



# T&L@NAS Bulletin

November 2021


## From the editors

[Ina Louw](#)

This sixth issue of the T&L@NAS Bulletin is weird and wonderful. Weird because I had to do it on my own, since Rory needed breathing space to do the online teaching on the level he wanted to. Wonderful because we have a great variety of submissions.

The contributions came from NAS, EBIT, Health, Education and EMS. Many of our stories are still revolving about surviving the pandemic while teaching online.

Please grab a cup of tea (or your favourite beverage) and read our wonderful stories. We hope you would feel inspired and we invite you to contact these people if you want to try out what they did. You will be able to read about nudges, a home made light board, improved service by the FSAs, producing videos for low bandwidth, innovative curriculum renewal, using inquiry-based learning (IBL) when you teach, creative strategies for foundation phase math student teachers, intensive objective online assessment, two apps



made to teach community ecology, planning of compulsory and optional task in radiography, puzzle-based learning in radiography, using Bloom to enhance pedagogical content knowledge, Twitter as a teaching tool, dimensions of student well-being, a combined effort between teaching and community engagement, how to optimize your contact time, podcasts to improve work readiness, and finally perspectives from tutors about online teaching.

The next issue of the T&L@NAS Bulletin will be in 2022, but I am not sure who would be involved. It could still be me, as I am now on contract with the Faculty of Natural and Agricultural Sciences. I could be joined by the new EC for NAS, or Rory again, or even a bigger team. The future will tell. On that note, I want to thank [Keith Mankgane](#) from Creative Studios (EI) who did the desktop publishing. It has a new look and feel, but still has the lovely smell of success.

## Dimensions of student wellbeing


[Irma Eloff](#)

Dept of Educational Psychology

[#wellbeing](#) [#SDG3](#) [#SDG4](#) [#studentsuccess](#)

Student wellbeing has long been integrally linked to student academic success. But what supports student wellbeing during a global pandemic?

The Student Wellbeing@UP project has been ongoing since 2018 under the auspices of the office of the Vice-Principal for Teaching and Learning, prof Norman Duncan. Within this project, an [online survey](#) conducted early on in the pandemic



revealed that support from family, friends, and [lecturers](#) were pivotal and that students also prioritised wellbeing by spending time together and connecting online.

The students also relied on a variety of spiritual coping strategies to support their wellbeing. Subsequently, further data was collected by conducting personal interviews with undergraduate students.

*continued on page 2*

The T&L@NAS Bulletin aims to be a forum for sharing thoughts, ideas, and stories on teaching and learning across NAS and UP. In doing so, we hope to help foster a supportive and collaborative community where we can be inspired by the experiences and innovations, no matter how minor, of all our colleagues.

Editor: [Ina Louw](#) (Edu. Innovation) | Bulletin archive: [bit.ly/TLatUP](#) | Latest bulletin: [bit.ly/TLatUP1](#) | Latest resource list: [bit.ly/RSatUPUP](#)



The findings from this study was presented at the [2021 Flexible Futures conference](#) by Irma Eloff, Motlalepule Ruth Mampane, Funke Omidire and Sameera Ayob-Essop from the Dept of Educational Psychology.

This study detected the importance of emotional support, academic support, self-care, social interaction and a strong sense of purpose to ensure student wellbeing.



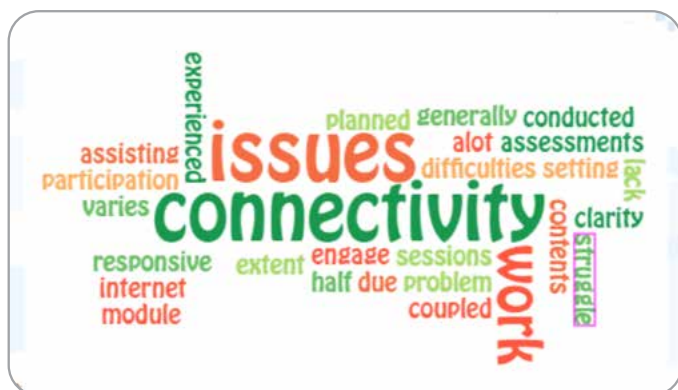
## Geography, Geoinformatics and Meteorology Perspective

#Tutorsexperiences



The unpredictability of a COVID-19-induced South African environment forced many in the higher education arena to pause and reconsider teaching and learning strategies. There was also a renewed urgency to critically engage with the nature of support that students would require during this emergency response online teaching and learning approach adopted by the higher education sector. It has been found that tutors and students frequently have negative attitudes towards online learning strategies. With this in mind, tutors in the Department of Geography, Geoinformatics, and Meteorology at the University of Pretoria focused on developing a questionnaire to capture tutor experiences in the wake of the COVID-19 pandemic.

A survey was conducted with 16 tutors to explore changes in their level of expectation, motivation and attitude as a result of their online encounters during the 2020 academic year. The nature of tutor and student support is a critical aspect and need more research, but our responses in terms of their perceived success can be seen in the word cloud.



**Acknowledgements:** Lecturers: Coetzee, Serena, Dyson Liesl, Davis, Nerhene.

Nesterenko, N., 2021. *Online tutoring flat concept vector illustration*. [image] Available at: <<https://www.dreamstime.com/online-tutoring-flat-concept-vector-illustration-distance-education-high-school-subjects-learning-smetaphor-remote-lessons-image18852174>> [Accessed 30 September 2021].



**Nkala Brian M,**  
LinkedIn: [Click Here](#)



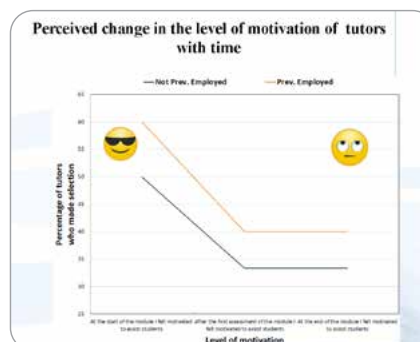
**Chinamale-Mwendera Violet**  
LinkedIn: [Click here](#)



**Rammopo Tsholanang**  
LinkedIn: [Click here](#)

Authors:

Relationships between tutors' experiences and changes in their levels of motivation, expectations and attitudes toward online tutoring, were explored. From the responses provided, tutor experiences varied in strong correlation with their initial levels of expectations, motivation and attitude about what they perceived as their role as online tutors towards ensuring



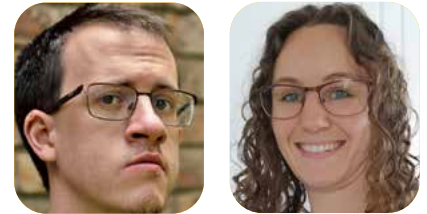
student learning and success. Their levels of expectations and motivation were also clearly linked to outcomes of assessment and student feedback provided during interactive sessions.

