



T&L@NAS Bulletin

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From the editors

Ina Louw – Office of the Dean: Faculty of Natural and Agricultural Sciences – Editor-in-Chief

Leushantha Mudaly – Department of Plant and Soil Sciences

Tjaart Krüger – Department of Physics



It gives us great pleasure to bring you this issue of the T&L@NAS Bulletin with the theme of “early career excellence”. The Bulletin has again transcended the original NAS borders and we bring you stories from EBIT, Health, EMS, Humanities, SciEnza, and Education, but the bulk is still from NAS. You can look forward to hearing the voices of the UPstarters, the emerging scholars in NAS. The stories by Renate, Gopika, Lindo, Kabelo, and René, are all from the Department of Statistics and deal with issues such as affective learning, student-lecturer relationships, Autograder, competitive summarising, and postgraduate support. JJ is from the Department of Geography, Geoinformatics and Meteorology and integrated art in his Urban Geography module. Belinda, Mihaja, and Valisoa are new in the Department of Mathematics, and Ina interviewed them to hear how they have adapted to the UP way. John, a PhD student who has been accredited to teach in Food Science, shared his experiences whilst transitioning from student to lecturer. All these contributions showcase the brilliance of our emerging scholars.

Stories by Warren, Nadia, Faheema, Joshua, Danielle, Elmien, Charisa, Natascha, and Machdel highlight our SoTL work at UP. SoTL is the Scholarship of Teaching and Learning and shares the work done about your teaching and learning activities. These contributions were all featured at the annual Flexible Futures Conference. Erika, Markus, Angelique, Rebamang, and Rocco share their innovation in teaching and learning.

Three stories deal with Artificial Intelligence (AI) and come from Danielle, Michael, and Elmien. Busisiwe from SciEnza shared their school holiday programme with us and lovely photos showing how our lecturers are involved in making kids interested in STEM.

We have organised the stories in the following order:

Section A: Teaching and Learning – 16 stories with a noticeable assessment focus.

Section B: Professional Development – 2 stories with a mentorship undertone.

Section C: AI and the contribution from SciEnza – 4 stories with a sci-fi vibe.

I was blessed this year to have had a team to assist with the Bulletin. They will each introduce themselves:

Leushantha Mudaly

It was a great pleasure to join the editorial team for the T&L@NAS Bulletin this year. This opportunity presented a learning curve that I enjoyed navigating, made all the easier with Ina's constant support and guidance.

Acquiring submissions from academics who already have their plates full is not easy, so I truly appreciate the time these authors took to submit their stories. I learned so much about what NAS is pioneering in the science education space as well as what other faculties are spearheading.

I hope you enjoy and learn from these stories as much as I did and I look forward to receiving your submissions next time.

Tjaart Krüger

It is an absolute joy to be part of this year's editorial team, led enthusiastically and skilfully by Ina. It presents me with an excellent opportunity to help disseminate practical and provenly useful information and experiences that may otherwise remain hidden with individual lecturers or confined to departments.

Working through the stories made me realise anew that our university has much to offer because of the creativity, passion, and dedication of its staff – and this Bulletin is an excellent platform for sharing our ideas and learning from others.

This edition again shares many excellent examples of innovative ways of aligning our teaching practices with the evolving educational landscape and the needs of our students. A large variety of ideas and experiences are shared, and I'm sure every lecturer reading these stories will walk away inspired!

Personal sharing from UPstarters



Summarising success

Renate Thiede

Department of Statistics

#summarise

Renate Thiede is a PhD candidate and lecturer in the Department of Statistics. She teaches Mathematical Statistics modules to senior students. These modules have a strong theoretical and mathematical focus.

Students taking my modules are typically enrolled for high-pressure, high-credit modules such as actuarial science, mathematical statistics or mathematics. They have a short amount of time to process a great amount of theoretical concepts, and this can overwhelm them.

Last semester, I pioneered the idea of student summary competitions. I encouraged students to make a summary of a chapter on an A4 paper. I gave them some guidelines and examples, but encouraged them to be creative. Students who submitted were rewarded with attendance marks. The top three summaries received bonus marks and their summaries were uploaded to clickUP as study tools for the whole class. This was a very popular competition, and students handed in a variety of creative, interesting summaries. The students thoroughly enjoyed it and mentioned it in the student feedback at the end of the semester.

Encouraging students to use their creative and artistic skills while studying helps them to feel relaxed and informal, thereby reducing stress and increasing the chance that they will remember what they study. Encouraging them to create summaries further helps them consolidate the work and reduce the sense of being overwhelmed. Hosting a summary competition combined these aspects, while adding the fun of a low-stakes, stress-free contest. I will definitely be running similar competitions in future to help students summarise their way to success!



Affective learning: Connecting with first-year university students

Lindo Magagula

Department of Statistics

#OperationFinishTheSemesterStrong

One of the most important arts to master in persuasion psychology is knowing your audience. Know your audience. What do they value? How do they think? How do they prefer being communicated to? When you tailor your message to something that your audience really cares about or finds compelling, you will find greater success in persuasion. As educators, our main goal is to teach our students; however, the reception and understanding of the work are to be measured by how they perform. That is, beyond us just teaching, we want to be heard and understood. Therefore, how we tailor and present the work is a very important indicator of performance.

In teaching a very large first-year group, my preparation has to include how to keep their attention for the greater part of 50 minutes. I realised that we are not just teaching, but we are selling content to the students. So how do we get their buy-in? It is by understanding and making continuous efforts to better one's skill in crowd persuasion. Trust me, it's a thing. It doesn't happen

overnight; it takes some trial and error. Sometimes it works, sometimes it doesn't, but we keep at it. One of the most effective techniques I tried was relating to the students in their domain by making use of a simple hashtag. We all succumb to the year-end fatigue. One day I walked into class and the room was dead. I was practically speaking to myself.

How frustrating! I stopped the class and did a quick poll on the clickers. The question was: At this point how do you feel? It was a word cloud so the students could see how everyone was feeling. Guess what the winning word was? Tired! At that moment I knew I had tapped into empathetic collectivism with the class.

Right there, I owned up to also being exhausted and we had to sign an agreement as a collective. That is, we are unleashing **#OperationFinishTheSemesterStrong**. Just like that, I had my people back. They were ready to fight again. There is a lot we can try. I feel that the affective learning domain, contrary to the cognitive, should simply look at learning by showing some level of caring.



Student-Teacher relations:

Knowing and assuming your role for effective learning.

Kabelo Mahloromela

Department of Statistics

#collaboration #expectations

"And it seems nobody's interested in learning but the teacher".

If you are a Sister Act fan, you probably recognise this lyric from the Ball of Confusion soundtrack in the second movie. In my role as a lecturer, this sentence resonates with a clear truth for me: I have a vested interest in student learning and discovering how to encourage it. Never have I been more aware of what learning is than when I became a learning facilitator.

What it also highlights are the different views that lecturers and students have about the student effort required for success at university and where the onus of responsibility for student learning lies. I often see this being expressed through disharmony in opinions around preparedness level for class, the importance of attending a class, active engagement in the classroom, and the level of willingness to complete a task if there is no mark attachment. Divergent academic expectations between students and lecturers may thus foster an us-vs-them mindset.

It is important for all stakeholders of the learning process to be proactive in their role and understand that we are collaborators. I believe everyone understands this as a concept, but it may get lost in translation when it must be actioned.

From a lecturing perspective, emphasising the importance of students taking an active and self-directed role in their university education can lead to greater awareness amongst students and efforts be made to help them realise that they are stewards of their learning and must assume full responsibility for their academics.

