn from one another.

Students use Google Forms to peer-evaluate each other on certain assignments such as the Friday Presentations; lecturers use these forms as a survey to get feedback from students on what works well and on any aspects that can be improved (Figure 6).

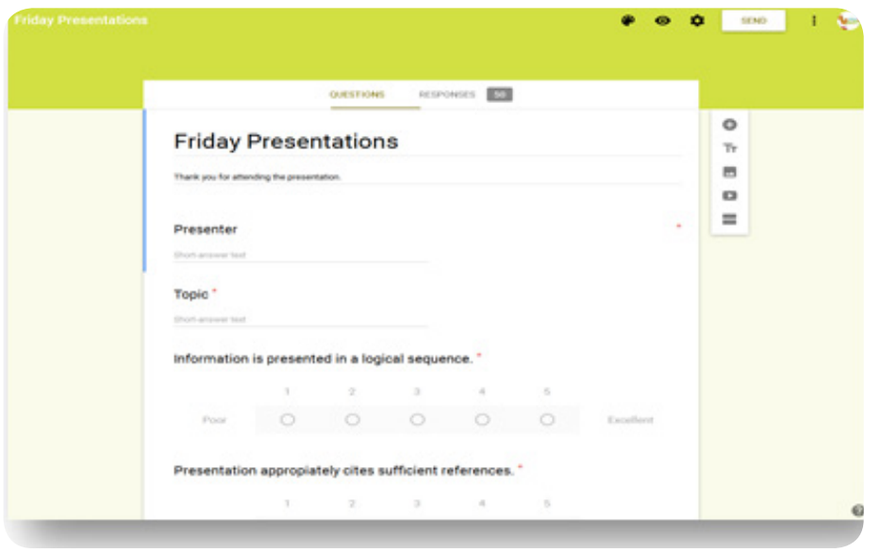

Figure 6: Google Forms for peer evaluation

The lecturer uses Socrative Learning during class for quick pop quizzes at the end of a lesson. The lecturer prepares the work and the quizzes beforehand and begins the quizzes when everyone is ready by clicking the 'Start' button.

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The WhatsApp group is used on a daily basis to answer any questions that students may have on any area in the course. This group is also used to distribute information, including educational articles, videos and pictures, for the students to gain some extra knowledge.

Support challenges

At the start of the year, students are given a step-by-step introduction by interns on everything that they need to know about the tablets. They are given their tablets and, through a PowerPoint presentation, are introduced to Google Drive, the uploading of lessons, the sharing of lessons and the feedback that will be given. They are also introduced to Google Plus and the writing of blogs, followed by the videoing of lessons and how this can be done on the tablets.

In the following weeks, during meetings and brief periods after their theory classes, interns briefly repeat the process to increase students' understanding. The door to the interns' and the lecturer's offices are also always open for students to ask any questions that they may have at any time of the day.

There are never too many issues when it comes to student support, as interns are able to help students through the process and mostly answer their questions. The biggest issue is problems with the software and hardware of the tablets, causing students to be unable to upload lessons or access Google Drive from their tablets.

Student experience

Student feedback on the learning experience

It took students some adjusting to the use of their tablets. Once they understood the process, however, it was well accepted by all. In July of 2016, a Google Forms survey was sent out to all the students who were involved in using both the paper method and the tablet method. The results showed that almost all the students preferred using the tablets to the paper copies and wanted the use of the tablets to continue. When asked whether they preferred paper copies or electronic copies, the result was 100% for electronic copies. A total of 60% of the class preferred written feedback that could be given to them directly on their tablets. Students commented that the tablets worked a lot better in terms of time and finances.

A second Google Forms sheet was sent out at the end of the year to evaluate the overall use of the tablets compared to the use of paper. The results from this form showed that students preferred the tablet method to the paper method, with a result of 89.9% for electronic. Lastly, 100% of students agreed that the electronic tablet method was much more financially feasible.

Assessment impact

As mentioned, feedback on the formative assessments of students is given directly on each of their lesson plans. Interns can comment on individual activities and overall lessons and on how students preformed. As feedback is given while students work on their lessons, students can view their feedback immediately after the lessons. This allows them to ask questions about anything concerning them and to learn more. The feedback is then also always present for them to refer back to when working on their next lessons.

Summative assessments can be done after the completion of tests on Socrative Learning. Students can therefore immediately see their results and where they went wrong. This allows them to ask the lecturer immediately about why they answered incorrectly, therefore allowing them to learn further before making more mistakes.

General

Opportunities

The uploading of lessons onto Google Drive works extremely well, as students do not waste so much money on printing their lessons for interns to read. This also allows them more time to prepare for lessons and involves less worrying about whether or not the printer at the building is working. The provision of feedback on Google Drive allows interns to offer personalised feedback to each individual, also meaning that the feedback can stay there if students wish to look back at their lesson plans to see what they can improve.

As theory content is provided to students before lessons, they can easily read along and follow the lecturer's PowerPoint presentations and articles

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on their own tablets. Any articles that need to be read in preparation for class can be done on the tablets without paper copies having to be printed. This means that students can work from anywhere and in any environment.

The tablets allow students to work collaboratively, as they can send and share information and experiences with each other both with Google Drive and with Google Plus. The videoing of lessons also works extremely well, as this means that interns do not spend so much time at all the schools and can complete other work that needs to be done in the office instead. This allows for better assessment of the students' lessons, as interns are now able to watch the entire lessons instead of just half the lessons or even less than that.

Challenges

The understanding of the technology when it comes to using the tablets, Google Drive and Google Plus is somewhat of a challenge, as some students struggle more and need extra guidance on how to complete certain tasks in the beginning of the year.

There are a few hardware and software problems with a small number of devices, such as devices turning off, not charging or proceeding to do their own thing instead of doing what is being instructed. Other issues that cause minor problems have to do with students who use up all their data early in the month and are then unable to access the drive from their tablets when they need to do so at home. This is the result of students not being self-disciplined enough not to use their tablets unnecessarily. The lack of WiFi connectivity in the Department of Sport Science is another issue, as class activities sometimes need to be completed online and the WiFi signal is extremely weak.

Advice

This approach proves to be of extreme benefit for small postgraduate courses where the number of students is minimal, making the monitoring of the tablets more effective. It is not recommended for undergraduate courses, as the cost itself and the management and organisation of the tablets would prove to be far too much for the number of students who are involved. The approach works well for courses where there is a lot of practical work that keeps students busy for most of the day. The tablets allow them to continue with their work while they are on the go instead of wasting that time when driving from place to place.

Other concluding thoughts

For the lecturer, a successful blended learning journey is like a balanced smoothie, combining an assortment of ingredients (face-to-face and online components), each with a unique purpose. The whole idea is not to reinvent the wheel but to take lesson plans that already exist and to see how blended learning can be worked into them and how students can be challenged in a provocative way to heighten their interest.

Making the mind shift to a blended learning model of instruction takes time, a lot of effort and definitely a great deal of patience, but the rewards are well worth it. We live in a digital era in which the way that we connect, communicate and discover things are ever-changing. Why should our methods and ways of learning and teaching be any different?

"If it doesn't challenge you, it won't change you!" – Fred de Vito, American educationalist

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Digital storytelling to engage postgraduates in reflective practice

Faculty of Education | Department of Educational Psychology

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Context

Background overview

The Department of Educational Psychology, amongst others, offers two BEd Honours programmes: Educational Support and Educational Psychology. The module in this case study – Learning Support 765 – is compulsory for all students registered in these programmes. The Honours in Educational Psychology leads to registration as a counsellor with the Health Professions Council of South Africa (HPCSA); this programme, however, is currently being phased out. The MEd in Educational Psychology is a professional programme that also leads to registration as an educational psychologist with the HPCSA. The Department furthermore offers modules in the BEd undergraduate programme from the first year to the fourth year.

Topic

The module Learning Support 765 focuses on the planning and provision of learning support within an inclusive pedagogy in which collaboration is a key factor. It explores various theoretical approaches and practical designs and strategies to address the needs of diverse classroom populations. A major outcome is that students develop as reflective practitioners and professionals.

Intended learning outcomes

By completing this learning activity, students should be able to provide reflective, effective learning support to learners with diverse educational needs within the context of an inclusive educational system.

Established practice

The module consists of a theoretical and a practical component. The theoretical component is assessed through a class test and the practical component through an assignment. Both contribute 50% each to the class mark. In the practical, students have to implement theory and reflection into their practices by identifying learners who experience learning difficulties at a school of their choice. The assignment requires them to assess the learners' reading, mathematical or perceptual skills and to plan and implement a learning support strategy. In previous years, students had to write up the assignment. They had to consider theoretical frameworks and pedagogical approaches while being reflective of their implementation of theory and practices in class. For the purpose of this project, they also had to do a digital story for the sole purpose of reflection.

The challenge

The Faculty of Education is encouraging the meaningful use of e-learning and teaching in both undergraduate and postgraduate programmes. It was therefore decided to use digital storytelling as a tool for reflective practice in addition to the written component of the assignment. Reflective practice forms a significant part of good teaching practice. In the past, it seemed as if students did the assignment purely for marks. While marks are an essential indicator of academic success, being able to reflect on theory and methodology in teaching is crucial for professional development.

Advantages associated with the integration of technology

Integrating technology into education is dependent largely on its ability to engage students in learning (Figure 1). It is therefore argued that engaging postgraduate students in their learning can contribute significantly to their professional development as teachers. Digital storytelling has the potential to engage postgraduate students through active participation in the creation process of digital storytelling (Jakes & Brennan, 2005) and to stimulate reflective practice. At the same time, digital storytelling can engage students in authentic learning and increase their understanding of curricular content (Sadik, 2008).

**Figure 1: Technology allows for more active learning

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Student overview

The students are postgraduate university students registered for a BEd Honours programme. All of them have a teacher's undergraduate qualification, this being either a BEd degree or a postgraduate certificate in education. The module Learning Support 765 is compulsory for students in both the Honours in Educational Support and Educational Psychology programmes. The students are a diverse group in terms of age, teaching experience, language and gender. They also have various levels of competency in technology.

Other relevant role-players

The blended learning coordinator from the Centre of Learning Technologies assigned to the Faculty of Education provided training for the students (the whole class) on how to develop a podcast using Windows Movie Maker. He further availed himself to answer any questions throughout the project and to provide support in other ways.

Learning and assessment activities

Educational approach

The lecturer follows a social constructivist approach to learning and assessment and students are expected to do the assignment within this pedagogical framework. According to socio-constructivist theory, human development and learning happen on two levels: a social level where the construction of knowledge takes place during shared activities and an individual level as the internalising process. What is learnt on the first level becomes part (with consolidation) of cognitive development. The learning and assessment activities are framed within the biosystemic theory. According to the biosystemic model of Bronfenbrenner and Ceci (1994), human development is shaped by social and cultural contexts. Learning and assessment activities thus have to be cognisant of the various systems in which learners live and function.

Learning and assessment activities

Students had to develop a digital story of the support that they provided to the learners, reflecting both in and on-practice. This required them to take pictures (ensuring ethical conduct) during the weekly support lessons that they had with the learners. They could include text and music and, if they were confident, a short video clip. In order to help the participants with the process of reflection, the following instructions were provided as a guide:
1) Explain the process of support.
2) Engage in reflective practice during the process of support.
3) Show evidence of adapting or changing methodology and/or techniques as result of reflective practice.

The digital story had to be three to five minutes long, with a minimum of ten slides. The completed digital story had to be uploaded onto SUNLearn (the Moodle platform of the University) as an .mp4 video at the end of the semester.

Figure 2: Screenshots from a digital story

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Feedback practice
Feedback was given to students during class as the practical assignment was discussed and questions from students were answered. The digital stories were evaluated on the three instructions for the assignment against the background of the seven elements of digital storytelling (Table 1). Some feedback was also given during focus group discussions, as this was a project supported by the Fund for Innovation and Research into Learning and Teaching.

Table 1: Seven elements of digital storytelling

1. Point of View	What is the main point of the story and what is the perspective of the author?
2. The Dramatic Question	Come up with a key question that will keep the viewer's attention and will be answered by the end of the story.
3. Emotional Content	Bring serious issues to life in a personal and powerful way that connects the story to the audience.
4. The Gift of Your Voice	Personalise the story to help the audience understand the context.
5. The Power of the Soundtrack	Music or other sounds can support and embellish the storyline.
6. Economy	Use just enough content to tell the story without overloading the viewer.
7. Pacing	Control the rhythm of the story and how slowly or quickly it progresses.

Source: http://digitalstorytelling.coe.uh.edu/archive/7elements.html

Student self-regulation
Students were given the opportunity to provide feedback on their experiences of making the digital story, including challenges and learning experiences that they could share with the group.

Learning environment
Collaborative settings
Although this was an individual assignment, students could collaborate and consult with classmates. They could also consult with the lecturer and the blended learning coordinator.

Content resources
The content available to the students for this assignment was uploaded onto the SUNLearn platform. This included PowerPoint presentations, articles and documents like policy papers.

Technology resources
As most mobile phones have a camera feature, all students were able to use the device to take pictures. It was decided to use Windows Movie Maker (version 2012), as it is available as a free app and very user friendly. Students were directed to the website from where they could download it and received a handout for beginners on how to use it. All students were familiar with the SUNLearn platform, as it is used to communicate and upload study material in all modules of the Department.

Support challenges
Although students could contact the blended learning coordinator, none of them did so. They did support each other, however, as some had made digital stories before in another programme. Many had technical challenges and some loaded the video in a format other than .mp4, with the result that the researcher could not open it.

Student experience
Student feedback on the learning experience
Some students reported that making the story (taking pictures while teaching) was very distracting and that they did not learn much in terms of being reflective. Others, however, said that it made them realise that they were not focusing on the methodologies and strategies that they were using in class, which is a reflective practice in itself.

Assessment impact
The digital story did not count for marks, as the main aim was to engage students in reflective practice as a valuable source for professional development. The impact that the assessment had on most of the students was that they did reflect on their teaching strategies, techniques and methodologies at one stage or another.

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General

Opportunities

Windows Movie Maker is a free software tool. Once students understood how to download and 'play' with Windows Movie Maker, they were more confident.

Challenges

Most students had technical problems, as illustrated below:
"Don't really know how to download software and how to install it and had trouble finding it once it was installed and then figuring out how the program works was frustrating."

They also struggled with keeping the video to the required length. Some had too many visuals and music, which made the file too big. Other challenges included adding music, losing pictures, the program (Windows Movie Maker) not being on campus computers, editing, publishing and the program shutting down unexpectedly. Some students did not have enough data and some had limited Internet access.

Advice

Firstly, this was an individual project and, although the support structures were set in place, it might have worked better if students had worked in pairs, supporting each other. Secondly, the project did not count for marks. The lecturer argues that, if it had counted for marks, more students would have participated in making the digital story and they would have asked for help sooner and more frequently.

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Gamification in Industrial Psychology: Using game elements in SUNLearn to increase student engagement

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Context

Background overview

After teaching the module for a few years, the lecturer decided to change the prescribed textbook and used this as an opportunity to redesign the module. A gamified learning environment was therefore developed on SUNLearn. The purpose of this was to provide enrolled students with challenging, fun, interactive learning opportunities both individually and in groups. Practical formative activities that were based on theory and covered in selected topics of the module content formed the basis of the gamified learning platform.

Subject area

Industrial Psychology 132 is a six-credit service module for first-year Occupational Therapy students. In this module, they are exposed to the general principles of industrial psychology. This includes psychological theory (i.e. motivation, individual differences and research aspects) and human resources-specific processes (i.e. labour legislation, recruitment, selection, training, performance management and leadership development) that are involved in the study of individuals and groups in the workplace.

Established practice and the challenge

The module was initially structured as a purely face-to-face approach. Two of the three contact sessions per week were allocated to theory and the third was used for practical activities. Later, the lecturer placed the activities, with clear instructions, on SUNLearn and students could complete the learning activities in their own time. SUNLearn was then used as a repository, since it was the easiest mode of communication with the group. The lecturer had been teaching this module for more or less three years and felt that it was time to try something new and interesting.

Advantages associated with the integration of technology

It was important for the lecturer to create opportunities in which students could translate the theory into practical applications and experiences. She also wanted to give them the opportunity to draw links between occupational therapy and industrial psychology. The gamification of SUNLearn offered the opportunity to present information in a more engaging format. Making use of this new educational approach also gave the lecturer the chance to evaluate and redesign the learning activities, where necessary.

Gamification is a way to engage students in higher-impact practices, such as collaboration and authentic learning opportunities. It allows students to start thinking practically about content. The theory does not make much sense to them at first, since they are only first-year students. Gamification brought the students' learning activities closer to what they would actually experience.

Student overview

In 2016, about 48 students were enrolled for this module. Students enrolled for the module are all first-year Occupational Therapy students completing Industrial Psychology 132 as a service module. They go through an intense selection process and, as a result, are more diligent and attentive students than those in an average class.

Students are exposed to industrial psychology, since occupational therapists often work not only in hospitals and schools but also in rehabilitation centres. A lot of their work involves equipping people with skills to go back to their normal or their pre-accident functioning, which may include a career or work environment.

Learning and assessment activities

Educational approach

It has been argued that gamification is a pedagogy that can be linked to experiential learning depending on its use and application (Banfield & Wilkerson, 2014). Moreover, combining game elements with learning objectives in a gamified module, one can create a "hands-on learning pedagogy that is student centric" (Banfield & Wilkerson, 2014). Experiential learning theory states that a new skill is best learnt when individuals **understand** it both conceptually and behaviourally, have opportunities to **practise** it, receive **feedback** on how well they are performing it and **use** it often enough for it to become integrated into their behavioural repertoire (Osland, Kolb & Rubin, 2001).