Suggestions made by the tutors towards improving online encounters included the use of additional material that students can use after class; making every lesson a solution to a problem and letting students lead a discussion or even a part of the lesson. Given the data and connectivity constrained environment, tutors, in particular, highlighted the need for more innovative and freely available open-access learning tools and apps to ease the learning process and improve communication. The findings from this baseline study can guide the implementation of a more extensive study for concrete interdisciplinary evidence across more academic departments.

**Presentations:** See other engagements [internationally](#) at the [World Meteorological Organization's \(WMO\) CALMet XIV 2021](#), which was held this year in Argentina; click [here](#) for more details. Locally we have presented at [Flexible futures](#)

# A podcast for improving the work readiness of BIS Multimedia graduates

[Diffie Bosman](#) & [Annique Smith](#)



Students from the BIS Multimedia degree generally join one of several industries such as web- or software development or graphic- or user experience design. Two things all these areas have in common are that they are rapidly-changing and require a range of hard and soft skills. The range of employment opportunities is also constantly changing, which makes it difficult for students, especially in undergraduate degrees, to plan for after-graduation. To address this issue, we have created a podcast specifically for the degree, which we named The Multimedia Podcast.



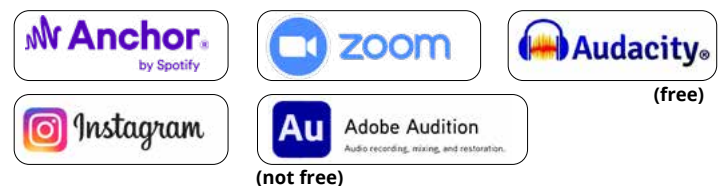
Each podcast episode takes the form of an interview with an individual in a specific Multimedia-related industry.

The goal of the podcast is to explore topics specifically related to work readiness such as what their current job entails and what they like or do not like about the industry they are in, what the highs and lows are of their careers and what lessons they have learnt so far.

Tips aimed at students are also discussed, such as tips for new graduates aiming to enter the same industry including what they need to know for interviews and portfolios.

Audio editing is performed using Adobe Audition, although free alternatives such as Audacity would also work. These software tools generally include tools for removing background noise and adjusting volume to achieve balance between the speaker volumes. We have also found that Instagram is a useful tool to advertise podcast episodes and prospective job opportunities to students.

## Links to tools:



The students have reported enjoying the podcast and finding it helpful in allowing them to understand the different career options available to them after graduation.

Some have also mentioned finding comfort from hearing that even the interviewees struggled during their studies and that it has given them an end-goal to work towards when they feel overwhelmed by the stress of the degree.

In summary, the podcast initiative has been a success so far and we have managed to streamline the process so that it remains manageable to execute.

We would highly recommend this initiative to other degree programmes to build relationships with industry partners and to improve the work-readiness of graduates.





# Making a plan to teach statistics

Gaonyalelwe Maribe

Department of Statistics



The pandemic has really shifted how we do our work and how we socially interact. This has also dramatically changed how we teach our students. Especially new students who've not even met their lectures. This made me think a lot about how to best facilitate and share my course content. As a result, I started looking at ways in which I could enrich my teaching toolset and methods, by investigating what established online course providers use.

Unfortunately, most of these tools can be quite expensive and sometimes require very specialized knowledge to operate. One such tool I learned about during lockdown was the lightboard. Particularly because I'm an avid online learner and had taken a few courses where this tool was used. The lightboard is a latent but ubiquitous part of an online classroom. It may just appear as if your instructor is scribbling notes on the camera, everything is clear, visible, interactive, and engaging.

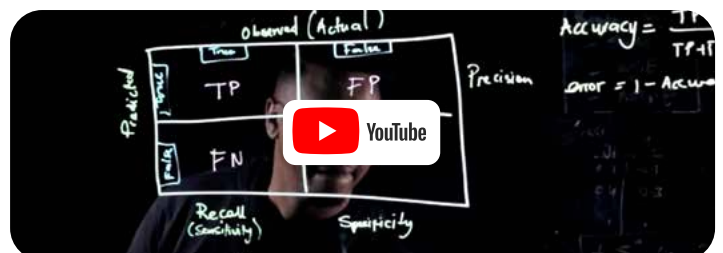


I did a bit of research of my own about the behind the scenes of such a setup. And to my surprise it was not as easy as I thought it would be. A lot of details to consider such as the special type of glass that is required to build a lightboard. Luckily research often brings forth some level of innovation. So, I attempted to simplify all the small parts of this setup that I could fully understand, and thereby opting for a cheaper and more ergonomic solution.

The first type of a lightboard I considered is very easy. The basic setup is to get a 5mm thick low iron glass, wrap it with led lights and hold it together by two shelf brackets on each end. I went with the bigger setup but also more ergonomic. I built a wooden structure with wheels, installed all the light emitting diode lights (LED) inside the structure and fitted the low iron glass.

Furthermore, I needed to have a camera facing the lightboard. An iPhone does the trick, or a DSLR (camera) if budget is not a problem. I connect all my peripherals (including my tablet when I present notes) using OBS studio (freely available software) and virtually feed a camera output to students through whichever online platform we were using.

I've greatly enjoyed learning about the many ways in which we can improve our teaching and make classes more enjoyable for students. And of course, every innovation is a risk. However, the only way to know if ideas can work and positively impact students is to try them.



Example Lecture using the lightboard.


# Combining teaching and community engagement

Ina Louw on behalf of [Michael van der Laan](#)

[#growingmagic](#)



The module PPK251 (Sustainable crop production and agroclimatology) was lectured by Prof Michael van der Laan. The project where students were given time to produce their own media item (podcast, video, app etc) aimed at technology transfer to small-scale farmers on some aspect of crop production was shared in [Vol 1](#) of this Bulletin. They have a Facebook page Ingesta: Farming for the future ([www.facebook.com/IngestaFarming](http://www.facebook.com/IngestaFarming)).