Lecturers are just one of numerous resources available to help them succeed.

When Geography and art meet

JJ Gregory

Department of Geography, Geoinformatics, and Meteorology

#livingclassroom #creativity #art



Teaching and learning is a dynamic process that constantly evolves to meet the changing needs of students and to engage them in a more meaningful manner. This reflective piece explores my experience teaching GGY 780, an honours module in Urban Geography, at the Department of Geography, Geoinformatics, and Meteorology. Since joining the institution two years ago, I have sought to transform this module into a more engaging and intellectually stimulating experience for students by adopting a transdisciplinary approach that integrates art and creativity into the curriculum.

One of the initial challenges I encountered in teaching Urban Geography was the tendency of students to engage with the subject matter superficially. Traditional teaching methods often led to linear patterns of thought and a disconnect between theoretical concepts and real-world urban dynamics. To address this issue, I decided to embrace a more unconventional approach.

In collaboration with the Javett Art Centre, I facilitated the module within a gallery space as part of an exhibition, which forms part of the centre's "living classroom" initiative. This innovative approach allowed students to explore the complexities of urban geography through the medium of art. Each week, we delved into a new theme, and discussions were primarily student-led.

Students were tasked with analysing specific pieces of art alongside readings and urban theory, encouraging them to critically reflect on how the themes presented in art relate to the literature and the urban environments they encounter daily. A key element of this transdisciplinary approach was the

integration of creativity into the learning process. In addition to traditional written, essay assignments, students were required to produce a creative piece that depicted their sense of place in the contemporary South African city. These creative pieces ranged from paintings, drawings, and videos to fashion garments and photography. This not only pushed them outside their comfort zones but also challenged them to think critically and creatively about urban spaces.

The response from students has been overwhelmingly positive. Many students expressed excitement about the "change of scenery" and the opportunity to engage with urban geography in a new and creative way. One student aptly noted that the module "allowed me to tap into my creative and critical side which is limited in my other modules. The different class setting and seminar-style lecture setting was an absolute hit and set the tone for every single discussion". Another student noted that "the incorporation of art throughout the module made a huge difference in my understanding of the content".

Incorporating art and creativity into the teaching of Urban Geography has been a transformative experience for both students and myself as a lecturer. It has challenged traditional teaching norms, fostering deeper engagement and encouraging students to think critically about the urban environment. This transdisciplinary approach not only deepened students' engagement with the module content but also honed essential skills, including critical thinking and creativity, which are increasingly vital in our rapidly changing world.

The positive student feedback and my invitation to participate in a panel discussion to share my reflections on my teaching practices at FNB Art Joburg underscore the potential of transdisciplinary teaching to enrich the educational experience and promote a more holistic understanding of complex subjects like urban geography. As lecturers, we should continue to explore innovative teaching approaches that enable students to see the world through different lenses and develop a broader skill set that prepares them for the challenges of the future. For more information on this click here, https://www.up.ac.za/geography-geoinformatics-and-meteorology/news/post_3183533-innovative-teaching-practices-shared-at-the-fnb-art-joburg-fair.

For more information on the collaboration with Javett Art Centre, click here:

https://www.up.ac.za/geography-geoinformatics-and-meteorology/news/post_3168994-the-javett-art-centre-hosts-interactive-urban-geography-honours-module

Making mathematics word problem-solving accessible to all

Nadia Swanepoel

Department of Early Childhood Education

#makingmatheasy #mathisfun #wordproblemsareforeveryone



As part of a Scholarship of Teaching and Learning (SoTL) project, I embarked on a study to support pre-service teachers' mathematics word-problem-solving instruction through the lesson study approach. During the first semester of 2023, twelve pre-service teachers took part in the research. The aim was for the pre-service teachers to collaboratively design lesson plans, teach the lesson plan to Grade 3 learners, while other pre-service teachers observe them, and then provide constructive feedback.

The rationale behind this study was to attempt to demystify mathematics word-problem-solving instruction, make mathematics word-problem-solving accessible to all, and concurrently, promote an awareness of continuous professional development and reflection. The main concepts addressed as part of the research were the integration of reading comprehension with mathematics word-problem-solving, activating the mathematics register, and incorporating play-based learning. Data was generated using observation checklists and video recordings of lessons taught, along with collaborative group discussions. Data analysis was done through inductive thematic analysis. Making use of the lesson study approach, pre-service teachers were guided through active, creative, and interactive mathematics word-problem-solving teaching styles whilst unlocking the mathematics register to pre-service teachers as a means to demystify mathematics

word-problem-solving instruction to pre-service teachers. The change in mathematics word-problem teaching and learning was evident among pre-service teachers' instruction as well as in Grade 3 learners' understanding of mathematics word problems. Mathematics word-problem-solving instruction is demystified by means of pre-service teachers' change in attitude, increased enthusiasm, collaborative lesson planning, and interactive teaching approaches.

This project has been an adventure from start to finish. I enjoyed working closely with second-year students and was inspired by their sheer "hunger" to learn about mathematics word-problem-solving instruction. One of the key aspects that stood out in this research was students' determination to present mathematics word-problem solving differently from the way they were taught. One student shared that, after the completion of the project, she now has a "new love for the subject of mathematics due to the practicality of the subject".

Another student explained that she is now confident in making mathematics word-problem-solving instruction "fun and exciting for learners". Lastly, another student admitted that "I believe I have the ability to engage with my learners and that I can explain to them on their level". This project has been an eye-opener for me as the main researcher, but also for second-year students about what it means to make mathematics word-problem solving fun and interactive.

Audiology students insights on a global peer-learning opportunity

Faheema Mahomed-Asmail¹ Saira Hussain², Nannette Nicholson²,
Cherilee Rutherford², Marien Alet Graham³,

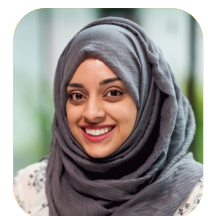
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#globalisedlearning #peerlearning #virtualexchange #personcentredcare #essentialskills

Globalised learning, a hallmark of our increasingly interconnected world, has revolutionised education by transcending traditional classroom boundaries. This paradigm shift equips students with vital skills essential for navigating a global society, while also nurturing their understanding of personal values within a broader global context. This pedagogical approach is uniquely poised to support the development of essential competencies necessary for delivering person-centered care (PCC) in healthcare education. The PCC approach involves the active participation of clients in their own care while considering their unique requirements, preferences, and experiences in the design and delivery of assessment and intervention services. Person-centered care, deeply



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rooted in principles of client empowerment and engagement, can be further enriched through peer learning—a proven strategy that cultivates communication skills and critical thinking. By challenging students to articulate thoughts, explain concepts, and defend ideas, peer learning promotes deeper comprehension and effective self-expression.

Globalised peer-learning opportunity

A global student-led conference for students on PCC took place on 10th October 2022, a first in Audiology. The conference was initiated by Saira Hussain (Aston University) and Victoria Watson (University of Southampton), who envisioned giving a voice to students on PCC and allowing them to engage and share their experiences with fellow students across the globe.

The conference was hosted by the Ida Institute (<https://idainstitute.com>) in collaboration with members from the Person-Centered-Hearing-Network (PCHN). The PCHN is a unique global collaboration, facilitated by the Ida Institute and committed to researching, enabling, and implementing person-centered hearing care.