The lecturer approaches the content in much the same way. The learning content that is presented in class is closely linked to the learning activities and the assessments. These activities also engage students in lower and

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higher order thinking skills (Bloom, Engelhart, Furst, Hill & Krathwohl, 1956) while applying the content to a scenario. Students are furthermore often asked to put the theories that they learnt in class together in such a way that the theories answer a question or solve a problem presented to them. Feedback is provided on all the learning activities, either through the use of automatic grading, a rubric or commentary.

Learning and assessment activities

To begin with, students were introduced to the concept of gamification in a short in-class presentation. The objective and purpose of the gamified learning activities were also discussed, as were the instructions and guidelines. SUNLearn served as a platform for the game titled OT Tycoon, where students could move through different levels and complete short knowledge checks and quests (Figure 1).

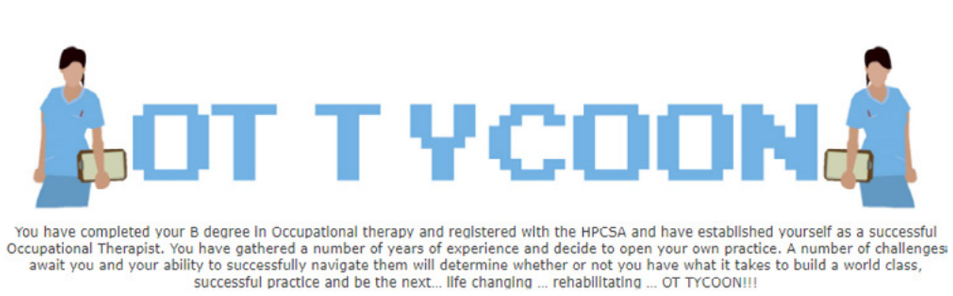

Figure 1: Screenshot of the introduction to the game OT Tycoon

Students were led through a story wherein they were to build their own occupational therapy practice. Each new topic represented a new level wherein students had to engage in different activities. The module itself is made up of eleven themes but only six levels were created. Each level combined certain themes or focused only on themes that had a more practical application (Figure 2). Each level contained a knowledge check and group or individual learning activities that were referred to as quests. The knowledge check could be attempted three times at any point during the semester. Each quest contained a short description of a challenge (in the form of a small assignment) that needed to be completed and an explanation of how it contributed to the final objective of the game.

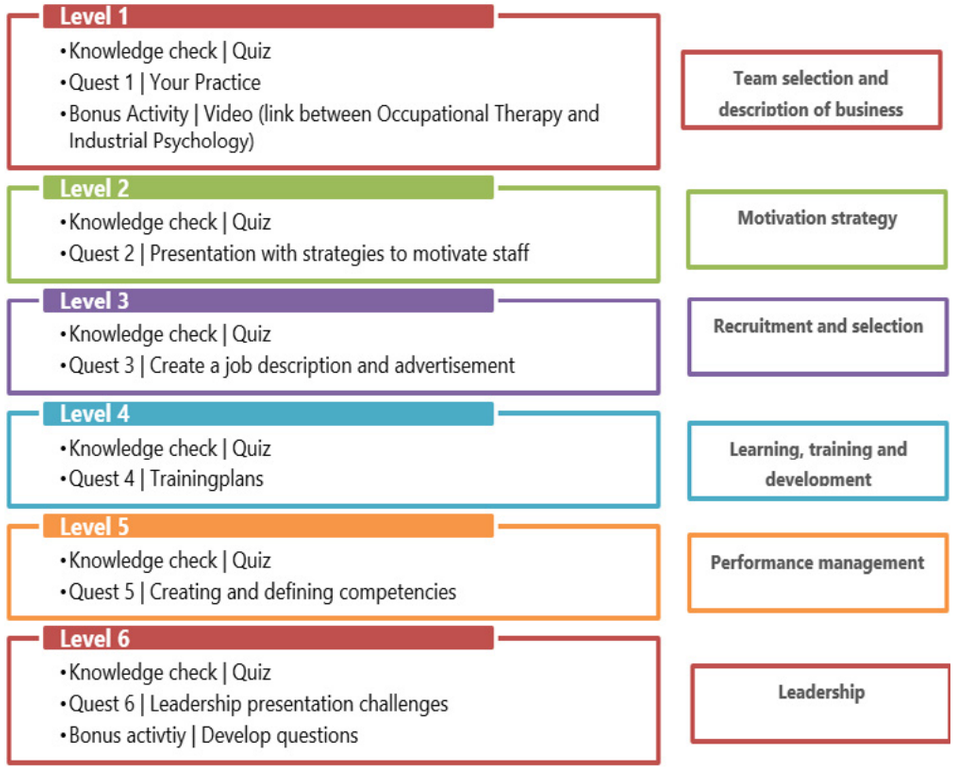

Figure 2: Themes for each of the six levels of the game

Feedback practice

Automatic grading was used on activities such as the quizzes (knowledge checks), which means that students received immediate feedback (in the form of marks). Other learning opportunities were graded by the lecturer and therefore took longer to mark, students sometimes waiting a week or two before receiving feedback (see *Opportunities and challenges*).

Student self-regulation

To place the responsibility of learning back into the students' hands, they were given more freedom in terms of timelines for activity completion. For all online activities, there was only one hard deadline: the end of the semester. There was, however, a proposed deadline for each activity (for the end of a level or section). If students completed the activity on or before the proposed deadline, they received bonus points.

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Points were assigned for various activities, including quizzes, class attendance, in-class activities and group quests. Points were earned for the completion of these tasks. Bonus points were also assigned at the discretion of the lecturer for additional activities or participation.

Learning environment

Learning setting

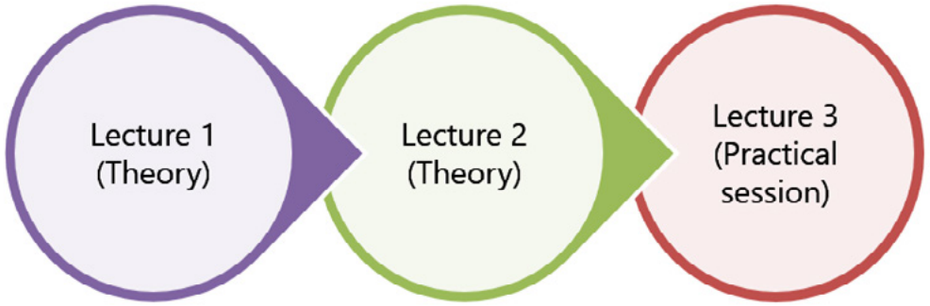

Figure 3: A typical week in Industrial Psychology 132

Three lectures are scheduled for this module every week. During the first two lectures, content is presented. The third or Friday lecture is occasionally used for a lecture but is more often made available to students to do group work. They then have the lecture hall available for them as a group to complete the week's activities. Attendance of these sessions is not compulsory but the sessions are made available since students mentioned that they struggled to get together as a group.

Collaborative settings

At the start of the semester, the students divided themselves up into groups of three using the Group Choice Tool on SUNLearn. During the semester, the students were not communicating issues about group member contributions but they were beginning to do so towards the end of the semester. As a result of these issues, the lecturer decided to make a buddy rating system available to the students. This system allowed the students to e-mail her the percentage that they thought the individual group members contributed throughout the semester, such as only 50% or the full 100%. The individual group members' marks were then adapted according to the average of the percentages that they received from their peers.

Technology resources

All online activities and gamification elements were designed on SUNLearn. Various tools were used (Table 1).

Table 1: SUNLearn tools for activities and gamification elements

Learning and assessment activity	SUNLearn tool
Choosing of teams	Group Choice Tool
Knowledge checks	Quiz
Quests	Assignment tools
Gamification elements	**SUNLearn tool**
Points	Gradebook items
Levels	Sections

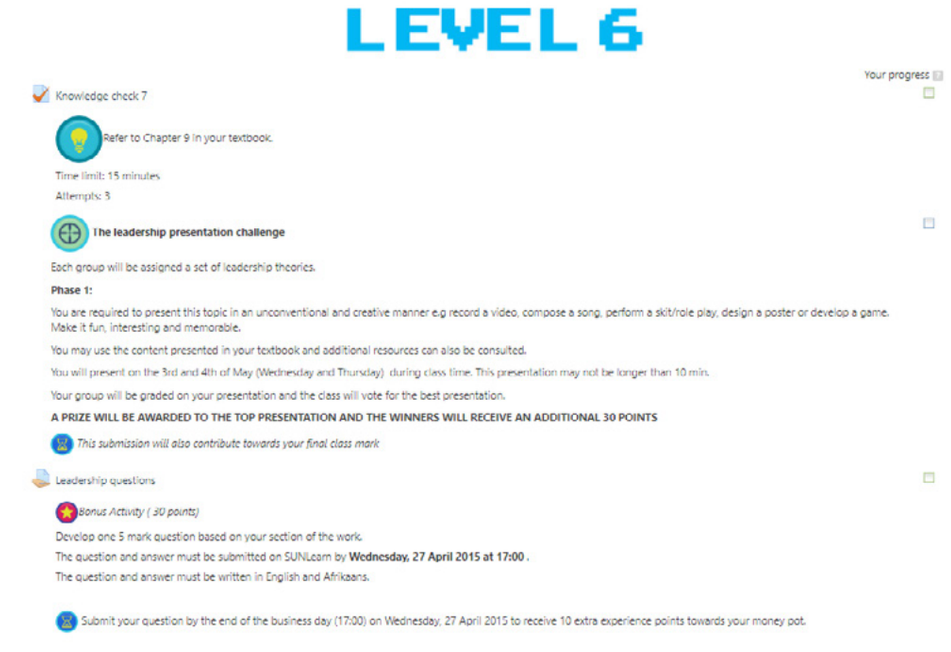

Figure 4: Typical level using various SUNLearn tools

Gamification in Industrial Psychology: Using game elements in SUNLearn to increase student engagement

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Learning activity:
Gamification

Learning technology:
SUNLearn

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Student experience

Student feedback on the learning experience

A focus group interview was conducted with some of the students after they completed the module. During this interview, they raised various issues about competition, communication, the structure of the course, group work and the content and concept of gamification. They felt that the gamified approach was interactive and made it easier for them to learn the content; the knowledge checks (quizzes) helped them to learn the theory and the online tasks provided interesting ways to practise it. They also said that it was different and fun.

There were also some criticisms in the student feedback. Some felt that the module now contained too many tasks and that they did not receive feedback on the tasks fast enough. Neither did they want to work in groups as often as they were required to.

Assessment impact

Each learning activity (i.e. the knowledge checks and quests) was assigned points for completion and some contributed a portion to the final class mark. The knowledge checks contributed 5% to the final class mark and four of the learning activities contributed 15% to the final class mark. Although the lecturer did not see a difference in student marks at the end of the semester, students did report that they were more engaged with the content, which made the content more relevant to them.

General

Opportunities and challenges

From the student feedback and the lecturer's own experience, the following opportunities and challenges were identified:

- More guidelines were given for students to complete their activities.
- A student assistant was appointed to ensure that feedback on activities was provided more rapidly and that student points were loaded more rapidly.
- A SUNLearn plugin was identified and installed to manage student points.

Advice

The lecturer proposes the following advice for others who want to implement gamification in their modules:

- Leader boards can be used to promote competition amongst students but should be used with caution.
- The rules of the game should be clearly communicated and easily accessible or displayed as reference.
- Feedback should be immediate or provided as soon as possible for all activities.
- Levels provide structure and facilitate progression through the game.
- All learning activities should be meaningfully derived from the content and included in assessment if possible.
- The game should facilitate varied social interaction both face-to-face and online in order to minimise time constraints on the players.
- A clear distinction should be made between the allocation of points and marks for the completion of learning activities.
- Rewards should acknowledge the players' individual differences in motivation, be meaningful and tangible and have utility in the course.

The points above were also presented as design principles in a conference presentation made by the lecturer and her PhD supervisor (Adams & Du Preez, 2016).

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Office Mix for online student presentations

Faculty of Economic and Management Sciences | Department of Statistics and Actuarial Sciences

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Learning activity:
Online presentations

Learning technology:
Office Mix

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Context

Background overview

The lecturer completed the PREDAC programme in 2016. Although he used another module as his case study during the programme, he applied the skills and principles learned there to Financial Risk Management 344. When he was first asked to lecture this module, he went through the Design for Learning, Teaching and Assessment (DeLTA) Cycle and then planned the module. He found that the current curriculum did not, however, include enough assessment and learning activities to fill the 240 hours of this 24-credit module. The lecturer therefore wanted to add an activity, one that would engage the students in deep learning but that would be interesting and create a level of excitement in the students at the same time.

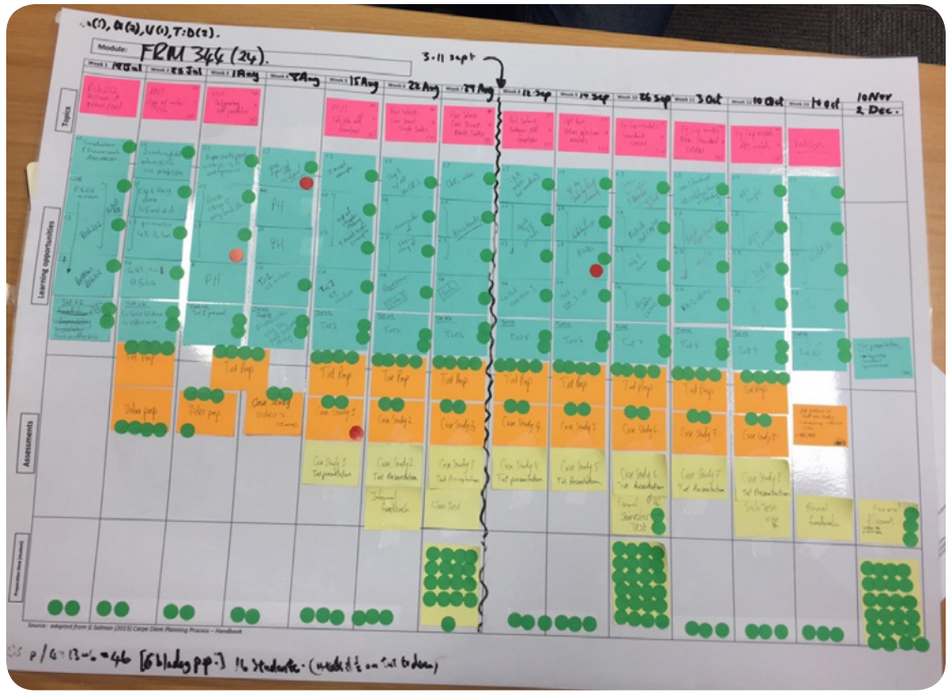

Figure 1: The lecturer's planning of the module using the DeLTA Cycle

Subject area

The module topics are modern portfolio theory and investment analysis and the module deals with various financial risk management theories in portfolio management, such as mean variance portfolio theory, the portfolio selection process, the optimum portfolio, models of equilibrium in the capital market and studies relating to financial risk management. The focus is on the mathematical foundation and the practical application of the topics.

Intended learning outcomes

At the end of this new learning activity, students are expected to:

- be able to explain various financial risk management failures through case studies; and
- produce a video presentation applying the theory learned in the module to the case study provided.

The challenge

As part of his professional risk management (PRM) examinations (an external professional designation), the lecturer was exposed to a selection of case studies about financial management risk failures. The association that offers the PRM designation, PRIMIA, provides access to industry case studies in the form of written documents of two to four pages. The lecturer wanted his students to work through the case studies and learn from the principles and applications contained in them but did not want them to work through every case study individually. A solution was to let the students each discuss one case study in the form of a presentation. At the same time, the lecturer was mindful of the fact that not all students are equally comfortable doing presentations in front of others. Neither would it be possible for all the presentations to be done during one contact session, which meant that some students would have more time to prepare than others.

Advantages associated with the integration of technology

Having students record their presentations and upload it as videos was a perfect solution to possible presentation woes and limited contact time, still allowing the opportunity for students to develop presentation building skills. After consultation with the Faculty's blended learning coordinator, it was decided that Office Mix would be an effective tool.

Student overview

The class consisted of 14 final-year Financial Risk Management students and a few Actuarial Sciences students who wanted to make up extra credits.

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Learning and assessment activities

Educational approach

The students were engaged in various types of learning (Laurillard, 2012) while completing this learning activity. Firstly, they were prompted to investigate their case study documents and search for further information on them (inquiry). Secondly, they consolidated what they had learned by articulating their current conceptual understanding and how this is used in practice by building a video presentation (production). Thirdly, they also, at the same time, learned from each other while working in groups (collaboration). This was all done by using real-world case studies and the students were therefore engaged in authentic learning (Lombardi, 2007).

**Figure 2: Students working in groups

Learning and assessment activities

The students were asked to analyse their case studies, search for further information and then build a video presentation explaining the various financial risk management failures in their case studies. A time limit of 10 to 15 minutes was given for the videos. The students submitted their videos on SUNLearn via the Assignment Tool, from where the videos were marked using a rubric. The criteria were concept, storyboard, content, quality, teamwork and timeliness.

Throughout the semester, the videos were played during the contact sessions, after which they were discussed. The students could ask the presenters of the videos questions and a discussion often ensued. This ensured that all the students could learn from all the case studies.