The project took on another twist and joined hands with the Tšhemo ya Setšhaba campaign (vegetable gardens of the people in sePedi) who has Moja Gabedi, the urban forest and community vegetable garden initiative as their physical base  ([Video](#)). The Community Engagement Unit of Education Innovation has assisted by linking the team to the community and providing land and other resources at Moja Gabedi for students who do not have access to a place to grow their crop. The students will assist Tšhemo ya Setšhaba by conducting weekend training programmes and produce seedlings for those who want to start their own food gardens.

The student volunteers from PPK also became involved at [Reliable House](#) and assisted in starting vegetable gardens for them. Emanuel Maringa, the manager of Reliable House said "We are delighted for receiving gardening training so that we can plant to eat in our centre".

He thanked Prof van der Laan and the students for sharing skills for the planting, irrigation system, compost and soil as well as the dos and don'ts of vegetable gardening. The latest site where these students will grow their magic, is the vegetable garden at the Mamelodi Campus.

This initiative brings real life into the classroom and prepare our students for life after university, while assisting a community initiative.



# Reimagining how we spend our teaching time with our students: An idea for a better balance

Iman van den Bout

Department of Physiology

[Centre for Neuroendocrinology](#)

[#foodforthought](#)



The classic approach of delivering knowledge through explanation of concepts in face-to-face classroom settings seems a million years away. However, eventually we will all return to campus where we will once again interact face-to-face with our students.

Do we just go back to the way we used to do things or is this the opportunity to really contemplate what worked during online teaching and see if we can integrate this into our future teaching? This is a question I have been pondering especially seeing the feedback I have had from students over the last year.

The main concept students have liked in the last year is the blending of asynchronous learning using narrated lectures and the attendance of online sessions where we apply the concepts learned during the lectures and there is plenty of time to ask questions. As lecturer I also have enjoyed teaching like this as I no longer have to regurgitate basic knowledge but rather

use my precious time to deepen and broaden my students understanding.

**So how could we build this into the future return to campus-based teaching?**

It seems obvious to retain the asynchronous teaching component as this is well-liked by students and lecturers. This will free up space for discussion classes that will allow lecturers to apply this gained knowledge.

Considering that some students may not want to return to campus, both online and physical discussion groups could be organized. Dividing up large classes into smaller ones so that discussion is encouraged should also be looked at. I know I am going to investigate this option as I think it may well encourage deeper learning by students even in a large class setting. Maybe you should too?

# EBIT FSAs paving the way to Online Advising

Rumaine Padayachee & Maridian Mawebele

#facultystudentadvisors #onlineadvising



The EBIT FSAs investigated different options to use for our online interaction with students, by considering perceived ease of use where we needed to evaluate whether a platform would be easy, effective and accessible to both the students and FSAs as well as ensuring that technological support and training was available from UP's IT-support. The next decision was about perceived usefulness which includes asking important questions like: *would these platforms allow for conducive and safe spaces for students to consult their FSAs and could these changes be sustainable for the FSAs?*

We migrated all services online and changed the mode of individual consultations, group workshops, updating our EBIT UG Support module, the development of EBITbot, the expansion of the FSA team to 6 and the introduction of our Peer Advisor team.

At the start of the pandemic we made use of phone calls to reach students who had connectivity issues and sent out a need analysis via Google Forms. Apart from this, students could book virtual appointments on our Google calendars and consultations took place via Google Meet or WhatsApp calls. Our academic Workshops were presented weekly via Blackboard Collaborate.

Each session was recorded and made available to students who could not make the live workshop. EBIT UG support module was updated with academic support tips in relation to online studies. We also created a chatbot named EBiBot to ensure

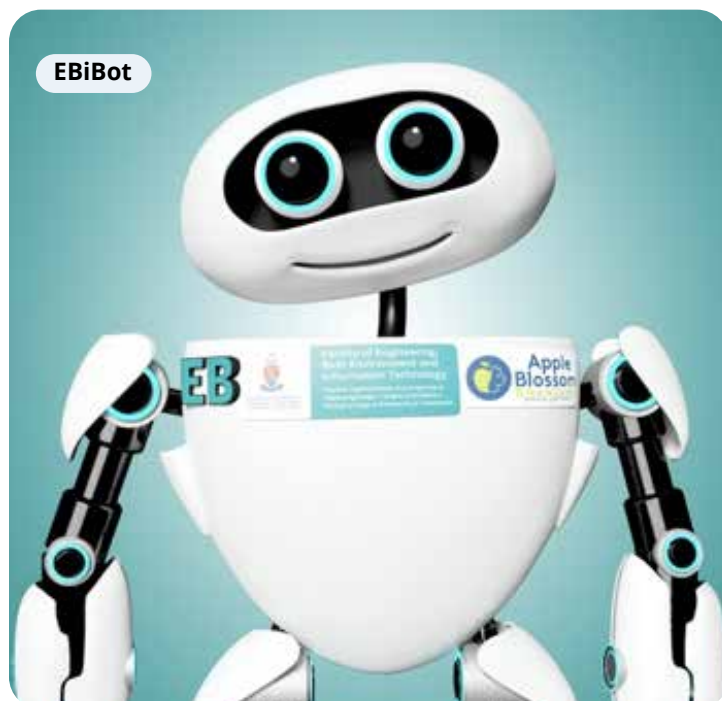
quick responses to students and serve as a self-help guide. Three peer advisors were recruited to augment and support the FSA services.

We can conclude that migrating to online advising has put us in a better position to serve and support more students. Our individual consultations grew by 93% comparing semester one of 2019 and 2020, and 80% during the second semester. The attendance of workshops was compared over the same periods and a 549% increase was seen during semester 1 and 197% during semester 2.

The provision of online advising has also added a convenience element for students, aiding in availability and increasing accessibility. We feel proud of our achievement and continued support.

## Meet the EBIT FSA team

EBIT FSA Webpage: <https://tinyurl.com/29hm2ma5>



Rumaine Padayachee



Madeleine van Meyeren



Beauty Mabunda



Jessica Versveld



Maridian Mawebele



Caitlin Vinson



# 5 advantages of using Twitter for science

Johan Ferreira

[Department of Statistics, UP](#)

[#Twitter](#), [#Science](#), [#Learning](#)



**M**uch has been written on the implementation of social media spaces within taught courses. It allows lecturers and students direct interaction with the public at large, but also with renowned and respected national- and international scientists. These social media spaces were not created with “academic” intention, however, the influence of [#academictwitter](#) has become rife within most disciplines.