From the PCHN, six academic partners were involved, which included the University of Pretoria, University of Cape Town, University of Southampton (UK), Aston University (UK), Rush University Medical Center (USA) and Nova Southeastern University (USA). Louise Metcalfe, a postgraduate master’s student at the Department of Speech-Language Pathology and Audiology (University of Pretoria), co-developed and co-hosted the conference with Ella Ujjal (University of Southampton).

The conference spanned three hours and consisted of six interactive live 20-minute sessions, which can be seen in Table 1. Each session was unique, with some including animations, others playing interviews, and some including standard presentations of students' experiences and/or what they have learned regarding the topic. Engagement strategies during the live engagement included polls, word clouds in Slido that updated in real-time, live chat, and a dedicated session at the end to discuss and answer questions.

Students’ insights

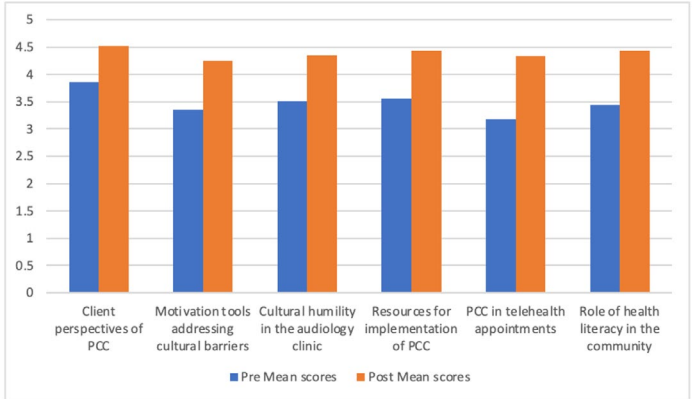
To evaluate the globalised peer-learning opportunity a survey was deployed following the conference. The survey consisted of three sections: (a) student demographics, (b) a 5-point Likert scale that was completed retrospectively for students to rate the level of awareness of the six topics before attending the conference and then after to determine if there was an improvement in their understanding of the concepts, and (c) four open-ended questions exploring their thoughts on the PCC concepts covered, including its implementation.

Table 1. Topics, university hosts, and video recordings

Session Topic and Presenting University	Link to video recordings
Understanding Clients’ Perspectives of Person-Centered Care presented by the University of Pretoria	https://vimeo.com/781797209?share=copy
The transition from university to placement, and how to begin implementing PCC in the clinic presented by the University of Southampton, United Kingdom	https://vimeo.com/781812125?share=copy
Simulated Patients Online presented by Aston University, United Kingdom	https://vimeo.com/781762851?share=copy
Removing Barriers to PCC presented by RUSH University, USA	https://vimeo.com/781763849?share=copy
Overcoming Barriers to PCC in South Africa presented by the University of Cape Town, South Africa	https://vimeo.com/781775246?share=copy
Cultural Humility in the Clinic presented by Nova Southeastern University, United States	https://vimeo.com/781776288?share=copy

One hundred and four students participated in the survey, with 83.7% of them being from the Global North regions. Pre- and post-ratings improved significantly across all the discussed topics.

Figure 1. Pre-post ratings of discussed topics



Note: Wilcoxon signed-rank tests (all $p < 0.001$) indicated significant differences between pre-post scores across all topics

Students indicated that the conference provided them with the opportunity to observe **the application and effective use** of PCC in practice, as opposed to theoretical knowledge only. The importance of prioritising PCC in clinics was a key finding, with one student mentioning “It opened my eyes way more. I feel as though PCC can be implemented significantly through

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audiology.” Students also indicated that their **perspective towards PCC** had improved, with many mentioning that they have a “better understanding of the approach” and have “gained an improved self-awareness of their role in PCC”.

Students indicated that although PCC is important, the conference sessions made them aware of the **barriers to its implementation** that ranged from “differences in culture” to “applying PCC in telehealth sessions”.

Effectiveness of the globalised peer-learning approach

From a pedagogical standpoint, this event achieved notable success, strengthening the relationship between academic partners and paving the way for future growth and collaborations in upcoming projects. However, it is essential to

acknowledge the challenges faced, including the complexities of coordinating across different time zones, managing diverse schedules, and optimising available resources. Rigorous planning, especially for a pioneering PCC conference, was crucial to ensure a cohesive and meaningful experience for all participants.

This project underscores the transformative potential of globalised learning in bridging borders, fostering collaboration, and embracing diversity. The Global PCC Conference served as a pivotal platform, empowering audiology students through a student-led, global learning initiative that actively engaged them in the observation and practice of effective PCC. The next event is scheduled for the 2nd of October 2023 with universities joining from Europe, South Africa, and America.

Developing a professional identity that supports employability

Bernice Beukes and Joshua Venter

Department of Auditing

#ProudlyProfessional #CAatUP



Students pursuing a professional accounting qualification often lack a comprehensive understanding of what it truly means to be a professional. A professional is defined as a person who has acquired and used a high level of technical knowledge and has the ability to judge the manner of how, when, and where to use this knowledge. This development of an identity becomes more complex when students have to combine it with the acquisition of discipline-specific knowledge and skills, whilst keeping up with technological advancements in business such as artificial intelligence (AI) and process automation.

The aim of this teaching initiative was to bring the concept of professional identity to the forefront of accounting education. The initiative employed two approaches: first, inviting practicing professional accountants to share their perspectives on professionalism, and second, creating a sense of belonging amongst students. In order to underscore the significance and relevance of the initiative, we branded it "Proudly Professional" and divided it into two distinct formats: "Tailored Tuesdays" and "Thrilling-Themed Thursdays."

During Tailored Tuesdays, students were encouraged to dress in business casual attire, and practicing Chartered Accountants were invited to present their views on professional conduct, focussing on their experiences as Chartered Accountants.

Short videos recorded by the professionals were shown, followed by discussions highlighting key concepts related to professionalism. On Thrilling-Themed Thursdays, practical questions and case studies were addressed to reinforce the

learning. The Thursday lectures were conducted in a playful atmosphere, with themes such as "come in disguise", "going on safari", "Tuks of Niks", and "wacky socks day."

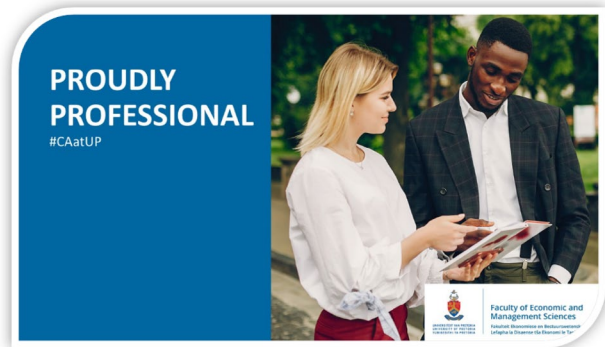
These themes not only added a fun element to the lectures but also fostered a sense of community and belonging amongst the students. An additional reason for "Thrilling-Themed Thursdays" was to show the students how a Chartered Accountant needs to be adaptable to their environments and to match the working environment of the client. Occasional small rewards were given to encourage participation and enable lecturers to interact with students on a more social level. This approach created a relaxed learning environment, fostering trust and leading to lively discussions.

At the beginning of the initiative, students were asked to describe their understanding of professionalism. Their initial responses were brief and focussed mainly on adhering to ethical codes of conduct. However, by the end of the initiative, their answers became more detailed, encompassing various aspects such as client relationships, service delivery, and pursuit of excellence.

Lecturers observed that more students enthusiastically embraced the Thursday themes, demonstrating their outfits, and actively engaged in discussions, displaying improved confidence. The students also exhibited a clearer sense of direction and a better understanding of the demands they would face in their future careers.