Figure 3: Example of a video presentation

Learning environment

Collaborative settings

Students worked in groups of two. The lecturer decided on two because, in his experience, loafing often surfaced in larger groups. Initially, the lecturer wanted to divide the students into groups randomly but some students asked if they could choose their partners themselves because of various logistical reasons, such as lift clubs and shared residences. The small class sizes allowed the lecturer to give the students a chance to e-mail him with their preferred group partner if they wanted to be with a specific person. The rest of the students were then randomly allocated to each other. Each group was allocated a case study.

Content resources

The students could access the comprehensive case studies from the PRIMIA website. The case studies covered different companies and banks that had failed because of financial risk management issues. These included China Oil, Riggs Bank, Orange County and many more.

Technology resources

It was decided that Office Mix would be a suitable tool for the learning activity. It was very user-friendly and did not require the students to learn

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any video-making software. It entails only building a regular PowerPoint presentation, recording your voice over the slides and then exporting this to a video. Office Mix is free to use as part of the University's campus-wide licence to Microsoft apps. It was installed in one of the Faculty's electronic classrooms but some students also installed it on their own devices.

One tutorial session was used to train the students in the software program. During the tutorial, they were required to build a presentation of three slides, record sound over it and then export it to a video. This basic training was enough to allow the students to complete the project but they went beyond this when making their video presentations, submitting high-quality videos with advanced video editing.

Figure 4: The Office Mix ribbon within PowerPoint

Student experience

Student feedback on the learning experience

Overall, the students enjoyed the learning activity. They wanted to be told beforehand what they would be assessed on and how but, since the rubric was not provided with the briefing, the students were unsure what they would receive marks for. They still, however, delivered very high-quality products. Some students said that seeing an example beforehand would have been valuable but, since this was the first time that the learning activity was presented, this was not available. They did state that the activity made them excited to see how the theory was applied in a real-world context.

General

Opportunities

The following worked well:

- The videos were made available to the second-year Financial Risk Management students. This developed some excitement amongst them about the topic and about the third-year module, hopefully inspiring them to enrol for the module during the following year.
- Requiring the students to submit their case studies early in the semester meant that 20% of their predicate mark was already handled and that the activity did not interfere with their tests and other assessments.
- When the other students asked questions on presentations after watching them during the contact sessions, the presenters answered with confidence. It was evident to the lecturer that the students had engaged in the presentation content and that deep learning had indeed taken place.
- The students enjoyed following a different approach to assessment than what they were used to. The technical skills of students are often underestimated; most students enjoy using technology and working out how software works.

Challenges

During the learning activity, the lecturer was faced with the following challenges:

- The students required a marking guide or rubric while creating their video presentations. In the following year, the rubric will therefore be provided with an activity brief.
- The students did not have a previous standard to work to but the 2016 cohort's videos can now be made available as examples in the future.
- The future groups will be much bigger (almost double in size). Marking the video presentations will then take much longer. Peer assessment might therefore be used so that students can mark each other's presentations.

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Teaching data visualisation through infographics for research projects

Faculty of Economic and Management Sciences | Department of Logistics

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Context

Background overview

This module covers the research process. Before lecturing this module for the first time, the lecturer consulted with others in the field, either researchers or those teaching research methodology. He found that most modules like these take the students through the theory of the research process and even let them write a research proposal but they do not let them do research. Since the focus of this subject area is on applying theory in practice, the lecturer wanted the students to engage in a small-scale research project. At the same time, the lecturer wanted the students to

Figure 1: The research process

Topic

Research capabilities have become useful skills for most individuals, whether they choose to pursue further studies (involving research) or a career in a chosen discipline. The research skills developed in this module can easily become transferable skills for problem solving in logistics and supply chain management issues.

The following key topics are covered in this module: the nature of business and logistical research; the research process; research topics and problems; research philosophies, approaches and designs; access to and the use of secondary and/or primary data; the analysis of quantitative and qualitative data; and the writing and presentation of a project report.

Established practice and the challenge

The module prepares third-year logistical students for the research part of their honours degree. As part of the research group assignment for the module, students work together on an approved research topic in groups consisting of a maximum of five students each. Each group drafts a research proposal to guide the group's research assignment. The assignment is broken down into well-balanced sub-assignments that each member of the group takes accountability for (typically a research question and a specific corresponding objective). In the past, students wrote up this research project in a report only.

Advantages associated with the integration of technology

The lecturer wanted the students to present their research in a way that would spark interest in the general public. After another lecturer mentioned how data visualisation is becoming a new basic skill, the lecturer started noting how infographics were used to represent research results. He found the Tableau Viz of the Day newsletter especially inspiring. Therefore, instead of letting the students write a research report, the lecturer designed a learning activity wherein the students present their entire research project in an infographic.

Student overview

In 2016, about 157 students were enrolled for the module. Students worked in groups, with the resultant 33 groups requiring research supervision on the research projects. The student cohort consisted of students studying BCom General, AgriSciences and other BCom programmes.

Other relevant role-players

Postgraduate students acted as research supervisors for the groups. Each supervisor had about six groups and therefore six research projects to lead. The supervisors were trained by the lecturer beforehand, the training covering basic supervisory skills, such as coaching. The research groups made appointments to see their supervisors, some consulting their supervisors more than others.

Learning and assessment activities

Educational approach

As the use of infographics has become more popular, data visualisation in this manner has become a crucial skill (Ferreira, 2014). Developing infographics engages students in various ways of learning (Laurillard, 2012). They are required to consolidate what they have learned by articulating their current conceptual understanding and present it in a visual manner. They are then required to pull together the entire research project and articulate their current thinking while collaborating with others.

Learning and assessment activities

As part of the lecture about data visualisation, the lecturer talked about how infographics can be used to move from data to insight, information thus becoming more meaningful and useful. Students could use Tableau,

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Microsoft Publisher or any other free infographic software to design an infographic that presented their research project findings. They were given examples of good infographics and a guide on how to create infographics. The groups submitted a range of products from interactive infographics to PDF documents.

The infographics were marked by the supervisors according to the following criteria: what was used to create a theme, story or message; the use of different graphics and visualisations to make the presentation appealing (using preattentive visual attributes); the mixing of text and graphics to convey the message; and the tools that were used (the software that was used and how easy or difficult it was). Each supervisor then selected the best infographic from her or his group of research projects. These infographics were then used as a presentation tool for a five to ten-minute presentation during a contact session.

The students therefore used infographics as a tool to tell the story of their research and taught them how to reduce a big project into something that could be presented quickly.

Learning environment

Collaborative settings

Students worked in groups of a maximum of five. CATME was used to divide the students into research groups according to their demographics, academic distribution and research focus areas, CATME Team-Maker allowing the lecturer to gather the relevant information from students and assign them to groups based on this information. The lecturer could choose the criteria and weighting that were most relevant to successful teamwork in the class. If the groups experienced any problems, they could consult their study leaders but CATME assisted in creating well-functioning groups.

Content resources

To complete the infographic section of the research project, students were given a lecture on data visualisation and the use of infographics. This included a definition of infographics, examples, principles of infographics and an introduction to the tools available to create infographics.

Figure 2: An infographic submitted by one of the groups

Teaching data visualisation through infographics for research projects

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Technology resources

Tableau was proposed as a possible tool to create infographics; this software allows users to analyse and visualise data.
CATME was used to create homogenous research teams. This is a system of secure, web-based tools that enables instructors to implement best practices in managing student teams. The lecturer used the CATME Team-Maker and CATME Peer Evaluation tools.

Student Experience

Student feedback on the learning experience

Students found that infographics helped them to convey the core information of their research projects to the rest of the class and contributed to their understanding of the visual representations required when presenting projects. They struggled with the graphics but the software that was used made it easier. The main challenge was condensing a lot of qualitative data for the infographics.

**Figure 3: Students working

General

Advice

Lecturers should make sure that they and their students understand the principles of data visualisation (both quantitative and qualitative) when implementing learning activities like this. A lot of material and blogs are available on the topic, which can be integrated into a module. Students should be provided with good guidelines on how infographics can be used in their subject areas. It should be remembered that infographics are contextual and that students should not be provided with a recipe for creating an infographic but rather just with guidelines. This gives students the freedom to develop creative and innovative infographics.

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The night before the test: Electrical engineering students' use of online resources to prepare for assessment

Faculty of Engineering | Department of Electrical and Electronic Engineering

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Context

Background overview

Stellenbosch University has increasingly expanded its use of various technologies to support student learning. At the same time, the Faculty of Engineering has experienced a rapid growth in student numbers representative of the socio-economic and cultural diversities of the country. The use of ICT has offered the possibility to address this challenge and still maintain a competitive level of teaching and learning. One of the ways in which ICT has been used is by making resources available online for students.

The module Systems and Signals 214 is compulsory for all second-year Electrical and Electronic Engineering students, introducing various key concepts in this field. The use of technologies to assist learning forms an integral part of the teaching of and learning in the module. Much of the literature on the use of technology to support learning appears to assume that the accessibility of materials and the nature of the net generation means that students are engaging in learning in their own time and at their own choice of venue. This has led to increased interest in researching how students are learning under these new conditions. In other words, what are the affective manifestations of the new systemic mechanisms?

A study done by Howell, Jahrig and Powell (2004) suggests a significant relationship between academic performance and sleep quality for students carrying a greater workload, as is the case with electrical engineering students. In 2016, the lecturer wanted to determine if this suggestion holds true for situations where resources designed to support understanding and assessment are available on a 24/7 basis (systemic). The aim was to use students' SUNLearn activity logs to ascertain their sleep patterns (affective) and how this correlates with students' academic performance (cognitive).

Subject area

Systems and Signals 214 covers an introduction to the field, which includes circuit analysis techniques and power calculations for both direct current and alternating current circuits and the analysis of basic cases of transient behaviour in passive circuit networks. Some concepts and analysis techniques for balanced three-phased circuits are also introduced.

Intended learning outcomes

Using the SUNLearn activity logs, the lecturer wanted to explore students' use of the electronic study resources available on SUNLearn. Analysing the activity reports available on the learning management system could provide insights into the access of the online resources in relation to the students' sleep patterns and academic performance. Through this analysis of student study habits, the lecturer hoped to contribute to the growing body of knowledge on technology-supported student learning that takes us beyond the typical endorsement of a technology resource (Laurillard, 2007) and enables a more refined understanding of the educational problem being addressed.

Established practice

The presentation format of the module consists of three lectures and a tutorial or practical session each week. The lectures are formal "chalk & talk" sessions where theory and some examples are discussed. The tutorials follow a problem-based learning approach where students are expected to apply what they have learned and assistance from lecturers and student assistants is available. From a cognitive support perspective, the course material made available to the students in this study include a module framework, a textbook, lecture notes, tutorials, tutorial tests, practical assignments and memoranda for the tutorials and tutorial tests.

The challenge

Many of the studies on the relationship between the affordances of technology and engineering student learning focus on student perceptions and suggest a technological panacea for the woes in engineering education. There is little interrogation into how and when students use what kind of resources and what kind of learning this enables, however. The question of time is a crucial one and technology has offered a way for lecturers to avoid the 'too-little class time' issue and shift the responsibility of learning to students in their own time.

The first assessment for all engineering modules at Stellenbosch University is written in one week at approximately the halfway point of the semester while lectures are suspended. Students therefore write one test a day for five days under examination conditions. The possibility exists that students

The night before the test: Electrical engineering students' use of online resources to prepare for assessment

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do not get enough physical rest, which may influence their academic performances. During 2016, the assessment took place towards the end of test week. The analyses of test performances became a matter of contention since the relationship between sleep patterns and fatigue became a point to investigate from an ethics-of-care perspective.

Advantages associated with the integration of technology

On SUNLearn, a time-stamped activity log was created for every item that users clicked on when signed onto the course website. This allowed the opportunity to correlate the use of online resources, the length of use and academic output. The integrated technology used was therefore online resources and SUNLearn logs.

Student overview

The two cohorts (i.e. year 1 and year 2 of the project) whose activity logs were investigated both consisted roughly of 160 second-year students each. Stringent entry requirements are applied to all students who study Electrical and Electronic Engineering and their basic maths and science skills can therefore be considered to be above average. The module in question is compulsory for all students who wish to obtain a BEng (Electrical and Electronic) degree and it is a co-requisite for a further three second-semester modules, namely Energy Systems 244, Electronica 245 and Systems and Signals 244. The motivation for students to pass this course can therefore be considered to be high.

Learning and assessment activities

Educational approach

The workload for engineering students has steadily increased. In an engineering thermodynamics course study (Taraban, Hayes, Anderson & Sharma, 2004), the authors researched the impact of lecturers' use of technology to expand the possibilities for instruction. Students were asked to keep an activity log of their engagement with module resources and activities. These logs were then analysed in relation to course performance. Key findings indicate a strong correlation between online homework problems and course grades.

Taking inspiration from this study, the lecturer thought that it would be valuable to explore her own students' interaction with online resources to understand better the challenges of time management that students face and to reflect on future interventions when curriculum reform is envisaged.

The lecturer framed her investigation by three complementary perspectives as proposed for open distance learning, i.e. cognitive, systemic and affective aspects (Tait, 2000). These different characterisations are based on the centuries-old philosophy of the education of the whole person (Brühlmeier, 2010), the so-called head, heart and hand dimensions.

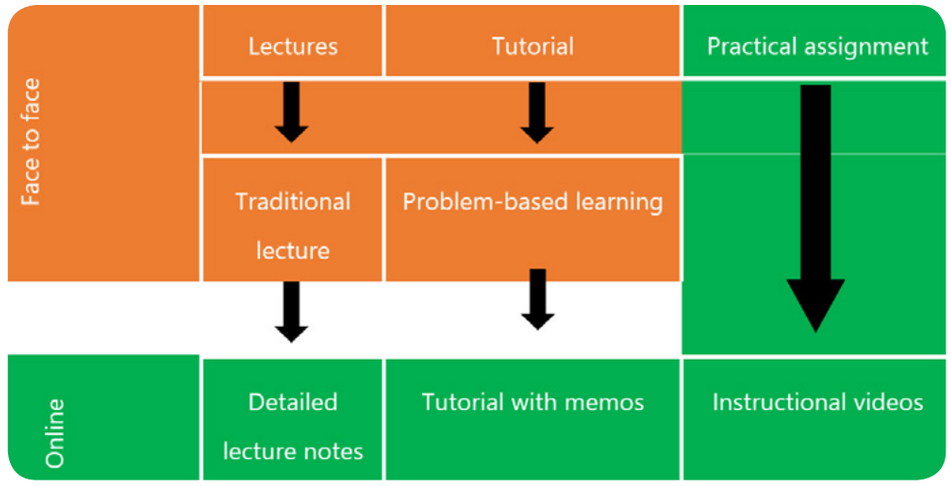

Figure 1: Presentation format of the module

The module consists mainly of traditional lectures, tutorial sessions and practical assignments. Figure 1 above shows that the lectures and tutorial sessions take place face to face. In addition to these sessions, detailed lecture notes, tutorials with memos and practical assignments (with instructional videos) are made available on SUNLearn. The instructional videos are available before and during the practicals. As a whole, the module provides an enabling system for student learning. The time-stamped activity log allowed the opportunity to correlate the use of online material, the length of use and academic output.

Student self-regulation

Access to the learning material occurred at the students' own pace and time and in their own space. The lecturer posted all the instructional and learning materials before the teaching sessions, which remained available

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to the students throughout the semester. The lecturer did not monitor the students' use of these support materials; it was the students' own responsibility to manage their learning.

Time	User full name	Affected user	Event context	Component	Event name	Description	Origin
22 May, 23:52			File: Tut 5 Memo	File	Course module viewed	The user with id '100429' viewed the 'resource' activity with course module id '412437'.	web
22 May, 23:51			File: Lecture 17 February - English (Natural response of parallel RLC - Crit Damped)	File	Course module viewed	The user with id '77603' viewed the 'resource' activity with course module id '400293'.	web
22 May, 23:51			Course: 2017-46779-214 Stelsels en seine - Systems and signals - 214	System	Course viewed	The user with id '77603' viewed the course with id '29344'.	web
22 May, 23:45			File: Tutorial 5	File	Course module viewed	The user with id '100429' viewed the 'resource' activity with course module id '411547'.	web
22 May, 23:42			Course: 2017-46779-214 Stelsels en seine - Systems and signals - 214	System	Course viewed	The user with id '86251' viewed the course with id '29344'.	web
22 May, 23:42			Course: 2017-46779-214 Stelsels en seine - Systems and signals - 214	User report	Grade user report viewed	The user with id '86251' viewed the user report in the gradebook.	web
22 May, 23:42			Course: 2017-46779-214 Stelsels en seine - Systems and signals - 214	System	Course viewed	The user with id '97552' viewed the course with id '29344'.	web
22 May, 23:40			File: Tutorial 4	File	Course module viewed	The user with id '97552' viewed the 'resource' activity with course module id '405946'.	web
22 May, 23:39			Course: 2017-46779-214 Stelsels en seine - Systems and signals - 214	System	Course viewed	The user with id '97552' viewed the course with id '29344'.	web
22 May, 23:38			File: Tutorial 4	File	Course module viewed	The user with id '97552' viewed the 'resource' activity with course module id '405946'.	web

Figure 2: Example of SUNLearn activity logs

Learning environment

Technology resources

The learning technologies used to create the instruction videos included video cameras and Camtasia software over and above the laboratory technologies used for the demonstrations. SUNLearn was used for all the online resources and activities. The learning management system was reliable, accessible and widely used by both the lecturer and the students. The practical assignments were accompanied by instructional videos made available online for use by the students.