Twitter, as a microblogging platform, has several advantages (and disadvantages...) for academics and students – not only in a taught/coursework setting, but also for the postgraduate supervision process. The overarching positive theme that a complementary platform such as Twitter allows, is to create a sustained researcher and scientist identity, and facilitate an environment for enculturation into a discipline in a rapid-fire, engaging, and (mostly) restriction-free way.

**Particular advantages include the following:**

**1 Low time investment, short posts.**

Tweets offers short posts of up to 280 characters which makes it ideal for ideas and thoughts, and composing and sending a tweet takes comparatively little time.

**2 Ability to rapidly join in on online conversations.**

Due to the open access nature of Twitter, it is easy to follow and join in on online conversations that an academic, or group of academics (or even a journal) may be having.

**3 Posting updates with regards to meetings and conferences and circulate information regarding professional opportunities and upcoming events.**

The use of hashtags (#) to categorize certain topics, updates, and scientific meetings make it easy to find information relating to gatherings of academics at conferences or other scientific meetings across the world; and even if you are not attending, Twitter makes it

accessible for people around the world to follow and join in on scientific conversations at these meetings.

**4 Twitter is cost-free and has virtually no restriction on a user's geographical location.**

There is no cost to Twitter, and it is easily available via the app for any smartphone operating system as well as the web interface. Scientists from all corners of the globe can access twitter, with some exceptions where government agencies have outlawed the use of this platform.

**5 Creating and sharing a sense of researcher identity within a community.**

This is one of the most important aspects in the discussion of this platform's advantages – to create a sense of belonging and exposure to international scientists for postgraduate students. Furthermore, to facilitate an early look into academic life for budding undergraduate scientists.

There are disadvantages to this (as with any!) social media platform as well – including sifting fact from fiction ([#fakenews](#)), that the internet is forever (be careful of what you say), Twitter and its users are (to a large extent) English-speaking, and the ease of getting distracted with non-academic content from your favorite celebrities. Twitter as a digital community of practice in an academic sense remains a meaningful and viable option for inclusion and discussion on a global scale, for both our under- and postgraduate students, and also ourselves.

**Johan Ferreira** is a senior lecturer within the Department of Statistics at UP. A [recently published paper](#) of his reflects on the viability of using Twitter as a complementary tool in the postgraduate supervisory process in particular. You can find him on Twitter at [@statisafrican](#).



# Re-thinking foundation phase mathematics: JGS 212

**Nadia Swanepoel**

Department: Early Childhood Education





**S**econd year foundation phase students are introduced to academic mathematics through the module JGS 212. This module is focused on guiding students' understanding of pedagogical content knowledge and subject matter knowledge related to the concepts and themes covered in the foundation phase.

This module was originally designed in a hybrid-learning mode, but since the onset of online teaching and learning, it was re-designed to enable students to re-think foundation phase mathematics in a virtual manner, in their own way, allowing students to add their 'spice' to foundation phase mathematics.

The emphasis of the module is the research component that students have to do in collaborative groups. Students sign up in groups on clickUP, where a mathematics theme from CAPS is assigned to them. Following the guidelines and instructions, students engage in researching the origin of the mathematics concept and they define the mathematics concept ... in a creative manner. The magic happens when students have to

align theory with practice and explain how these concepts can be taught in a foundation phase classroom in a way that will help learners to also re-think mathematics.

Once students have completed the research component, they have to make a presentation on the work they have researched. This is where students' faces light up. Students embrace this part of the task as they re-design foundation phase mathematics through interactive presentations.

Students are encouraged to think creatively and make their presentations true to their identity. The quality of the presentations which students submit via  [Google Drive](#) or  [YouTube](#) is outstanding. Students have mentioned during their reflections, that being able to present their theme, aids them in their understanding of the concept. This is the future of JGS 212 - seeing how students take authority of the theme assigned to them, enables them to re-think, re-create and re-imagine foundation phase mathematics.

---

## Move aside – we are coming in LEAN!

**(A medical school's curriculum redesigning and mapping journey)**

**F**or the past two decades, the School of Medicine has used the same accredited curriculum, with small adjustments, for undergraduate medical students. Although numerous excellent doctors have graduated, the curriculum is outdated and content heavy.

Therefore, it was time to go back to the drawing-board and redesign a curriculum that will prepare our novice doctors for the current and future [healthcare](#) challenges, and in so-doing address the relevant Sustainable Development Goals within our African context.

The process is also well aligned with the UP curriculum transformation initiative as all four drivers are represented: responsiveness to social context, epistemological diversity, renewal of pedagogy and classroom practices and Institutional culture of openness and critical reflection.

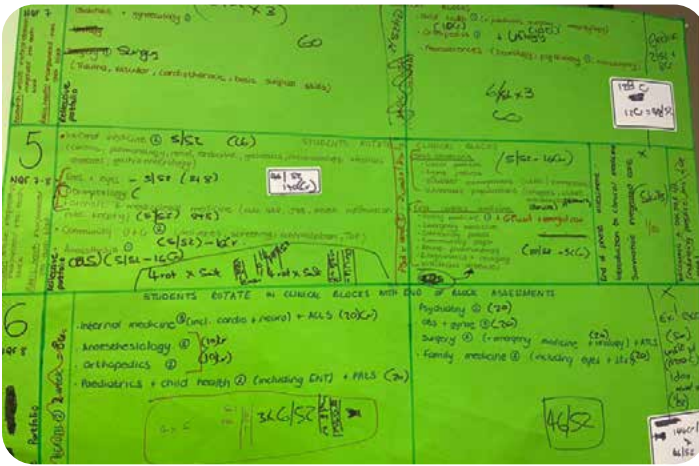
An approved research project was registered to track the process and evaluate the impact of implementing the new curriculum. In this paper, we share the initial steps as work-in-progress. We have revisited the current curriculum, explored various national and international medical curricula and started a curriculum mapping process.

While the complete findings of the research project are not yet available, sharing of our approach to best practice in curriculum change may enable others by offering some insight into our processes and preliminary steps.

We based our approach on the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) for course construction with an embedded PESTLE (Political, Economic, Social, Technical, Legal, Environmental) framework.