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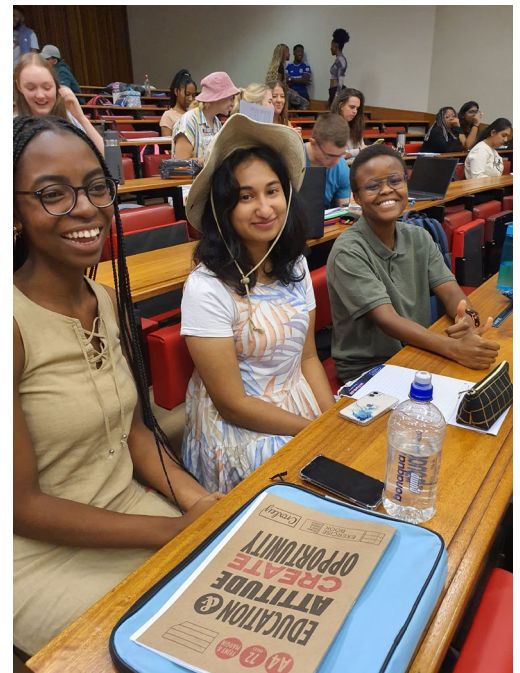
This teaching initiative provided students with an opportunity to reflect on their professional identity and the type of professionals they aspired to become. It familiarised them with the opportunities available within the accounting profession and instilled the idea that struggles are normal but worth the effort. The gradual development and sustained focus on professional identity through mini discussions proved effective, requiring initial planning and preparation but minimal resources during execution. We believe this approach can be implemented in any professional teaching context, empowering students with the skills necessary to navigate future workplace challenges.



Tailored Tuesday



Thrilling Themed Thursday



Unlocking student success: The power of class attendance in MLB 111

Markus Wilken, Angelique Kritzinger, and Rebamang Mosa

#attendancematters #tutorials #frontloading



MLB 111 is a large first-year module that is a service module for the faculties of Natural and Agricultural Sciences (NAS), Health Sciences, and Veterinary Science and an elective for Education and Engineering, Built Environment and Information Technology (EBIT). All first-year students with biology-based degrees in the respective faculties are required to pass MLB 111 to proceed with subsequent years of study. The module has an average enrolment of 1500 students and is presented during the first semester of each academic year.

In-person classes create a valuable connection between students and educators, and research has consistently shown that active class attendance and participation strongly correlate with academic success. As we stepped into 2022, the relaxation of COVID-19 restrictions allowed us to contemplate the reintroduction of face-to-face teaching. To our delight, most of the students polled during an online introductory lecture expressed a desire for on-campus classes. However, logistical challenges loomed large with an enrolment exceeding 1500 students and venue capacity capped at 50%.

A fully face-to-face teaching model was not feasible, and our teaching team adopted a hybrid approach. Each lecture was delivered six times, with four taking place on campus and two remaining online. To our disappointment, class attendance turned out to be a source of concern. On-campus classes averaged just 15 to 20 students, while online sessions fared slightly better, attracting around 200 participants. This meant that we were effectively reaching only 30% of our student body in each lecture, and the situation was not much better in our tutorial sessions, where attendance hovered around 50%.

Predictably, these attendance challenges took a toll on student performance. Average scores on summative assessments fell below 50%, resulting in an overall module pass rate significantly lower than in previous years. Early on it became evident that many students were not fully appreciating the significance of active class engagement, and this was confirmed by the candid feedback we received during student evaluations. They noted, *"I did not have to attend lectures, and this helped me save time"*, and *"Recorded lecture slides were most helpful, allowing me to go through them at my own pace"*. The lack of in-depth discussion provided in face-to-face lectures left them ill-prepared for the crucial summative assessments. Subsequently, the results for the module were not as good as in previous years, prompting us to devise a plan to address the fundamental challenge of class attendance.

In 2023, we used a dual strategy to encourage better class attendance and engagement. First and foremost, we re-emphasised the immense value of attending classes in person and did not provide any online options. We also made a bold decision to remove recorded lectures and pre-recorded class notes, ensuring that all lectures took place exclusively in a face-to-face setting. Although we retained low-stakes online assessments as front-loading of the theory concepts, our lectures moved away from being content-driven and focussed on essential concepts guided by science literature. Although

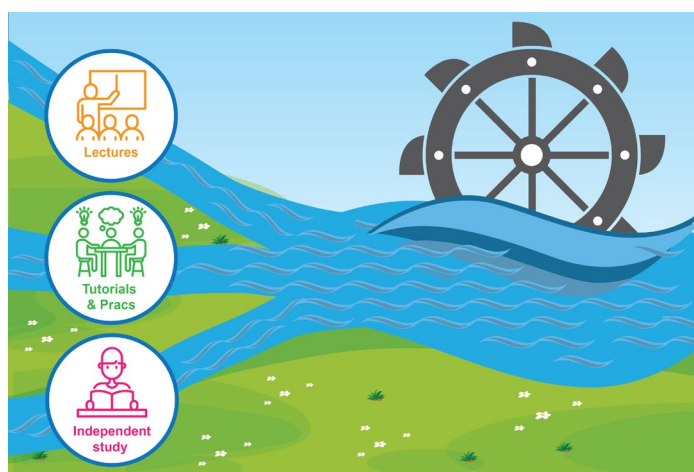
fostering active engagement in large classes is difficult, we saw it as a priority. Using tools such as clickers and peer learning, we prioritised maximum engagement, employing interactive question sessions and team-based revision quizzes.

Our tutorial sessions were used as platforms for exploring higher-level questions, directly tied to the core lecture concepts, thus offering students a valuable self-assessment opportunity. Furthermore, during summative assessments, we doubled down on the emphasis on concept-driven questions, mirroring the content covered in our lectures and tutorial sessions. This strategy yielded a notable improvement in overall module performance, with test averages showing an impressive 10% boost and a corresponding increase in the module pass rate.

Once more, this experience reaffirmed a fundamental principle: students engage most enthusiastically when they perceive a clear plan that guides their learning experiences. By providing essential theory front-up, we can focus our teaching time on core concepts, illustrating their real-world significance beyond the confines of textbooks. This way, we succeeded in demonstrating the tangible benefits of attending lectures. Our tutorial sessions, designed to assess these vital concepts in a low-pressure environment, served to guide student learning to where it has the most impact.

The structure of these sessions allowed students to consolidate their understanding in a low-stake environment. Furthermore, our approach to designing summative assessments, with a resolute focus on these foundational concepts, became a powerful motivator. It incentivised students to maintain a steady workflow throughout every unit of the module, ultimately culminating in the strategy's overall success.

We have made a visual representation of our teaching approach to assist students in aligning their learning strategies. We show how all the smaller elements culminate in one stream of knowledge. The water wheel shows that the knowledge should become useful (unfortunately not in generating electricity) but in other modules and in real life. The water wheel is represented by assessment in the module. We need to assess if they have mastered the work to serve them in future.



Teaching physics with a few songs

Rocco Duvenhage

Department of Physics

#motivation #learningenjoyment



Classical Dynamics and Statistical Mechanics are amongst the core subjects in physics and any physics degree programme. They deal, respectively, with the passage of time and the role of probabilities in situations that are too complicated to pin down precisely.

These modules are demanding, though. The ideas are conceptually challenging, build on one another, and are technically tough. I wanted a simple way to pull students into the individual topics being treated, make it more fun for them, and get them curious about what it all means and where it is leading. I wanted to help them organise the ideas and to stay motivated - but not at a high additional cost in terms of time and effort on their part.