The SUNLearn logs were used to explore the student's interactions with the online resources and subsequently the relationship between the students' interactions and their sleeping patterns and academic performance.

Assessment impact

When combining the overall assessment performance with the time of last access to the course-website data versus test-performance graph shown in Figure 3, it can be seen that the students who went to bed after 02:00 all fall in the category of students who failed the assessment. Figure 2 therefore suggests that there is a relationship between the number of hours that the students slept the night before the assessment and their academic performance. This suggested relationship is not, however, reciprocal: the students for whom online activity after 02:00 was logged all failed the assessment but not all the students whose activity stopped before 02:00 passed the assessment either. This unidirectional relationship means that a variety of factors influences academic performance.

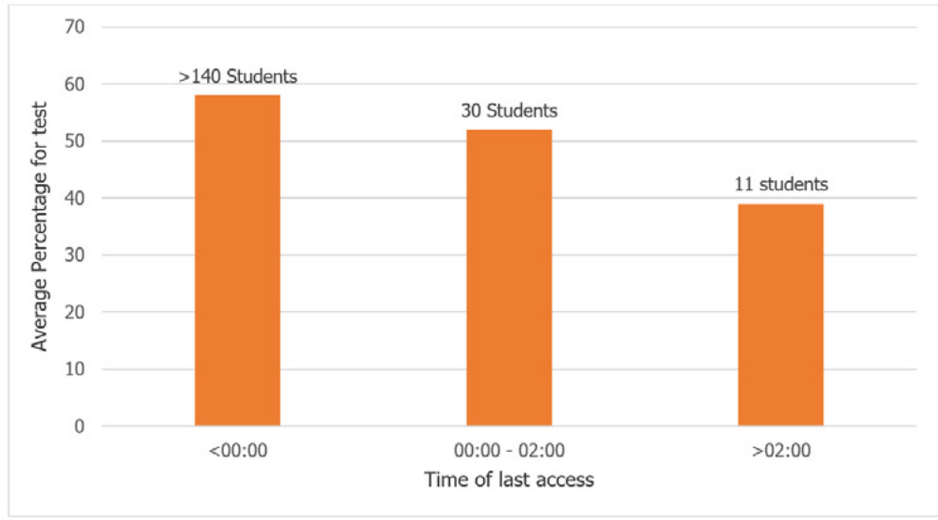

Figure 3: Average assessment performance per sleep category

The data confirm that blindly emulating seemingly successful content access behaviour is not enough to ensure academic success; i.e. having only access to content intended to support successful academic outcomes is not a guarantee for academic success. What other factors together with readily available online resources that support and enhance successful academic outcomes in the Systems and Signals 214 module are therefore open for further investigation?

The night before the test: Electrical engineering students' use of online resources to prepare for assessment

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The lecturer was able to draw the following conclusions:

1. The negative impact of student behaviour from an *affective* perspective manifested *cognitively* in a 100% failure rate for all the students who demonstrated poor sleep hygiene (those whose online activity ceased only after 02:00).

2. Struggling students - for whom the learning management system (LMS, i.e. Moodle), from a *systemic* perspective is seemingly ideal given the 24/7 provision of a range of materials to support deep learning - it gives the impression that gaining proper understanding of the concepts is not a priority.

3. Top performing students study habits suggest an ideal *cognitive-affective-systemic* synergy. Their personal systemic is evident through a multimodal approach to the learning support materials (both offline and online), which appeared to enable or, indeed, result from the positive *affective* behaviour evident in their sleep hygiene.

**Figure 4: Student studying

General

Opportunities

The time-stamped activity log data provided by SUNLearn are a very effective way in which entirely objective data regarding student study behaviour can be collected. The data collection method is, in the lecturer's opinion, more reliable than self-reported data, since the students do not know that their behaviour is being analysed and can therefore not adjust their behaviour or exaggerate certain aspects of it during reporting.

Further investigation into students' time management skills in a highly complex and dense knowledge environment (engineering) is recommended.

Further research on students' perceptions of their quality and quantity of learning using SUNLearn is necessary. Comparison between modes of learning and learning outcomes in an engineering context is envisaged.

Challenges

The log data are available for only one year, which means that all the data must be collected and stored before the one-year window expires.

Advice

The lecturer is sure that many more insights into student study habits can be obtained by analysing the log data available on SUNLearn. This study suggests that academic success is significantly linked to evidence of 'responsible' (or self-regulated) learning but that this is not the reality for the majority of the students in the study. The question of the appropriated of materials and platforms in relation to learning outcomes or objectives is a significant one given the proliferation of technology-supported learning initiatives.

Other concluding thoughts

One clear advantage of SUNLearn, which enables student behaviour tracking, is that it facilitates a richer view of the complex relationship among the cognitive, the affective and the systemic domains of student learning support. This understanding, however, needs to be accompanied by a deeper interrogation of how the actual learning materials facilitate deep, strategic, surface learning and a more focused study of how the 24/7 availability of learning materials actually influences study behaviour.

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The current study suggests that students are lured into a false sense of security by believing that they can access materials at the last minute and that this might be sufficient to pass. This clearly is not the case and the study in question hopes to make a contribution to a more refined understanding of the affordances and constraints evident in the use of technology-based learning support.

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Using blended teaching to overcome millennial classroom barriers

Faculty of Engineering

Project: Blended teaching and learning in Engineering
Vice-Dean: Teaching: Prof Anton Basson ahb@sun.ac.za
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Learning activity:
Blended learning

Learning technology:
Various

Context

Background overview

With the maturing of our democracy, the demographics of student enrolments at Stellenbosch University have changed at a rapid pace and class sizes have increased at an alarming rate. The lecturer: student ratio has consequently become unbalanced. Add to this the challenging research output requirements for lecturers and you have a recipe for burnout and dissatisfaction with the teaching-learning context.

During 2014, Faculty management therefore embarked on a process of collaborative planning to evaluate the usefulness of a blended teaching and learning (BTL) approach in the Faculty. During 2015, a blended learning coordinator was employed to start the process of the thoughtful integration of a BTL pedagogy in the modules offered at the Faculty.

The implementation process of the project followed a top-down approach, i.e. the idea of BTL was embraced by the broader institution as a whole. The Vice-Dean: Teaching collaboratively developed the Faculty's own unique broad aims and objectives in line with those of the tertiary institution at large. The various departmental heads were encouraged (1) to identify their unique challenges and (2) to identify participants whose workload was heavy and who could therefore benefit from a blended learning approach.

The modules that formed part of the project were identified according to the following criteria:

- Modules with a high lecturer: student ratio (e.g. 800 students per module).
- Modules with a traditionally a low pass rate.
- Lecturers with information and communication technology (ICT) interventions that they wanted to put through a trial run. The focus for such a trial run had to be increasing student throughput whilst still maintaining the high-quality teaching and learning experiences of the students.

The lecturers chose their own blended learning intervention strategies. During the run of the project, additional members joined on the basis of their interest in the new and innovative use of technologies in the classroom. After each year of implementations (i.e. 2015 and 2016), questionnaires were used to gain information on students' perceived experiences on the implementation and use of BTL.

**Figure 1: New and innovative uses of technology

Project objectives

The objectives of the project were (1) to improve the teaching productivity of lecturers given the large, diverse class sizes and the demand for higher research outputs, (2) to improve the learning productivity of students by, amongst others, creating available time whilst still maintaining or improving educational standards and the throughput rate and (3) to make students more accountable for their own learning. In addition, assistance was needed by students who were lagging behind because of limited one-on-one time with lecturers and tutors.

Established practice

In the past, most lecturers followed the traditional face-to-face approach using the chalkboard as their main teaching tool. A large number of the lecturer participants also used the Socrates method of teaching (i.e. the question-and-answer approach). They furthermore preferred PowerPoint presentations when presenting their lectures in the formal lecture style.

Using blended teaching to overcome millennial classroom barriers

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The challenge

Although the Faculty is located in a developing country, it has not escaped the impact of the millennials, also referred to as "digital natives" (Prensky, 2001). A study done by Howe and Strauss (2009) suggests that millennials use digital technologies more than their parents and that they use social media extensively. Prensky (2001) suggests that the single biggest problem facing education today is "our digital immigrant instructors, who speak an outdated language (that of the pre-digital age) and are struggling to teach a population that speaks an entirely new language".

The Faculty itself is dealing with students who are "used to receiving information really fast; like to parallel process and multi-task; prefer their graphics before their text rather than the opposite; prefer random access (like hypertext); function best when networked; thrive on instant gratification and frequent rewards, and prefer games to 'serious' work" (Prensky, 2001). On the other hand the digital immigrant instructor tends to stand with one foot in the past whilst adapting to the new digital environment. This tendency makes the lecturer from the traditional teaching and learning era an ideal candidate for a BTL approach.

The Faculty has an added challenge to that of the trendy millennials, namely the impact of a socio-culturally diverse cohort of students. The remnants of the apartheid system and the failure in education of the new democratic government have led to the output of students with varied secondary-education development. This disparity has caused a mismatch of tertiary-education successes on tertiary level. The Faculty has been hard-pressed to rethink the didactics of engineering teaching and learning.

Advantages associated with the integration of technology

By implementing this project with the hope of driving the introduction of BTL, the following advantages may be obtained:

- The trial run of an innovative teaching method, since traditional teaching methods are no longer appropriate.
- The transfer of knowledge to develop the level of understanding of students and their application of skills and for them to express this in a reflective way.
- Assistance in the professional relationship between lecturer and student, i.e. encouraging students to participate and engage in the teaching and learning moment.
- The improvement of the critical thinking skills of students.
- The improvement of the applied knowledge of students, i.e. bridging the theory-practice divide.
- The management by students of their own learning, i.e. learning in their own time and space and at their own pace.

Other relevant role-players

This case study involved all five departments in the Faculty. See Table 1 below for the participating lecturers and modules.

Table 1: BTL participating academic staff and modules for 2015 to 2016

Lecturers	Modules	Lecturers	Modules
Corné Coetzee, Debby Blaine, Dawie van den Heever, Jacques Miuyser, Piero Trinchero	Engineering Drawing 123	Johann de Swardt	Design (e) 344
		Joubert van Eeden	Industrial Management 354
Billy Boshoff, Roman Lennet	Strength of Materials 143	Percy van der Gryp	Chemical Engineering 354 (Reaction Engineering II)
Gideon Wiid, Jacky Gilmore	Electro-Techniques 143	Willie Smit	Modelling 334
Carl Tshamala	Thermodynamics 214	Lidia Auret, Tobi Louw	Chemical Engineering 344 & 426
Debby Blaine	Material Science A 244	Louzanne Oosthuysen	Industrial Practice 442
Johann van der Spuy	Fluid Mechanics 244	Mike Owen	Heat Transfer A414
Stephan Matope	Manufacturing Processes 244	Richard Walls James Bekker	Structural Design 424 Simulation 442

Using blended teaching to overcome millennial classroom barriers

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The blended learning coordinator (BLC) was an active participant in the preparations of the BTL interventions and in the executions of the questionnaires. The direct and active involvement of the Vice-Dean in this large project gave the participants the necessary authority, access to resources and the uniformity of Faculty hierarchy. This was specifically significant to encourage collaboration and collegiality amongst the participants. The departmental managers played an active role in encouraging the lecturers and giving them the freedom to be creative and innovative in their interventions.

Learning and assessment activities

Educational approach

The project is firmly based on a constructivist view of teaching and learning. The project methodology is also guided by a constructivist epistemology, where epistemology is concerned with the nature of the knowledge generated in the research. The researchers' constructivist epistemology allows for the generalisation of results within the engineering context.

Learning and assessment activities

The learning activities were module and intervention-specific. The following learning activities were trialled, as presented in Table 2 below:

- Vodcasts that focus on key background information. The aim with these videos was to ensure that all students, irrespective of socio-economic or educational background, have the same basic understanding of key concepts and principles required at the start of the module.
- Podcasts of revision lectures for first years and of modules with a high impact value in the second year of Engineering studies.
- Vodcasts of strategic problem-solving activities for students to use in their own time, thereby creating more time for more contact face-to-face lectures.
- Demonstration videos to assist students in their preparation for laboratory practicals.
- Videos that pre-empt possible questions (taken from traditional experiences) and that may assist students in their problem-solving activities during tutorials.
- Strategic videos that demonstrate practical activities in the world of work.
- Simulation videos that illustrate the practical application of the theory.

Live lecture video recordings	Videos of key topics and/ or formative assessments	Videos as preparation for lab practicals	Various
Engineering Mathematics 242	Numerical Methods 262	Building Materials 254	Industrial Management 354 (Wiki for group work)
Strength of Materials 143	Chemical Engineering 344	Design (e) 344	Industrial Practice 442
Numerical Methods 262	Fluid Mechanics 244	Electro-Techniques 143	
Revision lectures (different modules)	Manufacturing Processes 244	Control Systems 354	

Table 2: Examples of implemented project initiatives

Learning environment

Technology resources

All resources and activities were run from SUNLearn. The following technology resources were used: document cameras, video camera laptops, Camtasia Studio, Format Factory, YouTube and videos from partner universities.

Support challenges

The lecturers were supported by the BLC and the IT specialist (Mr Andre du Toit) assigned to the Faculty. The students were supported through the process set out by the Faculty for student learning. Particular support

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Learning activity:
Blended learning

Learning technology:
Various

included collaboration with departmental managers to identify and contact specific lecturers who could be supported largely by the BTL initiative.

Student experience

Student feedback on the learning experience

A questionnaire was created to explore the students' experience of the BTL interventions. The questionnaire was distributed through three main ways, namely hard copy and electronic means using SUNLearn and SurveyMonkey software. It was left to the lecturers to decide how the data in their modules should be collected; the questions were all identical irrespective of the mode of data collection. The questionnaires were all completed during the last two weeks before the completion of a module; some modules ran in the first half of the year and other modules in the second half of the year.

The first set of questions explored the time that students spent per week on BTL interventions and, if they did not have any interventions, whether they would have spent more or less time to achieve the same level of learning. The second set of questions explored the reasoning behind students' quantitative responses. The questions explored whether the BTL interventions affected the way in which they learned, how much they learned and what they found most helpful and least helpful in the BTL interventions.

The empirical analysis revealed that students from all four academic year groups viewed the innovative BTL experiences as positive. The average amount of time spent on these interventions varied from thirty minutes to two hours. The time spent was determined by the students' own need either for information to assist their study processes or to consolidate information, deepen understanding and subsequently learn more, faster. Motivation and aspiration for time spent were internal, as the BTL interventions did not specify the time to be spent on them.

The technology uptake produced weighty positive experiences and the need for flawless technology exposure is worth mentioning. At the time of the project, the ICT available to staff was limited and fairly dated. The findings support the need to fast-track ICT infrastructure, since students see the interventions as a means to solve perceived challenges with a large curriculum.

**Figure 3: Students valued the opportunities that the learning technologies provided

General

Opportunities

Students' main arguments for the continuation of the interventions was the ability to study in their own time and space and at their own pace and having a back-up system during unforeseen circumstances or when they needed to consolidate, confirm or revise content for formal testing, tutorials and practicals.

Even though one specific group indicated that more time was spent on the interventions, it is significant to note that (1) the interventions replaced the traditional project approach and that (2) students, by their own accounts, highlighted the opportunity to merge theory and practice, thereby deepening their learning, understanding and practical skills. Therefore despite more time spent on the interventions, the students preferred the interventions to remain as a method for formative and summative assessment.

Using blended teaching to overcome millennial classroom barriers

Faculty of Engineering

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Challenges

Even though students did not complain about any negative experiences with the lecturers' presentations themselves, it may be useful to invest in a well-structured ICT system, since negative technical aspects could overshadow any other negative impacts of BTL interventions. A longitudinal study will give insight into this currently novel intervention.

Although lecturers used technology in one way or another before the BTL interventions, they felt challenged by the following issues:

- Context-specific issues, such as large classes, work overload and pressure to publish in accredited academic journals.
- Knowledge-transfer challenges: The University at large is a research-based university and very little time is available for academic staff to be truly innovative in their teaching and still to do justice to their research outputs. Pressure exerted by management for research outputs has led to the neglect of teaching and learning initiatives.
- Didactical challenges: Lecturers felt ill-prepared to teach, even though they were experts in their subject matter.
- Lecturers felt the need to act as external motivational agents and struggled to hand students control of their own learning.

Advice

Good collaboration among the departments regarding their modules and BTL interventions is of high importance as students have limited study time available. The time management of the curriculum where BTL teaching and learning are used needs to be explored more.

Other concluding thoughts

The engineering curriculum across the globe is often perceived as very broad and students often feel overwhelmed by the degree of theoretical and practical work. With class sizes, student diversities and millennial needs that are rapidly increasing and the pressure on lecturers to produce research outputs, students often feel discontent with their academic outcomes. BTL intervention offers an opportunity to evaluate teaching and learning strategies and to alleviate the above-mentioned challenges. There is still, however, a need for face-to-face exposures and lectures, which is not unexpected since face-to-face teaching and learning have been the mode of exposure for these students for more than 12 years of formal schooling.

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Peer-assessed video workshops in Physiotherapy Science 272

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Context

Background overview

Practical assessment in Health Sciences is a resource-intensive activity forming part of the curriculum. This resource-intensive activity adds to the stress already placed on staff and students by the time constraints in the environment and by the increase in the numbers of students. The student skills selected for practical assessment are based on the financial and human resources available; in addition, the extensive curriculum content often makes it difficult to create opportunities for students to develop these skills.