*continued on page 9*





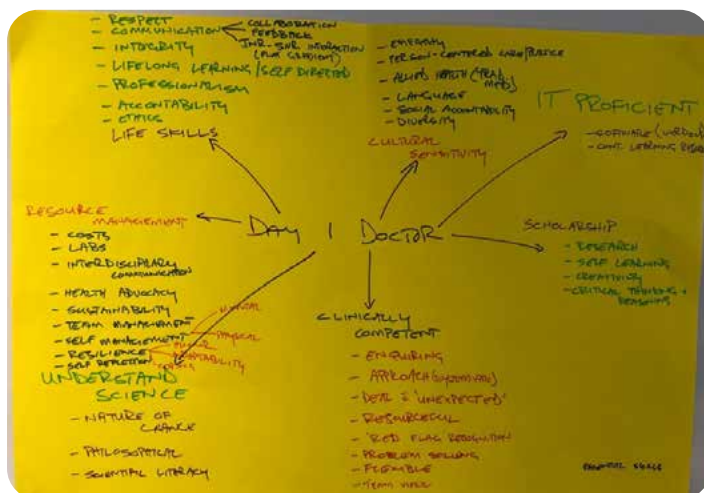
We also found the discussion and agreement on the underpinning values to be an essential early step. Constructing the curricular vision and focus and identifying transferrable skills and “first day” graduate competencies prior to starting with the actual curriculum design, helped to maintain focus during the initial planning and stakeholder engagement activities.

Although still a work-in-progress, the benefits of intensive think-tank exercises, with extensive stakeholder engagement and analysis have proved invaluable for supporting the process, broad acceptability and the good progress being made.

The analysis phase started with a serious reconsideration of the current silo-approach and the apparent lack of theory-practice integration. An extensive stakeholder analysis was used to gain insight, input and buy-in. One-on-one semi-structured interviews were conducted with faculty including the executive, HOD's and teaching coordinators.

The interviews were recorded (with permission), transcribed and thematically analysed. Questionnaires were also distributed to faculty, students and alumni. The decision was made to follow a [LEAN](#) curriculum approach with a [VALUES](#)-based foundation. During the initial design phase, the recommendations from the ETQA (HPCSA) were also considered. We have currently embarked on the detailed curriculum development, and are soon to launch the intensive curriculum mapping exercise using the [LOOOP](#) software recently purchased by the University.

The preliminary analysis and engagement process guided the construction of the initial high-level curriculum framework design, which has been shared for further input and modification. What has emerged from this iterative process lead by the core committee (see photo) is that there is considerable value in planning, consulting, discussing and re-planning and particularly in responding early on to concerns and adjusting as necessary and feasible.



### NAS bulletin\_MBChB curriculum review team



**Werner Cordier**



**Kay Mathabe**



**Sumaiya Adam**



**Sandra Spijkerman**



**Dianne Manning**



**Astrid Turner**



**Martin Brand**



**Yvette Hlope**



**Irene Lubbe**

# Encoding Video Lectures for Low-Bandwidth Connections

**Warren du Plessis**

Department of Electrical, Electronic and Computer Engineering

*#video #limited\_data #video\_lectures*



With the arrival of COVID-19, came a lockdown that has meant that almost all academic activities have moved online. While this change has been challenging for everybody, it has been particularly difficult for students with limited internet connectivity. Initiatives like [UP Connect](#) help by removing data costs when accessing university sites. However, they only go so far and do not address the effects of slow internet connections, for example.

The need to move lectures online has led to the production of lecture videos. Unfortunately, video files are gigantic, with 45-minute lectures giving video files of between 100 and 300 MB. It is clearly essential that the sizes of these lecture video files be reduced if all students are to be able to view such lecture videos.

With suitable settings, the use of the [VP9 video format](#) with the [Opus audio format](#) in a [WebM file](#) can dramatically reduce file sizes while maintaining acceptable quality.

More importantly, VP9, Opus, and WebM are open formats that are widely supported by a vast array of media players and web browsers, so it should be possible to view such videos on any platform.

A suitable [function file](#) for the free, open-source, cross-platform (Windows, macOS, and Linux) video encoding tool [Shutter Encoder](#) has been developed to reduce the size of lecture videos. The settings in the function file produce acceptable video and audio quality, while dramatically reducing file sizes to between 5 and 7.5 MB for 45-minute lectures.

A [video](#) has been posted showing how to use the function file to encode lecture videos as smaller files. The settings used to achieve the small files are also summarised with a brief description of each in the same video.

It is hoped that this information is useful, and any comments and feedback would be appreciated!

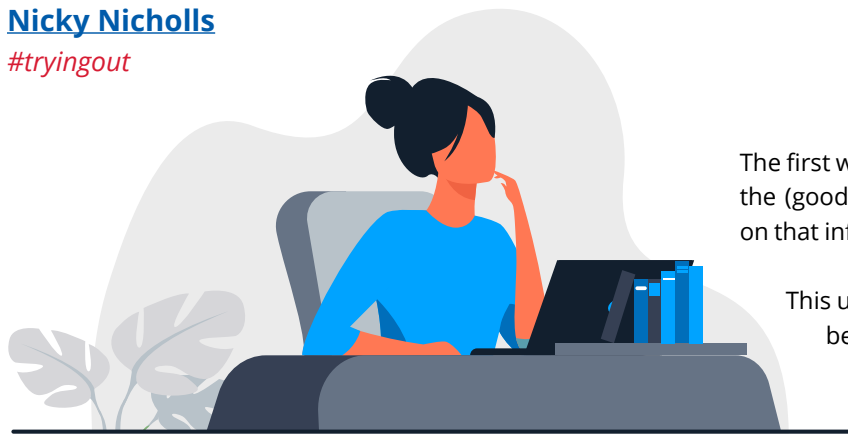




# Can nudges help students to procrastinate less?

**Nicky Nicholls**

*#tryingout*



**S**tudent procrastination is a problem that many of us see in our teaching. This ranges from students not submitting on time, to students only starting their work close to the deadline, and not having enough time to put their best efforts into their work.

I was interested in how procrastination impacts grades for students in our department (some research has shown that procrastination is associated with lower grades). Since clickUP records grades and submission times for all tests and assignments submitted online, I was able to use data from over 17,000 individual submissions in economics undergraduate modules in the first semester of 2020 to confirm that later submissions were correlated with lower grades for our students.

To help students to address procrastination challenges, I was interested in trying out some “nudges” to see if I could encourage students to procrastinate less. Nudges are small changes or communications that don’t impact people’s choice options, but that might help to get people to make decisions that result in better outcomes.

The concept originated with the 2008 book, “Nudge” (Thaler & Sunstein), and some background about nudges in education can be found [here](#). Researchers have tried many different kinds of nudges, and I experimented with two of these in one of my undergraduate classes.

The first was a social norms nudge, where students learn about the (good) behaviour of others in the class, and hopefully act on that information to better conform to a positive social norm.