I decided to add quotes from songs to my typed-up lectures that would variously describe the topic to be treated quite directly, serve as a memorable tag, or even be slightly mysterious to stir the students' curiosity - all the while being entertaining to boot. The students appeared to enjoy it. Some set up playlists consisting of the quoted songs. Others mentioned that it did help them to navigate the work more easily, with the quotes serving as markers. My general impression was that it also kept them motivated. And there certainly appeared to be more smiling faces in class than previous years.

The process of finding appropriate lyrics from amongst the songs and artists I like also made teaching much more enjoyable and exciting. All in all, it was a very worthwhile experience.

Here are some examples of the quotes and their intent:

Describing the introduction of momentum instead of velocity as a seemingly small change in point of view, nevertheless having a major impact on further developments:

"...shoves a little bump into the momentum. It's just a little lump, but you feel it."

- **Paul Simon, The Cool, Cool River.**

https://www.youtube.com/watch?v=evTk_-e5XE8

The mystery of action:

"Today, I make the action."

- **Peter Gabriel, Family Snapshot.**

A sermon about the central role probabilities will play in statistical mechanics:

"The sacred geometry of chance, the hidden law of a probable outcome, the numbers lead a dance."

- **Sting, Shape Of My Heart.**

On the correspondence between classical and quantum physics, and transitioning from the former to the latter:

"The perfect match - you and me. I adapt..."

- **Björk, Virus.**

Reminding students that fermions are individuals who won't let themselves all be forced into the same box:

"I keep pushing back."

- **The War on Drugs, Nothing to Find.**

Indicating that we are moving from theory to an application thereof:

"Ora che quest'avventura sta diventando una storia vera."

("Now that this adventure is becoming a true story.")

- **Mogol via Lucio Battisti, Con il nastro rosa.**

Visual and spatial thinking cannot be overemphasised:

"Though my language is dead, still the shapes fill my head."

- **Arcade Fire, My Body Is A Cage.**

Introducing a set of hints for some of the problems:

"...I could use just a little help."

- **Bruce Springsteen, Dancing In The Dark.**

As motivation for exercises and problems in a lecture scheduled to take place shortly after the test results would be available:

"What's the good in crying? It's always been that way. At the end of the day you gotta keep on trying."

- **Aztec Camera, The Crying Scene.**

Saying goodbye:

"Like the parting of the ways."

- **Radiohead, Where I End And You Begin.**

Emphasising the value of visual and spatial thinking:

"I talk in pictures, not in words."

- **Peter Gabriel, And Through The Wire.**

Equipping students to FLY@UP

Gopika Ramkilawon

Department of Statistics

#statssupport



Gopika Ramkilawon is a senior statistical research consultant with the Internal Statistical Consulting Services (ISCS) at the University of Pretoria. She provides crucial statistical and research assistance for masters and PhD students at the university.

Q: How do you support students on a day-to-day basis?

A: Firstly, I assist with their research plan. I assess the viability of their topic in terms of its statistical validity. I then assist with ethics applications, research protocols and data analysis

planning. I then perform the data analysis for them and assist in finalising their dissertations and any related publications.

Q: What pointers would you give students interested in using the ISCS?

A: Data literacy is important. Students need to understand how to structure and read data sets within their field. Basic statistical literacy always helps, broadly knowing what an analysis would entail within their field and having a clear idea of their research question. The most important aspect is effective communication skills. The better they understand their data and research goals, and communicate their needs, the more easily the ISCS can provide effective assistance.

Q: How does your assistance help students FLY@UP and beyond?

A: In addition to providing a report of statistical results, I equip students with basic statistical skills and tools that they can use throughout their academic careers. I provide them with a better understanding of what statistics is as a field and its role in their research. I aim to weave the golden thread that sews the research project into a coherent whole.



The Autograder: A feedback tool for the modern student

René Stander

Department of Statistics

#timesaver #trialanderror



René Stander is a PhD candidate and lecturer in the Department of Statistics. She lectures a large first year module with over 800 students. The module was presented in 2020 for the first time and has a strong focus on coding.

Q: What is the greatest challenge you face in your module?

A: There are two main challenges. For students, it is a fear of coding. For teaching staff, the challenge is that the marking load in terms of coding is very high.

Q: Can you explain what the Autograder is?

A: The Autograder is an assessment tool on Gradescope which automatically grades students' coding scripts using a memo uploaded by the teaching staff.

Q: How does the Autograder help students?

A: The Autograder helps students defeat their fear of coding since it gives them immediate feedback. With unlimited submissions, they can learn through a trial and error process. In this way, their mistakes become learning opportunities rather than something to be feared.

Q: How does the Autograder help teaching staff?

A: The Autograder marks more accurately and consistently than human markers. Once the autograder is set up, no work is required from the teaching staff in terms of marking and summarising results. The Autograder gives a detailed summary of student performance at each question. This also allows teaching staff to identify problem areas in the module.

Q: What are the main challenges with the Autograder?

A: The Autograder is very sensitive to small errors. Filenames and variable names must be exactly correct and syntax errors are not tolerated. However, this teaches students to closely follow the given instructions, and teaches them good coding practice.

Q: What would you say to other lecturers who are interested in using the Autograder?

A: Do it! Setting up the Autograder presents a steep learning curve in the beginning, but it is more than worth it in terms of time saved later on. The immediate feedback for students is extremely valuable and no other form of marking enables this kind of feedback. The Autograder has transformed the way I teach coding.

Addressing the effect of the “O yes” study method in second-year GIS modules

Erika Pretorius

Department of Geography, Geoinformatics, and Meteorology

#problemsolving #OYES #grouptest



Problem-solving is an integral part of effectively using Geographic Information Systems (GIS). Once students understand the basic concepts and analysis functions as discussed in theory, they need to be able to think for themselves and apply the correct tools, in a suitable sequence, to answer spatial questions in practice.

Students often struggle to apply suitable cognitive processes when confronted with spatial problems in GIS. They tend to look at example answers, and then say: “O yes, now I understand”, without verifying any real insight into the processes.

After presenting the relevant theoretical background, practical sessions and classwork exercises provide examples and introduce the relevant procedures. Classwork quizzes are available for students to practice their skills and gauge their own understanding before they encounter similar content in the semester assessments.

Students, however, do not always take the classwork seriously enough and are reluctant to apply their own minds. During practical sessions, they are hesitant to discuss or debate possible solutions to a problem. They tend to passively wait for someone (a tutor or friend) to provide a possible course of action and then follow the advice without question. Ultimately, they then learn with the “O yes” method, falsely believing that they understand and can come up with suitable analysis procedures themselves. If their assumption is then proved wrong in a demanding semester assessment or examination, it is often too late for remedial action.

We decided to use a group test scenario to facilitate student engagement with each other and the typical analysis procedures. Students were tasked to complete a series of analysis questions in random groups of three. They were encouraged to debate the procedures and fight for their viewpoint while also listening to each other’s viewpoints and ideas.

To increase the stakes and improve effective participation, the group test contributed 5% to the final mark (this percentage seems to be just important enough).