Subject area

The module Physiotherapy Science 272 follows a principle-based method of techniques that can be applied to various situations. The aim of the module is to teach students all the evaluation and treatment skills that are needed to treat patients.

Intended learning outcomes

The learning activities discussed in this case study have three objectives, with the outcomes assessing the lower-order thinking skills of remembering, understanding and applying (Bloom, Engelhart, Furst, Hill & Krathwohl, 1956), as follows:

1. Encouraging students to practise the techniques that they are taught during their practical classroom sessions. Giving students the opportunity to practise the techniques before submitting the final product allows them to become more confident and competent in demonstrating the techniques. This method of learning incorporates both practise and production, as described in Ways of Learning (Laurillard, 2012).

2. Ensuring that students remember and understand the theory. Students must have a solid understanding of the theory related to the techniques that are assessed in order to evaluate and give feedback to their peers on their assigned assessments.

3. Establishing a peer learning environment with student-centred assessment.

Established practice and challenge

Throughout each year, techniques are taught to the Physiotherapy Science 272 students, which are assessed during the quarterly objective structured clinical examinations. In the Department of Physiotherapy at Stellenbosch University, these are better known as FUSPEs (Fisioterapie Universiteit Stellenbosch Praktiese Eksamens). Typically, this requires the lecturers to block out a total of five days of the year to evaluate the students' performance of these techniques. The FUSPEs are stressful assessment environments for the students and a time-consuming exercise for the lecturers.

During these practical examinations, lecturers have noticed over time that students may require extra input regarding their practical skills.
The increasing student intake could also result in more time having to be allocated to the FUSPEs to assess the students. This could result in a more stressful examination environment for both the students and the lecturers, as the demand on their limited time would increase.

Advantages associated with the integration of technology

In 2014, the Department of Physiotherapy at Stellenbosch University published the following article on near-peer assessment:

A near-peer tutorial system was introduced and implemented as part of a second-year module to assist physiotherapy students with the practising of manual techniques in order to determine the effect of near-peer teaching on the perceptions undergraduate physiotherapy students have of their own learning. The outcome of this study showed that participating and functioning as near-peer tutors had a positive influence on physiotherapy students' perceptions of their own learning both in terms of own clinical technique competency, but also as teachers and facilitators of learning.

Unger, Keiller, Inglis-Jassiem & Hanekom, 2014

Building on this study, the lecturer decided to introduce peer assessment video FUSPE trials during the third term of 2014 by using the SUNLearn workshop tool. This would also give the second-year students more opportunities to practise their techniques.

Peer-assessed video workshops in Physiotherapy Science 272

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The aim of the peer video assessments was to alleviate the challenges faced by both students and lecturers and to allow students to practise and perform techniques in an environment in which they were comfortable, less stressed and able to submit their best demonstration. The students had to practise the techniques continuously to achieve the best technique video and they were able to work in groups and correct each other as they proceeded. The students, as the peer evaluators, also had to understand the techniques and the procedures and theory related to the techniques.

For the lecturers, using the peer video assessment workshop changed their role to that of moderator rather than examiner. Moderation was done online and within a set time period.

**Figure 1: Learning technologies allow more possibilities

Student overview

Second-year Physiotherapy classes generally consist of between 70 to 75 students, although the new intake policies of both the Faculty and the University will result in this number increasing in the future. Students are required to learn practical techniques in their second year and to use this knowledge and these skills when they are introduced to the clinical platforms in their third year of study. The Physiotherapy Science 272 module runs throughout the year and students are taught a minimum of one to three techniques per week.

Other relevant role-players

The blended learning coordinator (BLC) trained the lecturer to set up and control the SUNLearn Workshop activities and then guided the lecturer through the creation of the first five SUNLearn Workshop activities. The BLC also tested and set the software and video settings. Also on hand was the learning technologies support team, which assisted the lecturer with any problems experienced, whether by the lecturer or the students. Lecturers in the Department assisted with supplying content, such as marking guides and video examples of techniques. Some lecturers, together with postgraduate students, aided with moderating students' submissions and feedback.

Learning and assessment activities

Educational approach

Four ways of learning (Laurillard, 2012) were identified for the peer video assessment workshop activities:

1. Acquisition: Students were taught the techniques through demonstrations during their practical classes and were provided with video demonstrations of the techniques.

2. Practise: Students were expected to practise the techniques in class, with feedback provided by the lecturer, and they were expected to practise in preparation of submitting their videos via SUNLearn Workshop.

3. Collaboration: It was observed during video submissions and informal discussions with students that they used each other as simulated patients, working in groups of between two and four. This collaboration enabled

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them to guide and correct and thus learn from each other.

4. Production: By creating a video of their techniques, students could review the footage and rectify any mistakes made prior to submitting their videos, thus ensuring that they improved the quality of their demonstrations. Through this exercise, they built a portfolio of evidence while developing their competence in specific skills.

Learning and assessment activities

SUNLearn Workshop activities were created for each technique that the students were taught in the Physiotherapy Science module. A rubric used in the FUSPE environment was uploaded to guide the peer evaluators. To assist the students further, the lecturers in the Department created videos of themselves demonstrating the techniques.

The students were introduced to this type of assessment by the lecturer, who explained what was required of them at the start of the module. The mark allocation towards their final-year mark was also shared with them, as were the technical criteria required for successful submission. Each activity had an approximate two-week time frame. Submissions were made within a week of the practical session in which a technique was taught, followed by a week in which the assessments were completed. Moderation by the lecturers and postgraduate students had to be completed before the end of the term.

In the first quarter of the year, the students were required only to demonstrate the techniques taught during that week. The rubric and example videos were made available to the students before they made their submissions. The peer evaluators were required only to watch the submitted videos and to assign grades per the rubric. They could also watch the lecturers' examples as a guide for marking.

As of the second term, the rubric was not made available to the students during the submission phase of the assessment activity and the peer assessors were required to include feedback to the students. The weight for a submission was 90% and for an assessment 10% of the total activity mark. In the Workshop activity on SUNLearn, the submission mark was the grade given to a student by a peer. The assessment mark was a grade determined by an algorithm within the system that graded a peer on how well she or he marked a student, i.e. the grade had to fall within the assessment curve generated by the class submission grades.

After the assessments were completed, the lecturers and postgraduate students were assigned videos to moderate. The weightings of the moderated grades were higher than those of the peer evaluators.

Although the trial experienced some teething problems, these resulted in the development of technical guidelines and the identification of free software that students could use to format their videos in order for submissions to be viewed on any device.

Feedback practice

A comprehensive rubric was used from the beginning and students could easily diagnose where they went wrong. From the second term, students were required to give feedback on the videos that they evaluated. This meant that all students received feedback on their work.

Student self-regulation

Students were able to use the practical lecture venues whenever they were available to them but they were not restricted to use only the venues in the Department. Some students preferred the privacy of their own homes or dormitory areas.

Learning environment

Learning setting

Learning was threefold. Firstly, students learned the techniques in the practical lecture venues while working in groups to practise the procedures and then making recordings when they were satisfied that they had mastered the techniques. Secondly, students also learned from one another during this time, giving advice and feedback to others who were practising. Thirdly, students learned while watching and then evaluating other students' recordings.

Collaborative settings

While practical examinations were always individual tasks, the peer-assessed video workshops allowed for students to collaborate when practising and

Peer-assessed video workshops in Physiotherapy Science 272

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recording their video submissions.

Technology resources

Students used their own cell phones and other recording equipment to make the videos for submission. They were supplied with technical specifications for the length and time of the videos that were uploaded for each of the workshop activities.

To edit their videos, students were supplied with a free version of Format Factory, which they installed on their computers or laptops to convert the video formats to .mp4. This was required because older Android devices and video software cannot play Apple's M4V video format. A video tutorial was created and uploaded onto SUNLearn to show students how to use the software.

Table 1: Specifications for the video settings

Video specifications	
Video format	.mp4 (use the Format Factory to convert your video to .mp4)
Resolution settings	640 x 490
Video length	5 minutes
Video size	< 100 MB

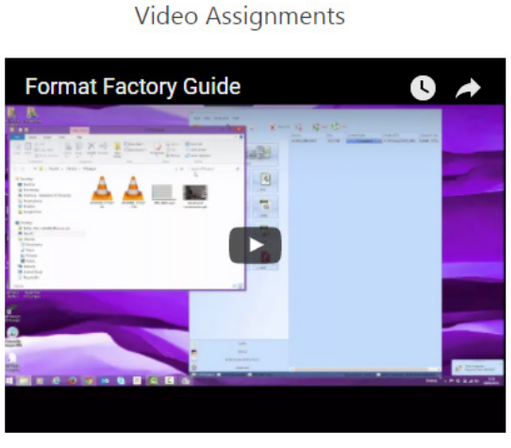

Figure 2: Screenshot of the Format Factory video guide made available by the BLC

The SUNLearn Workshop tool was used as the peer assessment instrument. This tool worked in four phases. In the first (setup) phase, the SUNLearn Workshop tool and rubric for assessment were set up. In the second (submission) phase, students submitted their videos (they usually had a week to do so). Once everyone had submitted their videos, the third (assessment) phase started, with students grading each other's work using the rubric provided. In the fourth (grading) phase, the lecturer could add grades and then finalise the peer assessments.

Support challenges

Students were supported by the lecturer, the BLC and the SUNLearn support team if any issues arose. Issues relating to the formatting of videos made on Apple products required some extra setting changes on the Format Factory program. A video user guide for Format Factory was created by the BLC to assist students to format their videos.

Student experience

Student feedback on the learning experience

No formal feedback process was conducted at the time that this report was written but informal conversations with the students indicated that, although they saw this learning experience as a lot of work, they understood that it forced them to practise and learn the techniques that they will be using in a clinical setting.

Assessment impact

Student participation improved after it was decided that the grade allocation would contribute to the continuous assessment marks of the students. It was expected that the students would generally grade their peers with high scores but this was not the case, especially after they were asked to support their scores with compulsory feedback, which was moderated. The lecturer noted that the feedback was both critical and honest.

General

Opportunities

Based on the acceptance by the students of using this manner of assessment, an opportunity to continue with even more near-peer assessment could be investigated by asking third-year students to assess second-year

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students. In this way, the lecturers could assess the third-year students' understanding of the techniques versus that of the second-year students.

Challenges

The biggest challenge was obtaining buy-in from the students to complete the tasks on time. This improved drastically over time but more needs to be done to encourage the students to adhere to the task times.

Advice

Colleagues in the Department of Physiotherapy have committed to using this method of evaluation for the third-year students. Keeping the format the same will result in fewer problems being experienced by both the students and the lecturers.

Other concluding thoughts

The project is in the process of being completed and the data, such as the mark comparisons between physical FUSPEs and online FUSPEs, will be analysed through a formal research project. Participation by students has increased and students have reported that, although it did take a while to do the recording, most time was spent on practising the techniques to get them correct. This is in keeping with the current evidence of best practice that clinical skills are best learned when repetitive practise with immediate feedback is promoted (Kneebone, 2005).

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Developing active learning methods in International Law

Faculty of of Law | Department of Public Law

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Context

Subject area

The module International Law 341 forms part of the LLB and BAccLLB programmes on third-year level, with classes consisting of more or less 180 students. It is presented as an introduction to international law. One of its subfields – international human rights law – is aimed at students with little or no prior knowledge in these fields. The objective of the module is to give students a basic working knowledge of international law and international human rights law, i.e. the rules governing interstate relations in the international community, the concepts, principles, sources and subjects that are relevant to this specific field of law, and basic human rights principles. The module aims to provide students with insight into the interaction between this particular area of law and the political context in which it exists. The interaction between international law and its development challenges students to think critically about the role of international law.

Intended learning outcomes

The aim is to not only to increase critical thinking around international law and, more specifically, human rights law but also to create a higher sense of learning where students retain the information longer. Another outcome is to help achieve a sense of equality in the classroom where students have the opportunity to learn in different ways and to show their potential through various forms of dynamic assessment.

Advantages associated with the integration of technology

International Law 341 is a writing-intensive module with a flexible approach to assessment. The learning strategy focuses on active learning and a dynamic assessment methodology (assessment for learning rather than assessment of learning). The idea behind this learning strategy is that most of the transfer of information takes place outside the classroom (through reading, watching online lectures and working on various related assignments) while the intense part of learning takes place in the classroom where the lecturer and students engage with the materials through discussion and questions.

Other relevant role-players

Apart from the lecturer, the educational team for International Law 341 consists of one research assistant and two tutors. Their main duty is to support students academically and to lend technical and administrative help if needed.

Learning and assessment activities

Educational approach

Sandhu, Afifi and Amara (2012) argue that interactive teaching styles or active learning leads to increased student satisfaction, better achieved learning outcomes, deeper learning and improved knowledge retention, since students' attention degrades after between 10 to 30 minutes of lecturing (Horgan, 2003). To reap the full benefit of active learning, lecturing also has to be coupled with a suitable assessment structure. Smaller, more frequent assignments can be used to track the progress of students' understanding and to serve as potential learning experiences for them.

Learning and assessment activities

There are two scheduled face-to-face sessions per week. One of these sessions is used for a traditional lecture supported by a Prezi or PowerPoint presentation, while the other is used for either a traditional lecture one week or an interactive class the other week.

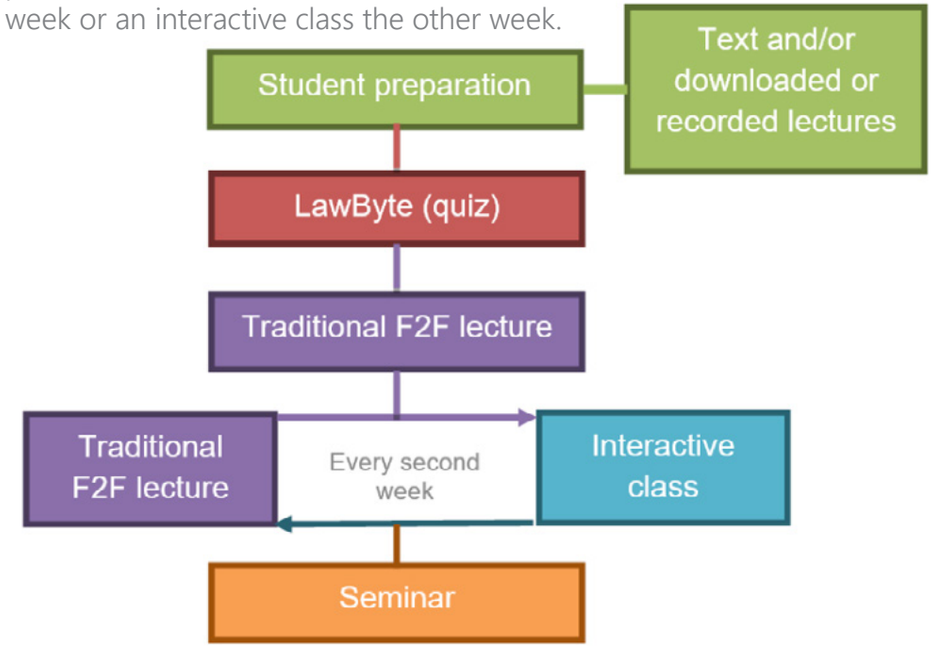
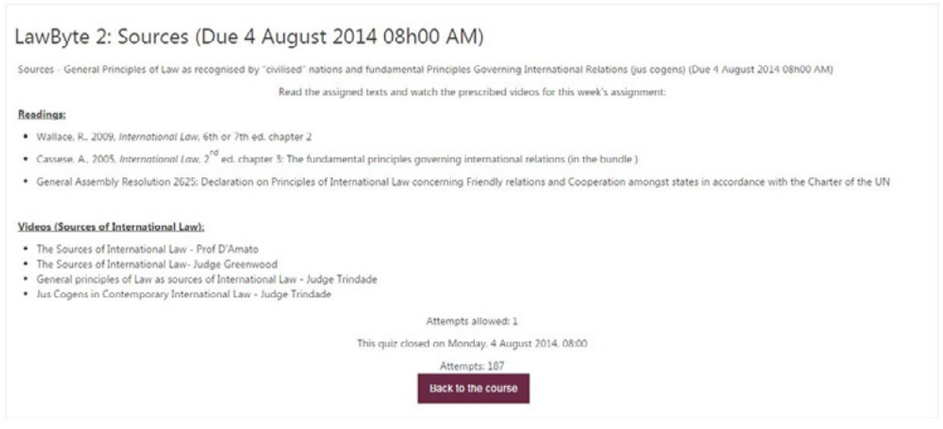


Figure 1: Structure of the module

For the interactive class, students are divided into groups of four to five and the facilitator presents shorter explanations based on the results of that week's LawByte exercise (an online quiz), which all students had to complete. Multiple choice and case scenarios also form part of this interactive class and low-tech clickers (colour cards) are used to identify the answers or scenarios that each of the groups chooses.

Apart from the above-mentioned lectures, students also attend one seminar (tutorial) session per week.

In preparation for a specific week's classes, students study texts and other materials, such as downloadable lectures and videos (from http://legal.un.org/avl/lectureseries.html) and then complete a LawByte (online quiz) before the first class of that week. Students are advised to read and watch the online videos before attempting the assessment, as they have only one attempt but no time limit.