This unfortunately backfired, as I had first elicited students’ beliefs about other students’ submission times, anticipating being able to correct these inaccurate beliefs with feedback showing that most students submit early. In the first semester, the vast majority of students in economics undergraduate courses submitted more than 12 hours ahead of a tutorial deadline. In my course, however, most students submitted in the last 12 hours. Because I had prefaced my intended communication with an incentivised beliefs question about my course, I had to communicate the true prevalence of early submissions in this course to the students. This unsurprisingly led to even more last-minute submissions.

The second nudge had limited success: here students received a clickUP announcement telling them that those students who submitted more than 12 hours before the tutorial deadline achieved grades that were 21% higher, on average, than those who submitted closer to the deadline (this was based on the class’ first 5 tutorial submissions).

Although this did not change submission times on average, we did see some students (about a third of the group) submitting earlier following the nudge. Among those students who did submit earlier, 83% saw some improvement in their tutorial grades.

The difference between the two nudges I tried makes it clear that the specific communication matters. It also seems that nudges in this context did not make a big difference. Having said that, exploring alternative nudges might be worth pursuing, given the positive impacts these have had in other areas and contexts.





## How we teach

**Pamela de Waal**

Department of Biochemistry, Genetics & Microbiology

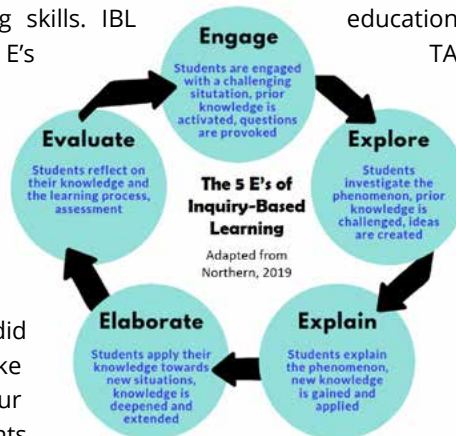
*#producing critical thinkers through Inquiry-Based Learning*



One of the core functions of a University is to produce graduates who are critical thinkers (Badat, 2009). Inquiry-based learning (IBL) activities in a module help students to develop critical thinking skills. IBL principles can be simplified as the 5 E's of Inquiry-based learning (as cited in Northern, 2019).

Thinking through a problem to successfully find a solution gives students a sense of having accomplished something in their classes (Northern, 2019). They weren't just there, they actually did something. Uno and colleagues (2013) make the valid point that just because you find your subject riveting doesn't mean that students share your passion.

They suggest that you have to build something into your module so that students can find out for themselves how interesting your subject really is. When preparing to teach a module, the outcomes of the module are the point of departure. What must students know, value and be able to do? (Uno et al., 2013).



The Teaching Advancement at University (TAU) Fellowship programme is a staff development programme for experienced academics nominated and selected from all public higher education institutions in South Africa. The goal of TAU is to broaden participants' knowledge of teaching excellence and SOTL, and develop their ability to function as change agents at their own institutions (de Kadt and Jawitz, 2018). I am a TAU fellow for 2021/2022.

For my TAU project I am focussing on the "do" outcome of teaching and learning. How we as lecturers can create an engaging academic environment within our modules where students can acquire knowledge and critical thinking skills. My project falls within staff development. I am interested in introducing young academics to IBL and helping them to apply these principles in their own modules. I will be working with the UPstarters within the NAS faculty who form a community of practice of young academics. If you are interested and want to know more, please contact me at [pam.dewaal@up.ac.za](mailto:pam.dewaal@up.ac.za).

## Using Bloom's Taxonomy to promote pedagogical content knowledge

**Joyce West ORCID**

Department of Early Childhood Education

*#authenticlearning #bloomstaxonomy*



Various national, as well as international literacy assessments, have reported on the alarming reading abilities of South African Foundation Phase learners. Several reasons have been attributed to learners' poor reading skills, such as poor socio-economic circumstances, overcrowding in classrooms, lack of reading material, the language of learning and teaching, lack of mother-tongue instruction, lack of parent involvement and poorly trained teachers, etc.

Another prominent reason is teachers' inadequate pedagogical content knowledge. Pedagogical content knowledge refers to

the ability of teachers to combine content knowledge in a specific domain or subject area, in this case, the science of reading, with sound pedagogical and methodological approaches that foster meaningful learning.

In 2021, Dr Malatji and I, in the Department of Early Childhood Education, wanted to better prepare future teachers for reading by enhancing their pedagogical content knowledge. Bloom's taxonomy guided us not as a hierarchical assessment framework but as a metacognitive framework and scaffolding device that promotes authentic learning.

*continued on page 13*

Over 14 weeks, students were guided to design (a higher-order thinking skill) their own reading programmes and have them reviewed by experts in the field. This project better prepared them for the teaching of reading in the classroom.

From student feedback it is also evident that this project enriched their learning experience, promoted their application of theoretical knowledge and stimulated their creative and critical thinking. Here are a few direct quotations of what students wrote about the project:

- I enjoyed designing the reading program. I was able to use all my knowledge and then apply in a practical way.
- The project got me doing extra research and it definitely broadened my knowledge of reading.
- For the first time, I feel that an assignment has real value. I really enjoyed designing the reading program.

- I will not be able to list all the knowledge and skills I have acquired in the program. It was so enriching and has changed my knowledge, view and excitement about the teaching of reading.

The recommendation is therefore made that instructional designers (i.e., lecturers) explore the value of Bloom's taxonomy as an authentic learning framework instead of a hierarchical assessment framework.

And finally, the project highlights the need for authentic learning opportunities to help bridge the gap between theory and practice and ultimately prepare students for the work environment.

## Puzzle-based learning in undergraduate teaching and learning

**Kathryn Malherbe**

Department Radiography (Faculty Health Sciences)

*#durablelearningstrategies*



When we talk about teaching and learning, we often forget that learning is the sum of science and active teaching methods. During the past year, online Teaching and Learning has been a challenge for lecturers, especially during the pre and post class activities: the students rarely completed them and it served no purpose in them understanding key concepts.

Enhancement of memory recall is found during durable learning strategies being used during the daily teaching and learning activities, of which [puzzle-based learning](#) is an example.