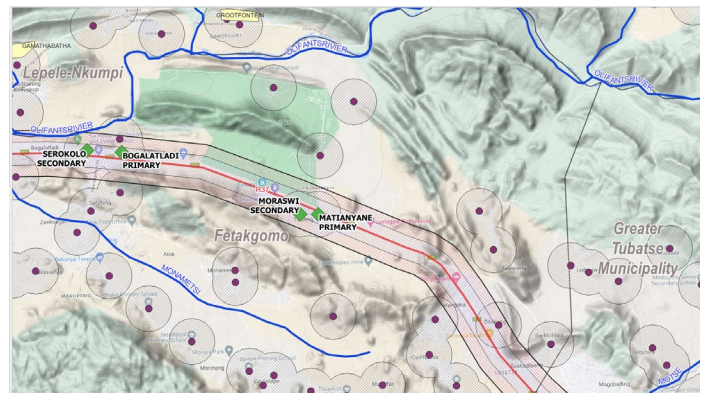
It is difficult to quantitatively measure the outcomes of this approach, but we observed extensive debating and discussion between group members during such assessments. The assessment method seems to be particularly beneficial to weaker and less active students, but we believe that all students benefit in one way or another.



What did the students think of it?

- Most of them indicated that they gained insight (either in the work or in their skills level).
- Several students indicated that it was a wake-up call and that it helped them to understand what will be required of them and where they may need to improve.
- Academic achievers were generally less impressed with having to share their skills (and marks).
- Most experienced the test conditions as “less stressful”.

Final note: Group assessments in large practical groups require some logistical gymnastics, but we believe it is absolutely worth the effort.



Benefits of using automatic question generation

Warren du Plessis

Department for Electrical, Electronic and Computer Engineering

#examinations #AQG #understanding



Students' approaches to modules are strongly influenced by the way they are examined. However, setting examinations that cover all the material for a module in sufficient detail is both challenging and time-consuming.

Automatic question generation (AQG) systems have been developed and used in the modules EAI 320 Intelligent Systems and ESC 320 Stochastic Communication Systems since 2018. Figure 1 shows the automatically generated solution to the α - β pruning question from the 2023 EAI 320 examination. The corresponding question was also generated by the AQG system.

Lecturer considerations

Generating examination questions by hand is extremely time-consuming because even small changes to the question can dramatically change the solution, and thus, the nature of the problem. Setting such questions is even more difficult when there is a need to include special cases that only rarely arise, such as those shown in Figure 1. Such special cases normally require deeper insight into the relevant material, making their inclusion important. An AQG system allows a variety of different potential questions and solutions to rapidly be generated, allowing the evaluation of trade-offs between issues such as problem complexity and the amount of time required to complete the problem. So, while the time required to develop an AQG system is considerable, the ability to set better questions and the reduced time required to do so make the investment worthwhile.

Student considerations

Students place emphasis on studying to understand the principles underlying the relevant material rather than memorising solutions from previous examinations because new questions are generated for every examination.

Furthermore, students are required to study relevant special cases, thereby guiding them to a deeper understanding of the relevant algorithm. For example, the question in Figure 1 was the first case where multiple solutions that have the same value as the best solution were present, and a number of students obtained the wrong answer. Had the students correctly understood the material, they would not have made this error because only one of the values, highlighted in green in Figure 1, is not pruned.

Finally, the very format of the solution in Figure 1 is a result of the AQG system. A far lengthier format was initially used, and students copied this format in their solutions, thereby wasting significant time during examinations. The current format in Figure 1 was developed to be compact, while still retaining all important information. Students have adopted this format in their examination answers, eventually requesting that blank answer sheets in this format be provided. Such answer sheets are now generated by the AQG system and provided to students. Students save time by no longer having to re-draw the tree, while lecturers can mark faster because student solutions all have the same answers in the same locations on the answer sheet.

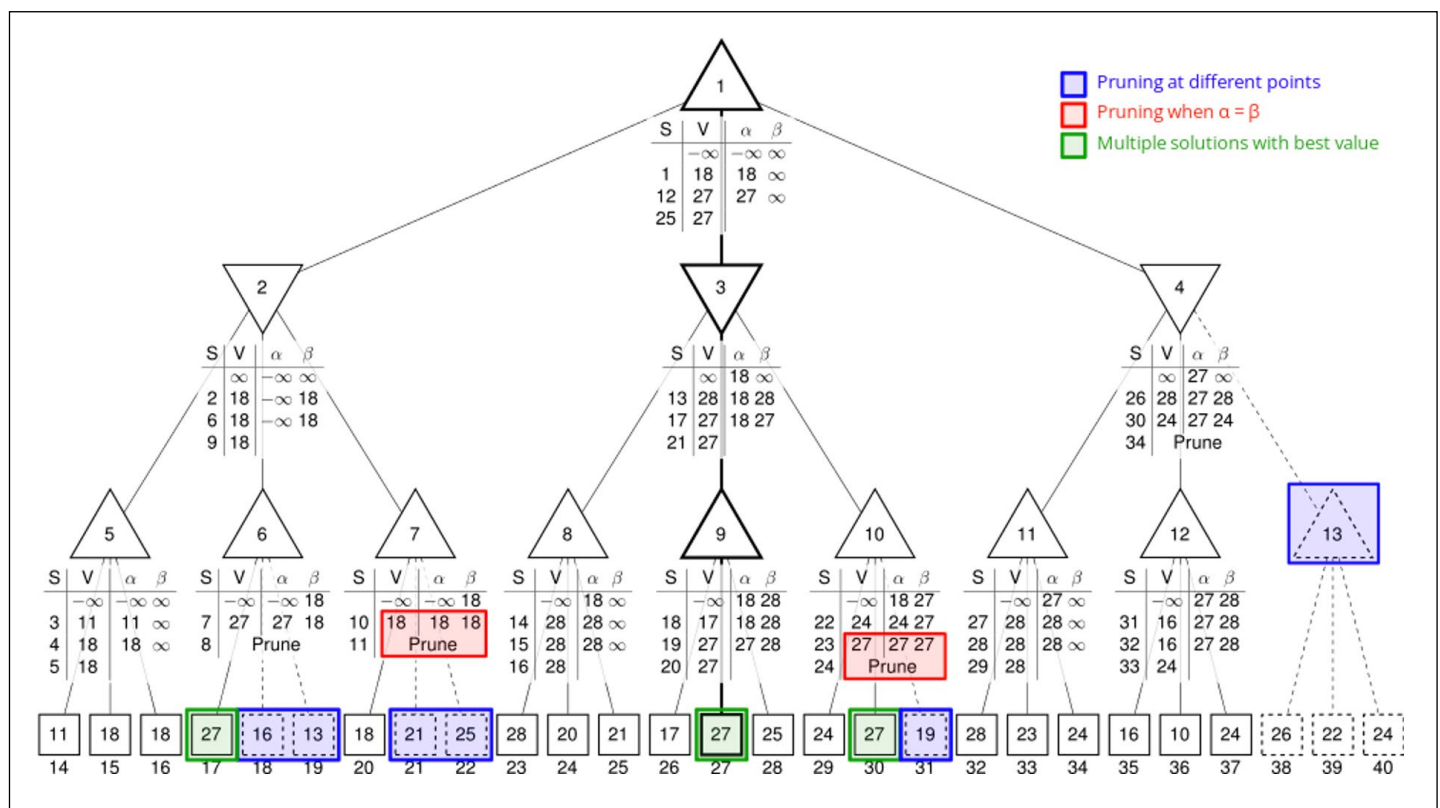


Figure 1: Example of an α - β pruning question

Authentic assessment of clinical skills: a modernised approach

Natascha Olivier

Department of Human Nutrition

#authenticassessment #modernisedapproach #clinicalreasoning



In an era of information overload, balancing theoretical learning and practical skills application is challenging. Theory-heavy modules can result in the suppression of clinical reasoning and skills as well as communication skills, as was the case in the third-year Medical Nutrition Therapy module. In addition, written examinations are limited to assessing understanding of theoretical principles, and cannot authentically test clinical reasoning and skills application, or oral communication skills.