LawByte 2: Sources (Due 4 August 2014 08h00 AM)

Sources - General Principles of Law as recognised by "civilised" nations and fundamental Principles Governing International Relations (jus cogens) (Due 4 August 2014 08h00 AM)

Read the assigned texts and watch the prescribed videos for this week's assignment:

Readings:

- Wallace, R., 2009, *International Law*, 6th or 7th ed. chapter 2
- Cassese, A., 2005, *International Law*, 2nd ed. chapter 3: The fundamental principles governing international relations (in the bundle)
- General Assembly Resolution 2625: Declaration on Principles of International Law concerning Friendly relations and Cooperation amongst states in accordance with the Charter of the UN

Videos (Sources of International Law):

- The Sources of International Law - Prof D'Amato
- The Sources of International Law- Judge Greenwood
- General principles of Law as sources of International Law - Judge Trindade
- Jus Cogens in Contemporary International Law - Judge Trindade

Attempts allowed: 1

This quiz closed on Monday, 4 August 2014, 08:00

Attempts: 107

Back to the course

Figure 2: Example of a LawByte on SUNLearn

Each LawByte contains a set of general questions. The purpose of the quiz is to test how much of the concepts of that week's work students understand and where more guidance is needed from the facilitator. At least four full sessions of class are used for LawByte-related exercises. During these interactive sessions, the correct answers of that specific week's quiz are given and discussed in class. The 10 LawByte exercises contribute 30% to the final mark and students must submit 9 out of the 10 assignments to obtain the mark.

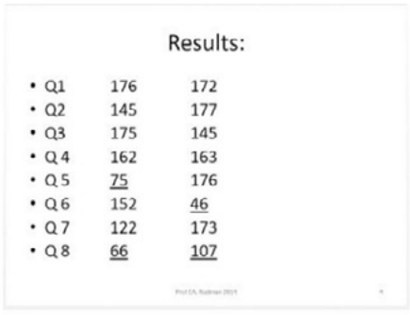
Attendance of the seminars is obligatory. The seminars focus mainly on relevant cases and other important topics that are discussed in the lectures, LawByte exercises and prescribed materials. The first seminar requires students to create a mind map and submit it online. The consecutive seminars require write-ups of one to two pages for each seminar. These write-ups are handed in as hard copy (typed and printed) to the seminar assistant at the time of a seminar. Although the write-ups are not marked, they are not accepted if they do not show that students have undertaken the required tasks and attempted to answer the questions put forward. All students have to participate in 9 out of 10 seminars and submit write-ups for 9 out of 10 seminars to obtain final marks. The first seminar assignment, the mind map, is an obligatory submission for all.

Difficulties:

LB 1:
- Universality of treaties
- Constitution of the International community

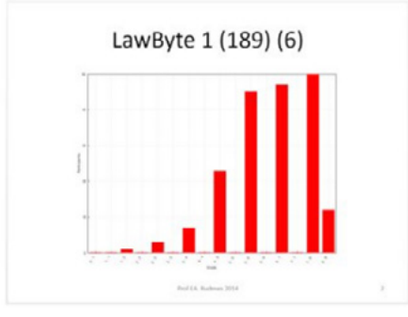
LB 2:
- How does a norm gain the status of Jus Cogens
- The interconnectedness of the jus cogens norms

- Active session next week Wednesday



Results:

Q1	176	172
Q2	145	177
Q3	175	145
Q4	162	163
Q5	75	176
Q6	152	46
Q7	122	173
Q8	66	107



LawByte 1 (189) (6)

Figure 3: LawByte result analysis for an interactive class

As indicated earlier, International Law 341 is a writing-intensive module, which means that students' writing is at the centre of the teaching and learning in this course. The final learning and assessment opportunity is the research outline and the research paper. These two assessments are interrelated and follow on each other. The aim of the research outline is for

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students to design a suitable framework that assists them to conclude the research paper successfully. Students' ability to demarcate, define and plan a research project can be evaluated through this. Students choose their topics, critically analyse the subject matter and put forward preferably one research question and a corresponding hypothesis that frames the issue (or issues) at hand. The research topics are generally broadly framed and it is the students' task to limit the area and explain how they have decided to approach the topic. The outline acts as a foundation for the research paper, for which students have to apply the norms and principles that have been engaged with during the semester to a real-case scenario. The more that analytical facts and deep understanding are expressed in the research outline, the easier it will be to undertake the research paper and to execute it successfully.

The research outlines are assessed by both the students (in a peer review) and the lecturer (in an instructor review). For the peer assessments, the workshop tool on SUNLearn and digital rubrics are used. Students are randomly allocated into groups of four. All grading is done anonymously. Clear assessment criteria are given and these, along with the rubric that is used, are discussed in detail with the students beforehand. The average grades that students receive from their peers count 20% towards the final grades for the outlines and the grades of the lecturer add the other 80%.

The research papers are submitted and graded digitally through the Turnitin assignment link on SUNLearn and the rubric tool that forms part of this link. The final grades of the research papers are made available in the gradebook on SUNLearn.

In 2016, it was decided to add a final test at the end of the semester. There were several reasons for this but the most important was that, during 2013 and, increasingly, during 2014, there were indications that students were not approaching the online quizzes in an honest way: they were using different Excel spreadsheets and screenshots with the correct answers indicated. Initially, the test was approached as a 'normal' open-book test written in a 'normal' venue where students brought their compilation of international treaties with them. However, as the #feesmustfall protests gained traction during the latter part of 2016, the issue of resources or the lack thereof amongst students became a focal point. Students indicated that they were not financially able to buy the compilation of international treaties as it was very expensive (it is published by a foreign publishing house) and were therefore at a disadvantage. To give all students an equal opportunity, the test was therefore moved to one of the computer laboratories on campus. A secure network with no access to resources outside the University's network was established and all basic documents were made available through SUNLearn.

Figure 4: Example of a digital test environment

Learning environment

Content and technology resources

In this module, the following learning technologies were used to support teaching and learning:

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Table 1: Learning technologies used for the learning and assessment activities

Learning and assessment activity	Learning technology used
Videos for student preparation	UN Audiovisual Library of International Law (http://legal.un.org/avl/lectureseries.html)
LawByte quizzes	SUNLearn quizzes
Presentations for face-to-face lectures	Prezi or PowerPoint
Interactive sessions	Low-tech clickers
Research outlines	Workshop tool
Research reports	Turnitin assignment tool and GradeMark
Digital tests	SUNLearn with restricted network environment

Student experience

Student feedback on the learning experience

Although no formal feedback was conducted with regard to the active learning and dynamic assessment, informal feedback was very positive. From the lectures' side, there was a general feeling that the grades were higher, although throughput rates remained the same.

General

Other concluding thoughts

Redesigning the module to include more active learning opportunities led to deeper learning and engaged the students more with the content.

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The use of Explain Everything to create video lectures in the context of flipped learning

Faculty of Science | Department of Physics

Module: Physics 154: Introductory Physics for Biological Sciences
Lecturers: Prof Brandon van der Ventel bventel@sun.ac.za & Prof Richard Newman rtnewman@sun.ac.za
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Context

Background overview

Physics 154 is offered by the Department of Physics in the Faculty of Science. It is referred to as a service course since the majority of students who do this module are registered for BSc Human Life Sciences and will thus not continue with Physics after their first year. The number of registered students annually varies between 700 and 800. Figure 1 below gives a typical breakdown of the programmes that these students are registered for.

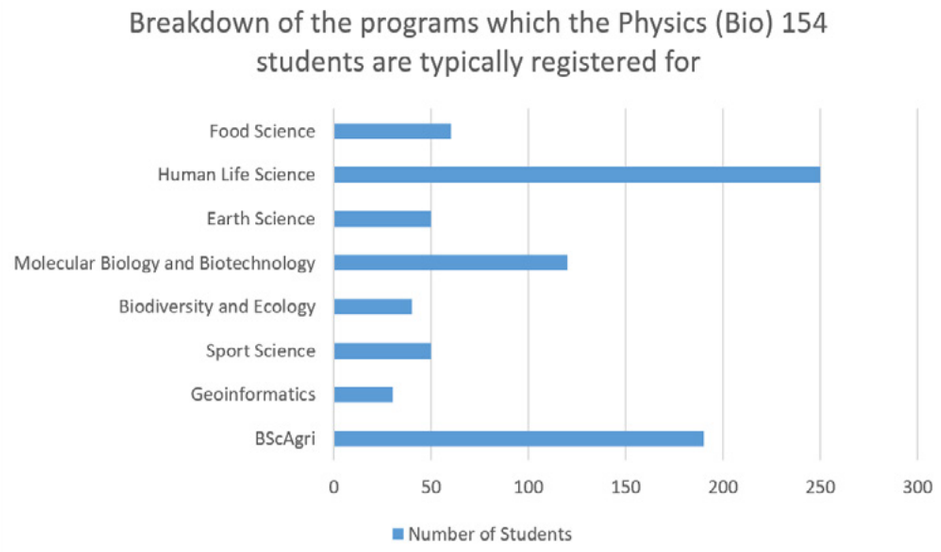

Figure 1: Breakdown of the programmes that students in the Physics (Bio) 154 module are registered for (according to 2016 data). The BScAgric programmes are all shown as one in the above graph.

Topic and intended learning outcomes

Physics 154 is a non-calculus-based Introductory Physics module mainly for students in the Biological Sciences programmes in the Faculty of Science. These programmes include BSc Human Life Science, BSc Biodiversity and Ecology, BSc Molecular Biology and Biotechnology and BSc Sport Science. The curriculum covers topics such as heat, sound, electricity and magnetism.

Established practice

In the current setup, each language group (Afrikaans and English) has three lectures per week. In addition, four tutorial and four practical sessions are spread over the semester.

During the tutorial sessions, students complete a set of problems. Tutors are available throughout the afternoon to assist the students with this. The theory covered in the problem sets is discussed during the preceding lectures. At the end of every tutorial, students write a 45-minute test that contributes towards their final grade.

During the practical sessions, students complete a specific prescribed experiment. These sessions take place in the laboratories and not in the lecture venues. Students usually work in groups. Again, students write a 45-minute test after the completion of each practical.

The challenge

The use of the app Explain Everything in this course forms part of a larger research project that was started in 2012, two years after the iPad was introduced (Apple launches iPad, 2010). By then, the adoption of the iPad in school classrooms was in full swing and a natural question arose: "What impact can the iPad have in the Higher Education environment?" To aid in answering this question, the lecturers of this module, Prof Brandon van der Ventel and Prof Richard Newman, proposed a four-component model for iPad implementation (Van der Ventel & Newman, 2014). In this model, the use of Explain Everything (https://explaineverything.com) was identified as the most suitable app for the flipped learning component.

As a starting point, the lecturers decided not to flip the complete course, however, but rather to start small to investigate the pedagogic value of this app.

Advantages associated with the integration of technology

Explain Everything is an app originally designed for the iOS operating system on Apple devices but is now available on Chrome, Android and Windows devices as well. It has a wide range of features. It can be used to import photos, videos and files, which can then be annotated and moved around. All these actions are recorded onto a timeline that can be converted into a video. Voice-overs to the actions can also be added. Alternatively, a blank canvas can be used to create drawings from scratch or to do step-by-step

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calculations and record the explanations as the calculations are done.

Explain Everything thus provides numerous possibilities for the development of supplementary resources that students can access 24/7 and that allow them to study at their own pace. It can also be used as part of a flipped learning approach.

Learning and assessment activities

Educational approach

The lecturers' motivation for using Explain Everything was to test a flipped learning model. The concept of flipped learning is based on the idea that traditional classroom activities need not be confined to the physical room where the students and the lecturer meet for a fixed time (Lage, Platt & Treglia, 2000). Instead, the flipped learning model relies heavily on the World Wide Web, recorded lectures and narrated PowerPoint slides. The advantage is that students then have access to the learning material 24/7 and can study at their own pace. In addition, contact sessions, i.e. lectures, can focus on the application of concepts rather than simply on the transfer of information.

As mentioned, the lecturers decided that to follow a complete flipped approach for a module with such a large number of students at first-year level would be a high risk. They therefore started by creating supplementary resources to complement the existing lecture notes and prescribed textbook. They then moved on to 'flip' specific sections of the Physics 154 module.

Learning activities

The lecturers' strategy was to use the app to record an entire lecture using the text, multimedia and voice-over functions of the app. In other words, the same lesson that was delivered in class became available as an .mp4 file on SUNLearn. Here one of the great features of this app should be mentioned, namely that one can record hand-written notes together with a voice-over. In the context of Physics, this is very advantageous, as long algebraic derivations can be presented in a lesson so that students can see the actual equations being written and simultaneously hear the lecturer's voice. Since it is a recording, students can pause and rewind it, thus getting a much better understanding of algebraic derivations as compared to just looking at the static text (of class notes) and trying to remember what the lecturer said in class at a specific algebraic step. The lecturers recorded an entire set of lessons covering the Electricity component of the curriculum.

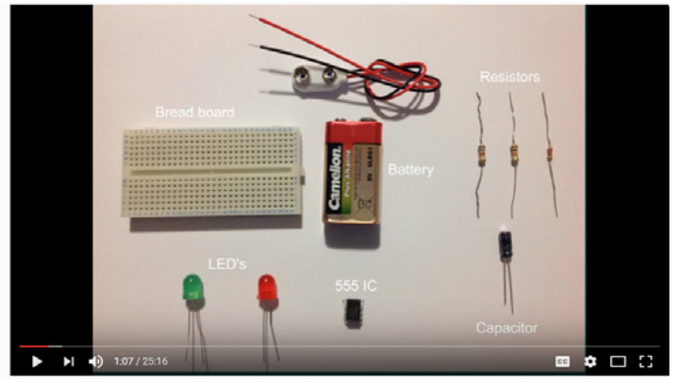

Figure 2: Screenshot of a video made available to students

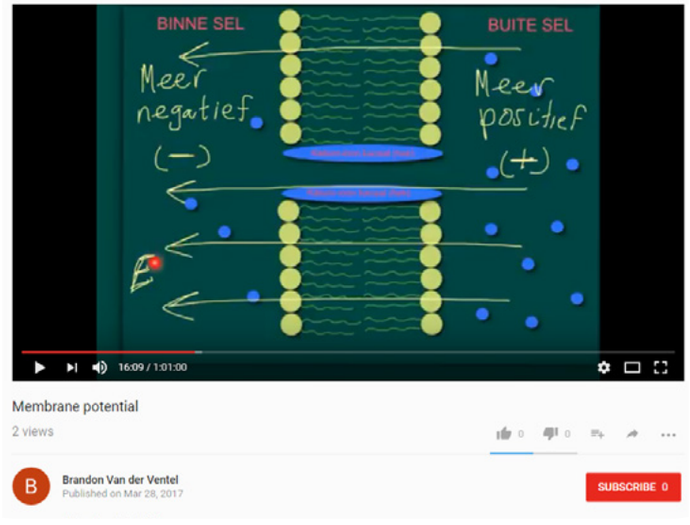

Figure 3: Screenshot of a video made available to students

The use of Explain Everything to create video lectures in the context of flipped learning

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Despite students having access to the recorded lectures, there was no drop in class attendance. Furthermore, in the lecturers' experience, the true advantage of these video lectures recorded with Explain Everything lies in (i) reinforcement and (ii) offering a safety net. Since the recordings are an exact duplicate of what was said in class, students could review a particular section or concept at will as if the lecturer were present. In addition, it offered a safety net to those students who missed a lecture.

Practicals form a very important part of the course. Two of the four practicals specifically lent themselves very well to the use of this app, as the lecturers could include pictures and videos of the apparatus and the screen recordings of the data analysis when creating supplementary material. Students could thus run through the entire practical before coming to the laboratories. The lecturers refer to these videos as "virtual practicals". In addition, one of these practicals (the RC-circuit practical) was traditionally seen as the most difficult, as students had no prior knowledge of the concept. Providing students with resources before they came to the laboratory greatly assisted in their preparation for this practical.

The lecturers eventually decided to implement a flipped learning component. They were very cautious as to which topic should be flipped. Their choice of the RC-circuit was largely motivated by the constant mantra of students in this course of "Why must I do Physics?!" It is important to bear in mind that the majority of students in this course are enrolled for programmes in Biological Sciences (Figure 1). The lecturers realised that they could flip the theory of the RC-circuit and focus in class on the biological application of the RC-circuit, namely the membrane potential. To ensure that students seriously studied the video lectures on the RC-circuit theory, they were told beforehand that they would be tested on this topic in their examination.

Here the lecturers could see the advantage of flipped learning, as it created space in the curriculum for more application of the theory and thus increased the standard of the academic offering. Furthermore, students could better see the rationale of doing Physics even though they were studying Biological Sciences. It was a great joy to the lecturers when they noticed students consulting their Biology textbooks during the Physics tutorial on this topic.

Learning environment

Learning setting and content resources

The formal lectures were given in the two big lecture theatres and the practicals and tutorials in three laboratories. All the content for this course was made available via SUNLearn, including the PowerPoint lectures of both lecturers and the video lectures created with Explain Everything.