### But why puzzles?

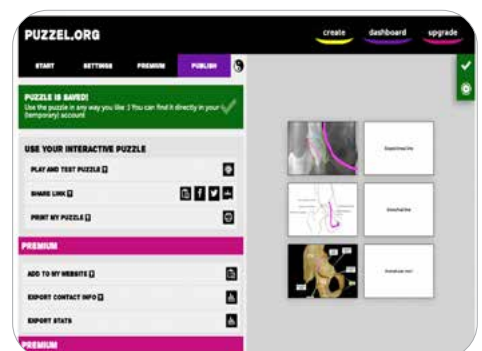
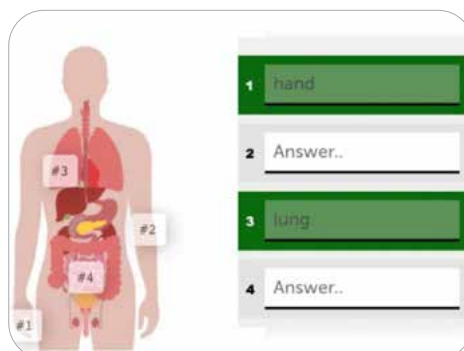
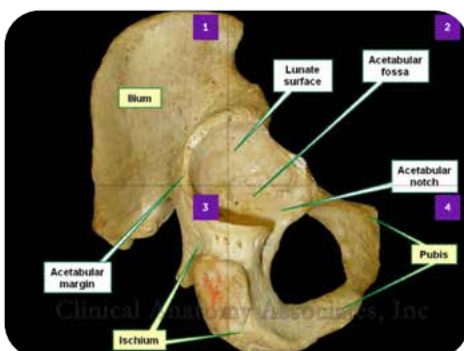
Puzzles is an old adage of enjoying the learning process in class, and I noted that the students were struggling to remember a large amount of terms or definitions. I discovered the website [Puzzle.org](#) and was beyond excited to use it in the online environment. Below are three examples of how I made use of [puzzles](#) and cross word puzzles to increase

their interest in online teaching and learning. Another method of puzzles to embed on clickUP was using [H5P](#) which is an excellent tool to embed puzzles and unique fun activities after hosting a lecture to students.

### What did it do?

The students had a 12 % increase in their average semester mark following the use of puzzles after class, and their engagement in completing activities increased from 69 % to 91%, in comparison to the previous years where puzzles were not being used. Students used words such as fun, engaging, and improved memory and understanding when exploring their use of the puzzles.

This has proved to me that changing the methods of teaching and learning to puzzle based learning will not only be fun to the students, but also an added bonus in memory recall and understanding.



# First Year Radiography student support and success

**Khomotso Motiang**

Lecturer: Department of Radiography

#Workconsistently #Keepupagoodsemestermark #FLY@UP



This is a review of an attempt to improve student success rate in a high-risk core module in the first-year radiography programme. The student success rate in the module was poor over the past three consecutive years with 97.5%, 95.2% and 92.9% pass rate between 2017 and 2019.

Formative and summative assessments contribute 50/50 towards the promotion mark in the module, thus, a good semester mark and year mark are imperative. I used learning activities as one of the essential components of hybrid teaching and learning to determine comprehension of concepts as the foundation for subsequent learning as module scaffolds. Because it is not feasible to assess students on everything facilitated in the module, compulsory and non-compulsory learning activities were used in this case.

The non-compulsory activities are self-assessment activities aimed at facilitating comprehension of concepts, and do not contribute towards a semester mark. Students are however, still expected to attempt the non-compulsory activities in order to help them master different concepts in the module.

The compulsory activities are mini formative assessments which contribute 10% towards a semester mark. Overall, ten (10) online learning activities, 7 non-compulsory and 3 compulsory activities, were administered at the beginning of term 2 of 2021 academic year.

The students' performance and participation in the online activities were reviewed at the end of the first semester in order to assess students' progress and teaching strategy. Participation in non-compulsory activities was very poor, with a pass rate of 62.5% and only 5.4% distinctions in subsequent formative assessment (Figure 1).

Although the compulsory activities contributed only 10% towards the Semester mark, participation was excellent with students making individual follow-ups and consultations via WhatsApp and emails.

The results were astonishing with an improvement of 20% in the class average (Figure 1), and a 75% in distinctions between the two formative assessments following the non-compulsory and compulsory activities (Figure 2 and 3).

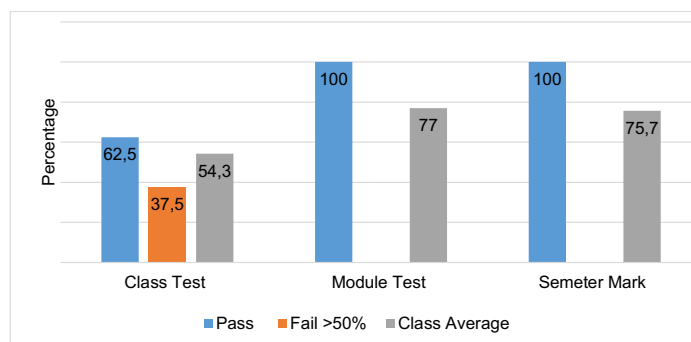


Figure 1: Class Average improved by 23% in the Module Test

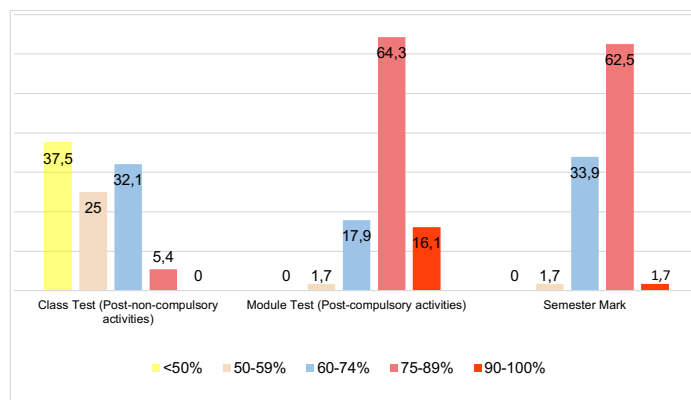


Figure 2: Pass rate with distinction improved by 75% after compulsory activities

Although the value of the compulsory learning activities was evident in improved student pass rate I also looked at the impact of the learning activities using results from the Student Feedback Survey. The highlights and lesson learnt are as follows:

- Regular activities are essential to engage with individual students and assist students with comprehension of concepts as the module unfolds, but also to the lecturer to see progress and plan change if needed.
- The students were motivated to work hard and consistently to obtain a good semester mark.
- If students understand concepts, they enjoy the module and become motivated to work hard. It is therefore important to reward consistency rather than a single summative assessment where students are most likely to cram rather than discern the concepts.