Authentic assessment of real-life clinical and communication skills was incorporated into the students' final examination in 2022.

Case study-based video recording of medical nutrition therapy education session

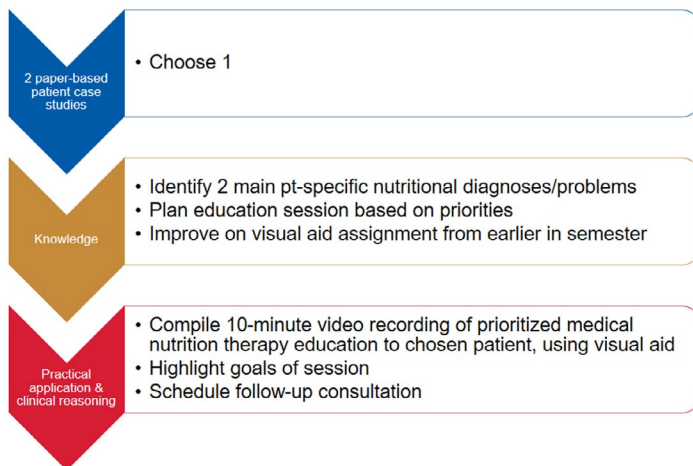
Problem-based approach

Application & translation of knowledge

Incorporation of modern media

Oral communication & presentation

The assignment was structured as follows:



A peer-reviewed rubric was shared beforehand, and students had two weeks for completion. A trial run was completed during the semester, and potential problems like inaudible voice, problems seeing the visual aid on a screen, etc., were pointed out.

Results showed good understanding of the clinical and communication skills investigated, indicating that students can be architects of their own learning. Benefits of the assessment included:

- Consistency, as the same case study and peer-reviewed rubric were used.
- Incorporation of various clinical skills acquired throughout studies, including communication skills.
- The time limit forced students to extract and focus on the main nutritional problem.
- Re-using the visual aid compiled during the semester allowed lecturers to assess understanding and improvements made.
- Less stressful as students were not put on the spot but had time to familiarise themselves with the case and to prepare and redo the video recording as many times as wanted.
- Blended learning, allowing the use of modern technology, and preparing students for real-life applications in a modern manner, similar to social media posts.

Such assessment may be utilised as a combined assessment across multiple modules to assess overall clinical skills application competence rather than knowledge boxed into various modules. Peer feedback and assessment prior to final submission and the investigation of students' experiences may enhance such projects in the future.

Comparative Judgement as alternative grading method for IS essays

Machdel Matthee, Lizette Weilbach, Funmi Adebisin

Department of Informatics



Introduction:

Due to the large number of honours students, the Department of Informatics considered more efficient approaches to evaluate academic writing, aiming to maintain reliability while enhancing efficiency. One such alternative methodology in this context is the Comparative Judgement (CJ) grading approach. This method asserts that individuals are more dependable in comparing two assignments or demonstrations of competence than attributing a mark to an individual assignment. Different judges evaluate pairs of assignments, selecting the better one based on demonstrated competence. This culminates in a final scaled score that reflects a collective consensus on the assignment quality.

This assessment method was applied to an academic writing exercise (academic essay) done by 81 INF 702/780 students. This honours Information Systems (IS) module is a research method module of which the outcome is a Systematic Literature Review (SLR). The software platform for grading assignments was provided by the UK-based company No More Marking (NMM).

Students had to write a short introduction to an SLR with a predetermined research question. To assist them with this task, students were given four article excerpts along with clear instructions detailing which articles related to the specific sections of the introduction they were required to compose. This material was provided one week prior to the assignment deadline.

The assignment activity took place in a supervised computer lab located on the university's campus, with restricted internet access (only access to the Learning Management System (LMS)) and had to be completed within a 45-minute time frame. Students submitted their work in PDF format through the university's LMS.

The grading process

The students' SLR introductions, formatted as PDFs, were shared with NMM via a dedicated Google Drive folder. The NMM system autonomously generated pairs of papers for comparison, with each pair consisting of two papers randomly selected (see Figure 1).

Through the accumulation of a significant number of these judgements, the platform could statistically infer the relative quality of all the papers in the dataset. Subsequently, it organised the papers based on these inferred judgements, ranking them in descending order of quality from highest to lowest.

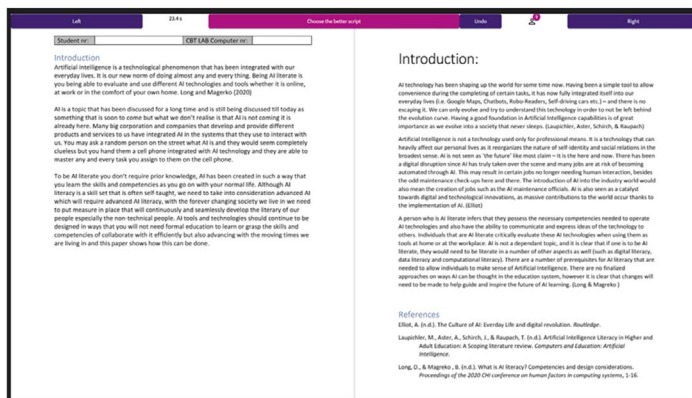


Figure 1: Example of NMM Platform Interface

No More Marking requires 10 judgements per script. The total is divided by the number of judges. For our study, a total of 81 papers needed assessment, which meant that each judge had to judge 270 papers $((81 \times 10) / 3 = 270)$. In this study the three authors acted as the three judges.

After the CJ grading process, we evaluated the same scripts utilising a rubric, keeping record of the time taken and the scores assigned to each assignment.

Findings

Figure 2 below displays a screenshot showcasing the outcome of the CJ grading process done by the NMM judgement tool.