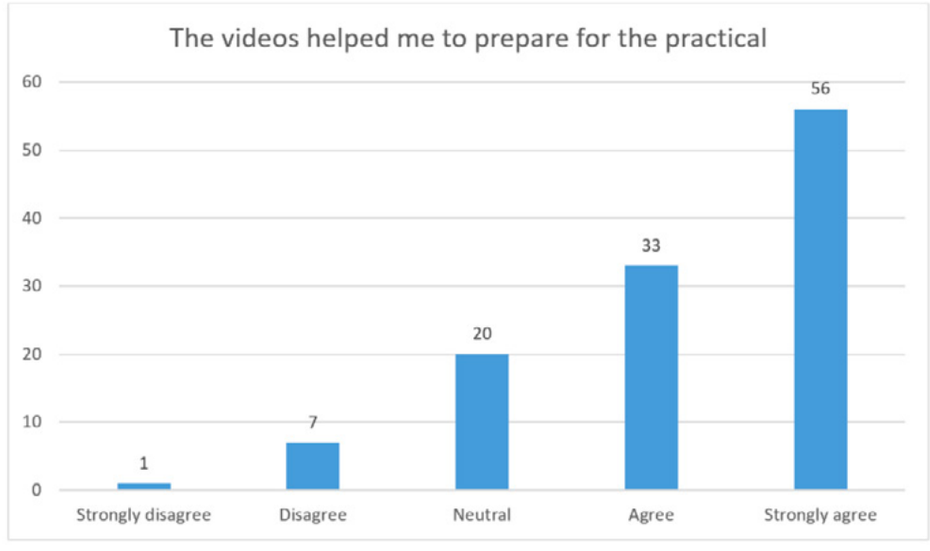
Technology resources

The Explain Everything videos were created on the lecturers' iPads. Students needed access only to the SUNLearn module to make use of these materials.

Student experience

Student feedback on the learning experience

The lecturers launched a survey on SUNLearn to get feedback from the students regarding the Explain Everything videos. Figure 4 below summarises the Likert scale questions while Figure 5 represents some open-ended student feedback.



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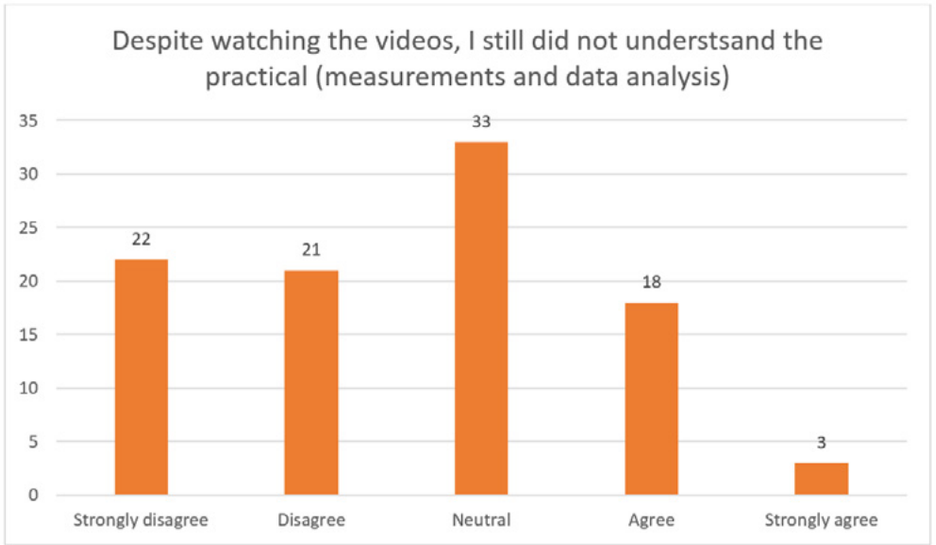

Figure 4: Summary of student responses to the Likert scale survey questions

General

Other concluding thoughts

The iPad and the Explain Everything app worked seamlessly and there were no problems in producing the video lectures. It is important to upload videos to SUNLearn in .mp4 format so that they are accessible to all students regardless of the device on which they view them.

When the lecturers started producing the supplementary lecture videos, they copied content from the existing lecture notes (the PowerPoint slides). They could then easily add voice-overs. This ensured that the videos were very similar to the actual lectures, which was aligned with their aim of creating the supplementary resources to reinforce concepts and to serve as a safety net for students who might have missed a lecture.
As Apple product users, the lecturers used a Bamboo Stylus to write on the screen. For the future production of videos, they will use the iPad Pro and the Apple Pencil. The Apple Pencil allows one to write equations at normal speed and the iPad Pro has palm recognition, which is a very valuable feature when using this app.

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Using Kahoot! to enhance the learning experience in Chemistry 176

Faculty of Science | Department of Chemistry and Polymer Science

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Learning activity:
The enhancement of student engagement in contact sessions using a gamified activity

Learning technology:
Kahoot!

Context

Background overview and topic

Chemistry 176 is an introductory Chemistry module offered by the Department of Chemistry and Polymer Science to first-year students in the BSc Extended Degree Programme. On average, approximately 150 students who do not meet the minimum admission requirements for their chosen programmes in either the Science or Engineering faculties enrol for the course each year. The students are divided into three lecture groups with two groups receiving instruction in English and the third group receiving instruction in Afrikaans.

The Chemistry 176 curriculum focuses on establishing a basic knowledge of fundamental chemical principles, including general atomic theory, acid-base theory and chemical equilibrium.

The timetable consists of three lectures and a three-hour tutorial/practical session each week. Formative assessment activities in the module include spot tests in class, tutorial tests and practical reports.

The challenge

The only way in which the lecturer or students could gain feedback on the students' understanding of new content during formal contact sessions with students was through spot tests and tutorial tests. Two negative aspects of using these types of formative assessments are that (1) students feel pressured into "performing for marks" and (2) students receive delayed feedback on their understanding, as the lecturer first needs to grade their assessments.

Advantages associated with the integration of technology

Various technological resources provide the means to offer immediate feedback to students on their performance. They also create a bridge between the traditional setting of the classroom and the ever-increasing digital and technological world in which students are immersed (Oomen-Early & Early, 2015). Furthermore, game-based learning and gamification of learning have proved to be effective tools to enhance student engagement. This, in turn, can support the development of problem solving and critical thinking skills. Games have also been used to review class content effectively (Dellos, 2015).

**Figure 1: Learning technologies can provide immediate feedback to students

Learning and assessment activities

Educational approach

The digital gamified platform Kahoot! (https://getkahoot.com) was identified as one such technological resource that could assist in providing students with immediate feedback. Additionally, it would introduce a game element to the formal contact sessions in Chemistry 176. The aim was thus to enable students to evaluate their own understanding of content covered during class time in a more gamified environment as an alternative to the traditional spot tests and tutorial tests.

Learning activities

Kahoot! is a web-based application that is used to create multiple-choice quizzes or surveys in a game-like environment. Students can complete these activities using their mobile devices, including cell phones, tablets or PCs, as clickers to choose suitable answers. In contrast to traditional clickers, no financial input, such as buying clickers or associated software, is required. Kahoot! is available to the public for free and currently boasts user numbers of over 50 million, with the target group being the education

Using Kahoot! to enhance the learning experience in Chemistry 176

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sector (Wired UK, 2015).

Kahoot! aims to create a safe learning environment in which a quiz creator (the lecturer) introduces a new topic and then uses a quiz to engage students in critical thinking. Through actively participating in the quiz, students assess their own understanding of a topic and receive immediate, personalised feedback.

In a typical Kahoot! quiz, questions are created by the quiz creator with up to four possible answers. A time limit ranging between 10 and 120 seconds per question can also be set. Media, such as images and videos, can be inserted into questions and points are awarded for correct answers whereas an incorrect answer results in a 0 score.

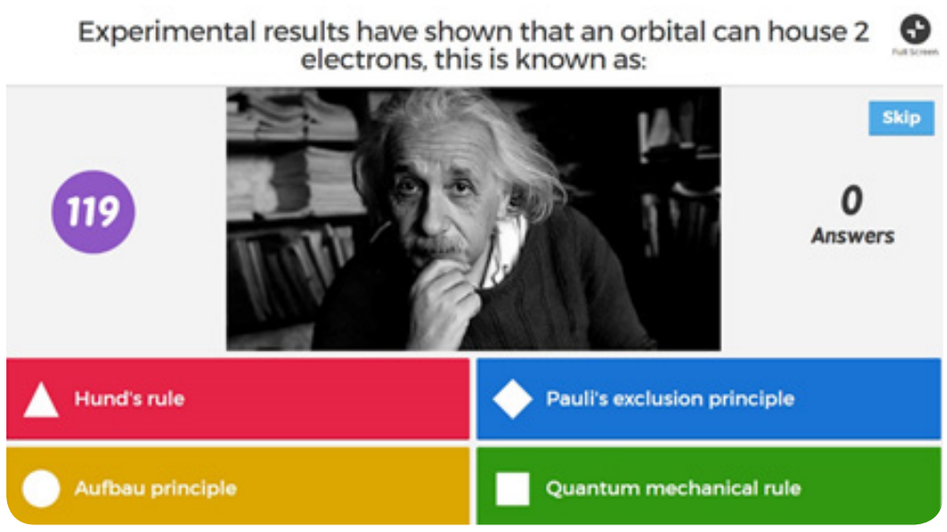


Figure 2: Screenshot of a question in Kahoot!

When a quiz is ready to be played, the quiz creator activates a game pin similar to an access key or password. Students enter this pin on the Kahoot! site to gain access to the specific game. When all students have entered the game pin and have chosen a name for themselves to play the game with, the quiz creator starts the game.

There is also an option for students to replay quizzes in "ghost mode", which allows them to revisit their mistakes in their own time and chosen setting.

Assessment activities

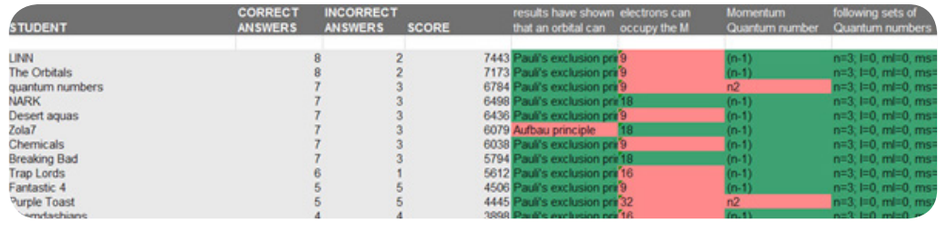
In the Chemistry 176 module, Kahoot! quizzes were initially used to enhance student engagement in class. They also allowed students the opportunity to evaluate their understanding of new concepts without the pressure of a test scenario.

The Kahoot! quizzes were eventually also incorporated into tutorial sessions. During these sessions, students were encouraged to participate in small competing groups, thus creating a peer learning opportunity and exploiting more of the competitive game element that Kahoot! offers. Students had to choose names for their groups, which added to the fun aspect of the activity. Students furthermore proposed questions used to create these quizzes and were thus even further engaged in the learning process. The quiz results were counted as a tutorial test mark in the calculation of the final semester mark for the module.

Feedback practice

After a question is answered, the correct answer is revealed and students are awarded points based on the correctness of their answer and on how quickly they selected their answer. A leader board keeps track of students with the most points after each round and of students "on a streak" when multiple questions are answered correctly. Students who do not perform well during a couple of questions are given a "come-back" message to act as encouragement.

Of critical importance is the data that are collected by Kahoot! Lecturers get access to information about questions answered correctly and to the time taken to answer questions. The data are summarised in Kahoot! in an Excel sheet that can be saved by the quiz creator. This provides valuable feedback to the lecturer as to the level of understanding of students without over-assessing students using formal test activities.



STUDENT	CORRECT ANSWERS	INCORRECT ANSWERS	SCORE	results have shown	that an orbital can	electrons can	occupy the M	Momentum	Quantum number	following sets of	Quantum numbers
LINN	8	2	7443	Pauli's exclusion pri		9		(n-1)		n=3; l=0, ml=0, ms=	
The Orbitals	8	2	7173	Pauli's exclusion pri		9		(n-1)		n=3; l=0, ml=0, ms=	
quantum numbers	7	3	6784	Pauli's exclusion pri		9		n2		n=3; l=0, ml=0, ms=	
NARK	7	3	6498	Pauli's exclusion pri		18		(n-1)		n=3; l=0, ml=0, ms=	
Desert aquas	7	3	6436	Pauli's exclusion pri		9		(n-1)		n=3; l=0, ml=0, ms=	
Zola7	7	3	6079	Aufbau principle		18		(n-1)		n=3; l=0, ml=0, ms=	
Chemicals	7	3	6038	Pauli's exclusion pri		9		(n-1)		n=3; l=0, ml=0, ms=	
Breaking Bad	7	3	5794	Pauli's exclusion pri		18		(n-1)		n=3; l=0, ml=0, ms=	
Trap Lords	6	1	5612	Pauli's exclusion pri		16		(n-1)		n=3; l=0, ml=0, ms=	
Fantastic 4	5	5	4506	Pauli's exclusion pri		9		(n-1)		n=3; l=0, ml=0, ms=	
Purple Toast	5	5	4445	Pauli's exclusion pri		32		n2		n=3; l=0, ml=0, ms=	

Figure 3: Screenshot of data feedback

Using Kahoot! to enhance the learning experience in Chemistry 176

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Learning activity:
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Student self-regulation

Students also receive immediate feedback on the questions that they answer and these answers can then be discussed further in class. This provides students with an opportunity to assess their knowledge on a topic without any of the pressures that are normally associated with formal assessments.

Student experience

Student feedback on the learning experience

Students give feedback at the end of each quiz on how they experienced the activity by answering several questions. This information is reflected anonymously to the quiz creator in an Excel sheet. Below is an example of such a report:

QUESTION	RATING
How fun was it?	5
Did you learn something?	1
Do you recommend it?	1
How do you feel?	
- Positive	0,625
- Neutral	0,25
- Negative	0,125

Figure 4: Screenshot of student feedback

Assessment impact

Students can partake in a learning activity that is not linked to a formal assessment, which relieves some of the pressure to "perform for marks" and creates a fun and engaging environment for learning. Many students now request weekly Kahoot! quizzes in order to test the content covered during the week.

General

Opportunities

The activities offered a more relaxed and engaging environment that was stimulating and goal-driven for the students.

Challenges and advice

Kahoot! works extremely well as a self-assessment tool, although connecting to the quiz uses Internet data, which has cost implications. The cost is minimal but it cannot be assumed or expected that all students can partake in the electronic version. It is thus good to have an alternative strategy, such as combining students into small groups to ensure that everyone can participate in the activity. When playing the game individually, students can also be encouraged to participate by writing down their answers for a question and checking whether the answers are correct. They can then still participate in the discussions afterwards.

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Clickers for attendance and formative assessment

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Module: Old and New Testament 144
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Context

Subject area

Old and New Testament 144 serves as a second-semester introductory and orientating module about the study of Biblical narratives in the Old and New Testament within their respective socio-historical contexts. The nature of the narrative genre and ancient historiography, together with the use of appropriate methodologies, is studied. In the Old Testament section, the Deuteronomistic history, Ezra-Nehemiah and Chronicles are highlighted. In the New Testament section, the focus is on Acts (together with aspects of the Synoptic Gospels).

The challenge

In this module, class attendance is mandatory and contributes 10% to the continuous assessment mark. Traditionally, class attendance was taken using the paper-based method at the start of the class. Not only did attendance marks have to be input by the lecturer or tutor onto a separate Excel grading sheet but there was also a risk that the information could get lost. Students also misused the system by writing down their absent friends' names. The challenge was therefore to find a technological intervention that would make the process more user-friendly and convenient. The traditional paper-based approach was a purely administrative activity and did not provide a teaching or learning opportunity that contributed to the students' classroom experience. Part of the aim and challenge was to find a system that could also serve as an applicable teaching and learning activity.

Advantages associated with the integration of technology

The aim of the activity was to gauge students' understanding of key terms, concepts and ideas communicated in the prescribed material and the lecture. By using the Clicker system and viewing the analysis in the classroom, the lecturer and the students could instantaneously see where there were misunderstandings and misconceptions of the content that needed to be addressed. These could be addressed in the classroom by further discussions of the question and the correlating content.

As mentioned, class attendance is mandatory in this module and, in the past, was taken using the traditional paper-based method. In order to provide further incentive for students to participate in the learning activity, the Clicker analysis was used as an attendance tool. This was done by linking the Clicker participants to their student numbers, allocating them a general attendance mark for participating in the activity and uploading the attendance mark to the SUNLearn gradebook. The attendance mark allocated was not related to the students' answers, either correct or incorrect, as this aspect of the activity was to ascertain their attendance and not their understanding.

**Figure 1: Students completed a Clicker activity for attendance

Student overview

The student body consisted of 87 students and included first-year attendees and second-year repeaters. All these students had previously completed the Old and New Testament 114 first-semester module, which focused on a broad overview of the art and science of biblical interpretation and included attention to the text, context and reception of the Bible. The general topic regarding the Old and New Testament was therefore not completely unknown to the participating students.

Other relevant role-players

This module makes use of parallel-medium teaching, with lectures and

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tutorials divided into English and Afrikaans groups. In order to ensure that all the students have simultaneous class times, the English lectures take place at the same time as the Afrikaans tutorials and vice versa. Tutors – one English and one Afrikaans – are responsible for the tutorials, with one lecturer attending to both language-group lectures.

The blended learning coordinator (BLC) provided the lecturers and tutors with training and a written procedure on setting up the activity. Being older students, the tutors already had some experience with the Clicker system and were familiar enough with SUNLearn to navigate the activity quite easily after the one short training session and after being provided with the written procedure. The BLC also created and facilitated the introductory Clicker session with the classes.

The Clicker activity simultaneously took place in the lectures and tutorials on the appointed dates and at the appointed times and the tutors took responsibility for the activity during the tutorials.

The BLC also facilitated the downloading of the analysis and the uploading of the marks to the SUNLearn gradebook.