# Teaching community ecology online

Mark Robertson

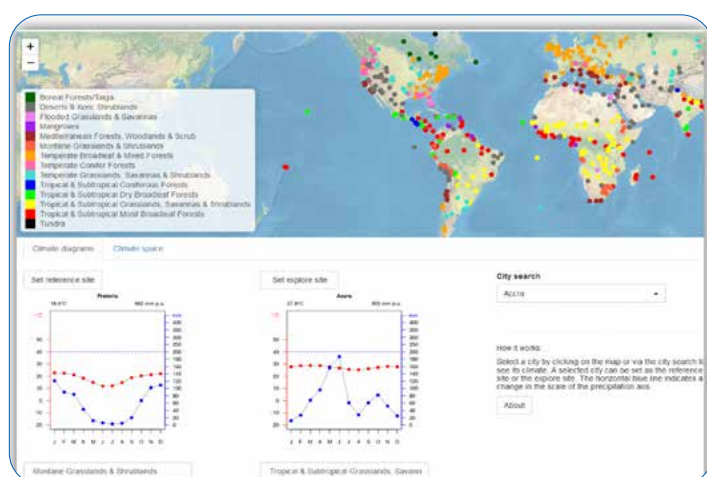
Department of Zoology and Entomology



**Z**EN 353 is a module in which students learn key concepts in community ecology. A community, in the ecological sense, refers to the suite of different species that occur and interact in a particular place. For example, the community of bird species that are present on the Hatfield campus could be the subject of investigation. Various regional (e.g. climatic) and local factors (e.g. vegetation type and structure, intensity of human activities) will have an influence on which species are present and how abundant each species is in the community.

In this module, students learn about the factors influencing community structure and how to compare communities in areas of differing land use. The module usually includes a field course to Sani Pass in the Maloti-Drakensberg mountains where students learn about insect and plant communities and how to sample them across an elevation gradient. As it was not possible to undertake the field course in 2020, I developed two online applications to teach important concepts in community ecology.

The [Climate Explorer](#) application allows students to explore the climatic conditions experienced in different biomes around the world by clicking on points in an interactive map. Climate diagrams, showing the seasonal distribution of temperature and rainfall, are used to compare the climate of locations around the world. The name of biome is shown for each selected location so that students can learn about the climatic conditions that characterize a particular biome.



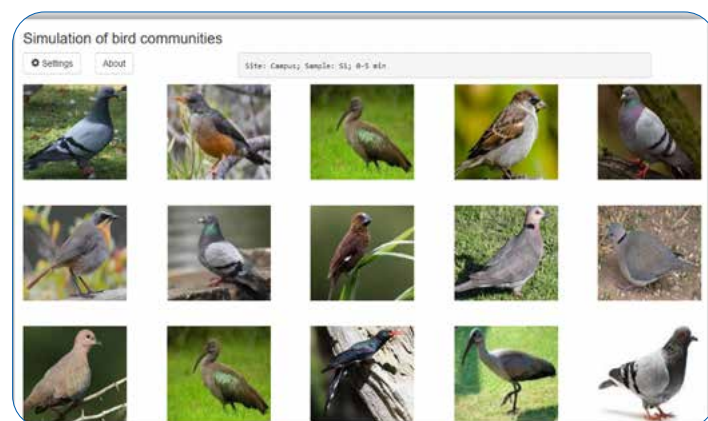
A screenshot of the Climate Explorer application, showing a comparison of the climate in Pretoria (in the Montane Grasslands and Shrublands biome) with Accra (Ghana), which experiences a tropical climate.

The Bird Communities application simulates bird communities in three different environments, including the UP Hatfield campus, the UP Experimental farm and the Pretoria National Botanical Gardens.

When the simulation is started, the user is presented with a number of images of birds that represent the species of birds that could be observed at a particular location during a bird survey. Students had to identify the bird species in the images and record the number of individuals of each species present, so that they could compare the bird communities using appropriate analytical methods.

The bird images are selected randomly from an image library so that the same species can be represented by different images, which incorporates some variation and makes the simulation more realistic.

The application enabled students to “collect” the data themselves and learn how to identify the bird species. In this way they gained valuable insights into the data collection phase, which they would not have learned if they had merely been provided with an existing bird community dataset to analyze. The Bird Communities application was used for two practical assignments.



A screenshot from the Bird Communities application, showing a selection of bird species simulated for a 5 minute period of observation on the Hatfield Campus.

The graphical user interfaces of these applications were developed in [Shiny](#) and the code for the applications was written in [R](#). The two applications featured above, and others, can be found [here](#).

# Framework for implementing Intensive Objective Online Assessment

**Moraka Makhura**

Department of Agricultural Economics, Extension & Rural Development

**Mpho Thukane**

Department of Education Innovation

*#IntensiveObjectiveAssessment*



The use of objective assessment has been accentuated by large classes and recently by lockdown. When classes are conducted online, [intensive objective assessment](#) encourages [time on task](#) and student performance. However, it requires some approach that should be well planned.

The Department for Education Innovation (EI) provides both support and resources to assist lecturers who wish to implement online objective assessment. EI conducts various [training sessions](#), but it is prudent to work with the Educational Consultant and the Instructional Designer to design the objective assessment plan.

While online objective assessment eases the grading process for large classes, the Learning Management System (LMS), clickUP also enables continuous assessment. When conducted intensively, it also helps students to track their own progress, while the lecturer is able to monitor overall performance through [Course Analytics](#).

The implementation of intensive objective online assessment was tested for the first-year course of agricultural economics. The experience showed that intensive objective online assessment is more effective when implemented in a phased approach.

As shown in the Figure 1, the assessment can be implemented in three phases. Phase 1 should focus on onboarding students to ensure they settle on the online platform. During this phase, it is advisable to set more accessible questions like multiple choice and true/false questions. The setting options should also give students chances to acclimatise. The time should also be more relaxed with possibilities of second attempts.

Phase 2 focus on content learning by introducing more engaging questions including matching questions. The setting options can involve randomised questions with or without backtracking. The time is also reduced. Finally, phase 3 can focus on performance and making students resilient in performance. More challenging questions can be introduced to include ordering and jumble sentences question types. The setting options should be randomised with no backtracking. The students are then given single attempts with very short time that resembles the test and exam environment.

The systematized intensive objective online assessment creates clarity between students and lecturer. During challenging times, it allows students the opportunity to learn and perform.

A word of thanks to Ina Louw for inputs in this project.



Figure 1: The execution of Intensive Assessment