Learning and assessment activities

Educational approach

The analysis tool of the Clicker system provides the opportunity for the lecturers and tutors to see instantaneously how many students answer a question correctly and which wrong answer creates the most confusion. This proves to be a valuable tool, as it provides the opportunity to facilitate effective teaching and learning dialogue (Laurillard, 2012) in the classroom. Discussions between the lecturers and tutors and the students and amongst the students themselves help to resolve misunderstandings and misconceptions about the work whilst also providing the space for the students to reflect on their own learning process and progress and the lecturers on their teaching practice.

Learning activities

As most participating students were first-year university attendees, they were not overly comfortable with or adept at the SUNLearn learning management system and did not have a lot of experience of different technology-based activities. Through an informal classroom poll, students indicated that they had heard of the Clicker system on campus but that the overall majority had not previously completed such an activity and were unfamiliar with the process. Repeaters of the module had no obvious benefit of prior knowledge regarding the questions or the procedure, as this activity was newly introduced to the module.

**Figure 2: The first completion of a Clicker activity was guided and supervised

In order to ensure the effective and uncomplicated use of the Clicker system, the first completion of the activity was guided and supervised in the classroom by the BLC and the lecturer. Students were requested to connect to Maties WiFi, to complete the activity by using their personal cell phone and/or laptop or tablet and to follow the verbal and PowerPoint instructions provided. A few students did not have the necessary personal devices – as indicated by an informal poll taken by the lecturer at a previous lecture time – and those were asked to make use of their peers' devices or of the classroom computer at the lectern. In such instances, it was clearly communicated to these students to make sure that they were logged in on their own profiles in order to ensure that their participation and attendance were correctly documented.

With the completion of the introductory Clicker activity, the lecturers allocated four other dates for the activity based on the weeks available. The students were informed that attendance would not be taken at every classroom opportunity but that they would not know on which dates the activity would take place. As this was also being used as a teaching

Clickers for attendance and formative assessment

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and learning tool, the activity would not necessarily be completed at the beginning of a lecture but would take place at a content-appropriate time. In order to ensure that absent students could not falsely achieve an attendance mark, each Clicker activity was created anew and therefore had a new, unknown Clicker number with which the attendees had to sign in. The Clicker number was shown at the appropriate time in the classroom via PowerPoint and the students had only one minute to complete the activity, thereby limiting the possibility of students sharing the Clicker number with others.

After each activity, the analysis was discussed in the classroom and feedback was provided. Students had the opportunity to take part in this discussion by indicating if and how they struggled with the question and why they chose their answer. This created the opportunity for peer-learning and for students to further their understanding of the work. Each analysis was exported to an Excel sheet where the participants' student numbers were indicated. The participants received one mark each for the completed activity, regardless of whether they gave an incorrect answer or not, which was imported into the SUNLearn gradebook.

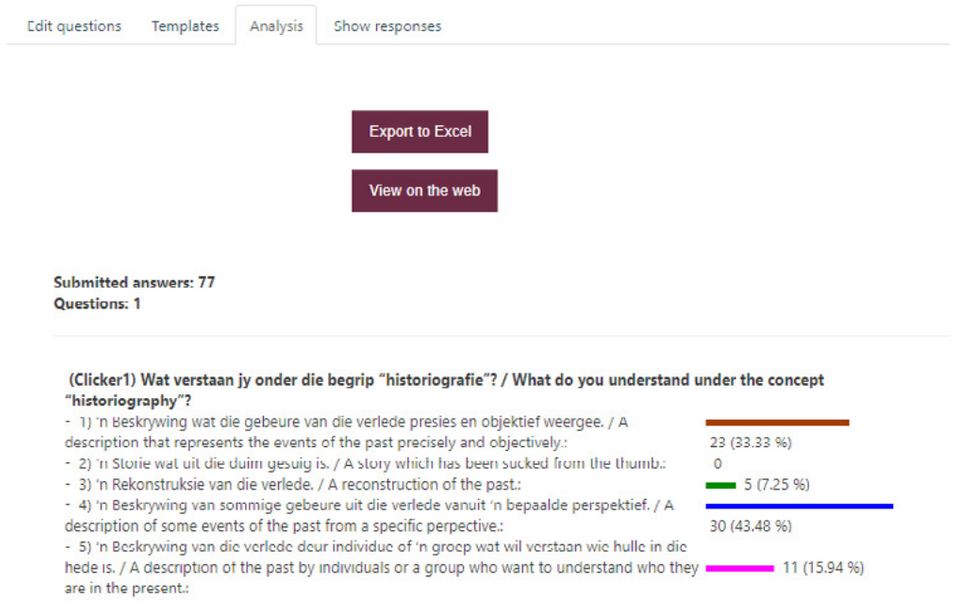

Figure 3: Screenshot of analytics received after the Clicker completion

Learning environment

Technology resources

The Clicker system was chosen as the main technological resource for multiple reasons:

1. It provides an analysis of the answers provided that can be used for immediate feedback and discussion in the classroom.

2. Every answer is linked to the student numbers of the participants and creates a database that can serve as an attendance sheet.

3. It is created on SUNLearn and lecturers and tutors therefore do not need to learn a completely new skill set or use an unknown resource.

4. There are no expenses associated with extra technological gadgets or high internet costs. Students can use their own devices and connect to the University WiFi.

5. The Clicker system is used throughout the University and campus-wide technological support and advice are available if needed.

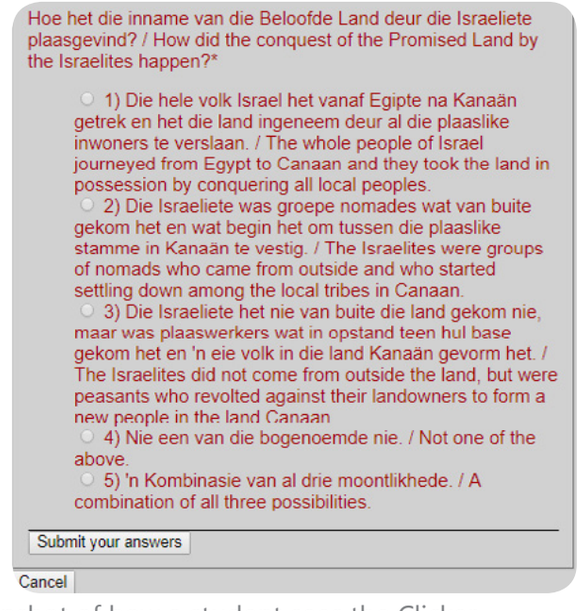

Figure 4: Screenshot of how a student sees the Clicker

Clickers for attendance and formative assessment

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Support challenges

The lecturers and tutors, with the BLC on standby, were available in the classroom to guide and assist students with any support challenges during the activity. The introductory session that enabled step-by-step assistance for the first activity provided students with a good foundational understanding of the use of the Clicker system. Students who had not attended the introductory session were a bit unsure of the process and needed some extra assistance to complete the activity.

The use of classroom computers and peer devices by students who did not have their own proved to be a bit problematic and some students felt rushed to complete the activity. One student used a peer's device for the completion of the activity and did not log in with his own student number. The student realised his error only when he checked the SUNLearn gradebook at the end of the semester but by then it was too late to verify that he had participated and he therefore forfeited the marks.

Student experience

Student feedback on the learning experience

In the introductory activity session, the students voiced their insecurity in using an unknown technological intervention and were worried that their inability to complete it correctly would result in their being unfairly penalised. Those who did not have their devices in the classroom on that day were very nervous of using their classmates' devices or the classroom computer. Due to the above-mentioned issues, the activity did take longer than one minute (it took approximately two minutes) and the students were sceptical of its efficacy.

Through classroom observation, the lecturers and tutors discerned a rising level of student comfort in later classes, which was reflected in the students' capacity to complete the activity in the allotted time. Informal discussions with students regarding the activity indicated that, although they preferred the quick and easy paper-based system, they understood the dual purpose of the activity and found it to be a helpful tool in the classroom.

General

Opportunities

The administrative element of this activity worked well and provided the necessary attendance information. The lecturers and tutors found the formative teaching and learning element of this activity to be very fruitful, providing insight into the students' understanding of the module content. The fact that misunderstandings and incorrect facts could be addressed instantaneously served to aid classroom discussions and, although students may not initially have perceived the benefit, it did seem to have a positive impact on their overall performance. A possible underlying reason for this positive impact (and an overlooked opportunity of the formative teaching and learning element of this activity) was that this approach addressed some questions that shy or quiet students may have had but were too afraid to voice in front of their peers.

Challenges

Although the gathering of attendance information was unproblematic, the uploading of accurate information onto the SUNLearn gradebook was not straightforward. For someone who is not familiar with the process, the different importing methods, along with encoding data and the use of verbose and non-verbose scales, can be very confusing.

Advice

The lecturers would give the following advice to those who want to implement a similar learning activity in their module:

- It is important that the questions used in this dual-purpose activity be unambiguous and short. This enables students to complete the activity in the allotted time and ensures that they receive their attendance mark and that they understand the question, therefore bolstering the learning element of the activity.

- If students use their peers' devices, the students need to be reminded to log on with their own student number in order to receive their personal attendance mark. One student in this group repeatedly forgot to do so and did not receive an attendance mark as there was no other way to verify his participation.

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- An introductory session is a valuable opportunity to provide step-by-step assistance and answer important questions. This promotes student support of the new approach and gives students the needed confidence to complete the activity successfully.

Other concluding thoughts

The Clicker activity worked well in this dual purpose, as it not only worked well as a technological administrative tool but acted as a formative activity that assisted students in reaching the intended learning outcome, namely the understanding of the module's key concepts, terms and ideas. One unintended learning outcome – which was not ascertained in this activity but is worthwhile exploring – is that of students' perception of the importance of class attendance. It can be argued that such a dual-purpose attendance system communicates the value of class attendance as more than an administrative grading exercise but rather as a continuous learning opportunity that cannot be replicated by simple studying.

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Student-created video assessments as an enabling heuristic

Faculty of Theology | Department of Systematic Theology and Ecclesiology

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Context

Background overview

Systematic Theology 421 and 444 are first and second-semester classroom-based modules that thematically follow on each other. Building on the different loci of systematic theology that were presented in the first three years of study, these modules aim to introduce students to some modern and contemporary theologians. The first-semester module (Systemic Theology 421) focuses on historical theological thinkers and trends of the modern landscape whilst the second-semester module (Systemic Theology 444) exposes students to contemporary theologians and their theological address of the current theological context. Both these modules focus on bringing students up to date with the theology of their own time and on students positioning themselves within the theological discourse.

Subject area

The first semester focuses on historical theological thinkers and trends that have contributed significantly to the above-mentioned systematic theology loci and on other theological themes. It also focuses on situating these theologians and trends within the broader theological landscape. The aim is to make clear how specific theological viewpoints link up with other viewpoints held by specific theologians or with trends and how these may be regarded as contributions within a continuous theological discourse. The background to the work of all these theologians and trends, their important publications and the central contents of their theology are discussed, with due account of criticism on their work and of the questions that this evokes, as is their influence on other theologians and theological trends.

The second semester has a slight thematic shift, with the aim of this module to expose students to the person, work and legacy of a number of living contemporary theologians (including South African theologians). Where possible, these theologians come to address the class regarding their own theology. The second part of the module addresses some important theological themes in contemporary theology, such as theology and religion(s), theology and the arts, and theology and science.

Intended learning outcomes

The intended learning outcomes focus on students' capacity to identify some of the most influential modern and contemporary theologians and theological trends and indicate their position within the broader theological landscape, to give a cursory account of the background, publications and theological contents of some of these theologians and theological trends, including their various views on the nature and task of theology, and to discuss important theological themes (e.g. theology and religion[s], theology and science, and theology and the arts) critically and in depth.

Established practice and the challenge

The two modules, although separate in grading and in credits, are thematically linked in their focus on modern and contemporary theologians and are structured in such a way as to complement each other and create an integrated view of the overall topic and of systematic theology in general. The challenge was to find a short summative assessment to help facilitate the creation of a cohesive bridge between the modules. The students did weekly summaries regarding the featured theologians and theological themes and the aim was to find some activity that did not expect further writing or repetition of what they had already completed. In order to encourage the high-order thinking of fourth-year students, the activity would also do well to include an element of creation, creativity, reflection and critical thinking.

Advantages associated with the integration of technology

In order to address the challenge, students were asked to create their own videos (both audio and video) or podcasts (audio only) of one to two minutes on any theologian not discussed during the first semester. In using this activity, the ideal was that it would help students think of different ways to engage their content form, not simply in the usual typed text and formulated textual argument. In other words, the use of video would invite them to think differently about what was important in the life, work and resources that they would gather about the particular person whom they wished to discuss and how they would convey this information creatively. It would also serve as a feedback bridge for the second-semester module by providing the lecturers with possible themes and persons whom they could discuss in the upcoming module or in the modules of the next year. Therefore, although the learning activity itself took place only in the Systematic Theology 421 first-semester module, the impact was much broader.

Student-created video assessments as an enabling heuristic

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By using another medium to communicate, different sets of academic skills, including creativity and critical thinking, were elicited. In creating these videos, the students had the opportunity to find ways of conveying their information engagingly and make it interesting whilst being short and to the point. Not only would they have to think about the content differently but they would also have to learn some new skills, such as narrative skills and basic technical skills (how to operate a camera, edit a video etc).

**Figure 1: The task engaged students with the content and taught them new skills

Student overview

The student body of Systematic Theology 421 consisted of 21 students who had completed the previous three years of systematic theology modules in the Bachelors in Divinity (BDiv) programme. Once the fourth and final year is successfully completed, students have the opportunity of enrolling for the Masters in Divinity (MDiv) programme, which focuses on equipping students for ministerial work in congregations. Students can also enrol for a general Masters in Theology (MTh) programme or one that has an applied focus (such as youth ministry or clinical pastoral care).

Learning and assessment activities

Educational approach

The learning activity served as an informal heuristic where students had to apply the higher-order critical thinking skills of analysis, evaluation and creation. By choosing their own topic based on their previous years' experience, reflecting upon it and creatively engaging with it in order to produce a suitable product to display this engagement, the activity demonstrated how learning orientation changes the way in which students think about the content that they engage with.

Learning and assessment activities

Students were required to create a video or podcast (of one to two minutes) individually for the last class of the semester. They could choose what they wanted to record based on the technology available and the skills that they had. Herein, students had to provide a short critical overview of the life and work of any academic theologian who was not discussed in the course but whom the students regarded as an important figure. They also had to provide a short analysis, evaluation and explanation of why they had chosen this specific theologian. These videos and podcasts, in their final form of a neat presentation, were played in the classroom by the lecturers and students.

The videos and podcasts accounted for 5% of the predicate mark, an incentive to participate in the activity. Although the lecturers allocated the final activity grade, students had the opportunity to provide feedback and comments to their peers.

Feedback practice

The students played the videos and podcasts in the classroom to the lecturer(s) and their fellow students. Feedback took place in a discussion format among all those present and focused on the narrative and communication skills in the presentation of the topic chosen within the allocated time. Students had the opportunity to respond to the feedback and discussion in that time but, due to the summative nature of the activity, could not change their product. The aim of the activity was not solely the allocation of a mark (hence the activity amounting to only 5% of the predicate mark) but also to compel students to engage with the activity and provide informal feedback regarding the module content.

Student-created video assessments as an enabling heuristic

Faculty of Theology | Department of Systematic Theology and Ecclesiology

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Learning environment

Support challenges

For some students, access to technology or persons who could assist them to learn the necessary skills was limited. In this regard, one can see the inequality divide coming into this learning experience. Some students flourished; others really struggled to do the basics. Scripting and language also proved to be barriers. Those students who felt comfortable writing a narrative, designing a plot or setting up a 'scene' tended to be more comfortable with the activity than those who just recorded a PowerPoint presentation with spoken words.

Student experience

The students generally seemed to enjoy it. Naturally, there were some students who, through their personality type or skill level, did not find such a public presentation easy or fun. However, it seemed that they enjoyed watching one another and felt that they may be able to contribute in a similar way in other forums (such as youth groups and church websites). By participating in the activity, they were also contributing to the module content and helping to create and inform it.

**Figure 2: Student assignments were used in future modules

General

Opportunities

By participating in a video or podcast activity, students had the opportunity to learn new skill sets. Narrative and communication skills were important in this activity, as students had to convey their message in a concise and effective manner. Technical skills, such as the operating of a camera and editing of a video, were developed and honed.

Through this activity, students also provided feedback for and input into the module content, which can be incorporated in the upcoming semester module (or the next year). Lecturers received valuable insights into students' perceptions and interests, which can be directly incorporated or simply inform the lecturers' teaching.

Challenges

Access to the necessary technology was a bit of an obstacle for some students and this influenced their enthusiasm in completing the activity and the quality of the product. Although the classrooms are equipped with desktop computers that have video and podcasting equipment, students had never used them or created their own videos or podcasts and did not have the necessary skill set to complete the activity with ease. In this module, the lecturer, who is an avid vlogger and is technologically capable, could jump in and assist where necessary.

Advice

Lecturers would do well to provide some gold standard examples. One should ideally spell out the expectations and the assessment criteria (in the form of a rubric) and give some clear guidance and advice about the video medium. A few 'worst case' examples (poorly produced, a weak narrative, simply reading a PowerPoint presentation etc) could also serve as a valuable teaching tool.

It is important to identify someone who has some technical skill and can be available to assist students with different creation aspects (recording a video, writing a script, dealing with audio, helping with basic editing, exporting a video etc). This could be either a blended learning coordinator or a capable tutor. Such a person should not only help the students to learn the skill and not to be put off by the technical requirements, but should also ensure that the video quality and the possible success of the activity is higher.

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