First Name	Scaled Score	True Score	True Score SI	Infit	Score	Prog Score	Local Comparison	Observed Score	Losses	Task Percentile
INF0209 - u1	21	21.018538	5.47509655	1.887530437	0.068814769	0.3	0.015789474	19	0	19.234567901
INF0207 - u2	5	21.2142177	4.981971019	1.905468845	0.089193433	0.3	0.015789474	19	0	2.469135802
INF0217 - u3	18	18.3904119	5.58619848	0.883237337	0.1113	0.3	0.015789474	19	0	3.701007704
INF0233 - u4	23	10.42159445	-1.78495582	0.935299197	0.051328592	2.24287143	0.106802721	23	2	4.938271605
INF0224 - u5	28	7.797816172	-2.941629952	0.698424891	0.888361755	3.205263158	0.16898061	19	3	6.172893506
INF0218 - u6	12	10.88931364	-2.546231148	0.933365452	0.123438339	2.248482105	0.171285132	19	2	9.876648321
INF0218 - u7	32	8.348877665	-2.575550136	0.748562615	0.77133048	2.245454454	0.102661146	23	2	9.876648321
INF0206 - u8	32	7.818073057	-2.548791783	0.701642871	1.153462719	4.18	0.209	20	4	9.876648321
INF0208 - u9	32	11.21121036	-2.50207073	0.8178366	0.1232059	2.24	0.112	20	3	18.11111111
INF0226 - u10	36	2.86500447	-2.130609979	0.741887555	0.43474354	4.18	0.209	20	4	16.125456701
INF0203 - u11	41	7.01345877	-2.734254621	0.629431743	0.8380085	4.18	0.209	20	4	16.125456701
INF0218 - u12	41	6.99041668	-2.73201062	0.628048151	1.012329451	6.12	0.306	20	4	14.81481481
INF0219 - u13	42	3.34407616	-1.663452544	0.749778896	1.45051187	3.205263158	0.16898061	19	3	16.04988272
INF0205 - u14	43	6.74879905	-1.92805638	0.57301164	0.91161135	5.15742857	0.245578211	23	5	16.172893506
INF0216 - u15	46	5.82770815	-1.28664971	0.59077510	0.79441283	6.12	0.306	20	4	19.73308642
INF0225 - u16	46	6.8339746	-1.31392077	0.613271912	1.008601386	5.15742857	0.245578211	23	5	16.172893506
INF0216 - u17	48	7.24849011	-1.16227628	0.64948554	0.75257147	5.142102621	0.27067119	19	5	24.22222222
INF0216 - u18	48	6.53490138	-1.165684829	0.586446114	1.09082369	6.12052616	0.27066468	19	6	22.22222222
INF0233 - u19	51	6.43777679	-0.861183904	0.599715684	0.91078371	7.09	0.345	20	7	13.24411111
INF0240 - u20	51	6.43777679	-0.861183904	0.599715684	0.91078371	7.09	0.345	20	7	13.24411111
INF0234 - u21	54	6.15210198	-0.6154112	0.552118107	0.75994264	6.12	0.306	20	7	28.35561173
INF0217 - u22	54	6.230814252	-0.600289897	0.559192319	0.744851338	7.09	0.345	20	7	13.24411111
INF0220 - u23	54	6.290171563	-0.540319944	0.54543732	0.764896992	0.042891744	0.043012245	21	9	28.35561173
INF0204 - u24	56	5.982295187	-0.470742575	0.534888878	0.740778147	9.042891744	0.430612245	21	9	28.35561173
INF0211 - u25	56	5.768189968	-0.40783375	0.517510178	0.732401817	10.9871429	0.523129232	21	11	10.33333333
INF0207 - u26	58	4.280262819	-0.39996027	0.56840151	0.941410498	7.09	0.345	20	7	13.24411111
INF0209 - u27	58	6.34267918	-0.371020954	0.573821462	1.018857216	7.078947368	0.372576177	19	7	12.33333333
INF0204 - u28	57	6.297861773	-0.285570263	0.546218058	0.853878005	7.078947368	0.372576177	19	7	12.33333333
INF0216 - u29	57	6.306252906	-0.14610108	0.560262559	1.012000004	8.08	0.403	19	12	40.74074074
INF0201 - u30	57	6.185376991	-0.22575421	0.555114494	1.096714428	7.078947368	0.372576177	19	7	12.33333333
INF0202 - u31	57	5.882288101	-0.242012666	0.52792327	1.04931589	9.08	0.4515	20	9	11.407407407
INF0205 - u32	57	5.890506413	-0.242418424	0.533008178	1.137186178	9.08	0.4515	20	9	11.407407407
INF0212 - u33	61	2.653551064	-0.424822601	0.623051929	0.742221514	7.078947368	0.372576177	19	9	20.74074074

Figure 2: First few results of the CJ grading process

The conclusive assessment of each assignment's quality is presented in the second column labelled 'Scaled Score', with a range from 0 - 100. Additionally, a crucial metric is the 'Infit' value, serving as an indicator of the level of consensus among judges. Elevated Infit values might imply potential discrepancies amongst judges regarding the assessed quality of the work in question.

continued on page 15

Efficiency results

The average time spent per script using CJ was roughly 1.5 minutes, leading to a cumulative total of approximately 20 hours and 15 minutes required for grading the 81 papers (equivalent to 6 hours and 45 minutes per judge, given the three judges). On the other hand, the average time for marking per script using a rubric was 1.32 minutes. This suggests that an individual can complete the script marking in just under two hours.

Reliability results

The reliability coefficient stood at 0.84, underscoring a strong reliability level for the task. The NMM software employs the scale separation reliability, which gauges how effectively the assessment distinguishes the quality of scripts. This concept is akin to Cronbach's alpha. An index of 0.8 or higher indicates substantial reliability.

Validity results

The authors employed the Statistical Package for Social Sciences (SPSS) software to perform the Spearman correlation test, aiming to assess the validity of the CJ grading method for academic writing assignments. The Spearman rank order correlation coefficient revealed a notable positive correlation between the rankings generated by the CJ grading process and the scores obtained through rubric-based grading

This finding underscores that the CJ method accurately reflects students' proficiency in academic writing.

Conclusion

The findings derived from this exploratory study highlight a method that is notably reliable and substantively valid, albeit with some efficiency drawbacks. Nonetheless, the user experience during the grading process was positive, characterised by a reduced cognitive load. We found it reassuring that the final ranking is not contingent on a single individual. Furthermore, we recognised the judgement tool's role in ensuring judgement consistency, thus enhancing trust in the process.

We also recognised the potential of enabling lecturers to design assignments which are not easily scored by conventional means. For IS honours modules, more specifically, short academic writing exercises can be assessed in a reliable and efficient way, depending on the number of judges. Unfortunately, the time-consuming nature of the grading process implies that with large student numbers and limited assessors, CJ will only be used in exceptional cases.

*This is a summary of an article accepted at the AIS SIG-ED 2023 conference.

Authentic feedback: The importance of feedback to improve learning

Chari de Klerk, Rhole Coetzee, Anneli Delport

Department of Finance Management

#authenticfeedback #rubric #studentlearning #pervasiveskills



Accounting professional bodies and accountants in practice have emphasised the importance of getting students ready for the workplace. However, students' readiness has been questioned due to graduates lacking key pervasive skills, such as critical thinking. This is accompanied by the challenge of students not being life-long learners.

Currently, the university curriculum is not necessarily set up to assess all pervasive skills, although these skills can be cultivated in the classroom. Feedback can be an important tool to cultivate these pervasive skills and enhance students' learning process.

During the 2022 academic year, we used two different feedback styles, a technical and rubric feedback method, in a case study assessment to determine whether different feedback styles can enhance a student's learning experience and showcase to students whether different pervasive skills have been accomplished. Students overwhelmingly recognised the benefit of the

rubric feedback method providing them with a better platform to showcase how they achieve pervasive skills, such as critical thinking. This was even further supported by responses that rubric feedback helped them understand areas for improvement better, which enhanced their learning experience. Rubric feedback, however, awarded students a competency rather than a technical mark, and this was one key benefit students identified from technical marking.

Regarding students' overall responses about which feedback method is more useful, there was not a clear preference. This showcases the importance of making use of different feedback methods in assessments as each feedback method provides its own benefits.

Results reported from this study can provide educators from tertiary institutions with guidance on the usefulness of different feedback styles used in assessments and their impact on a student's learning experience and pervasive skills development.

My transition from a postgraduate student to lecturer

John Lubaale

Department of Consumer and Food Sciences

#growingispainful #support #mentors



I always thought I was born a teacher, and this is in part because I was born and raised by two teachers but also because during my undergraduate degree (which seems like a million years ago), my mates always came to me to have me explain concepts they had failed to understand in class. For context, I was not a high-performing student in high school, so the trust my mates had in me granted me my first experience of imposter syndrome. Nonetheless, this sparked my interest in teaching because I somehow got everyone to understand concepts that even I had previously struggled to understand. Fast-forward to my honours year, where I had a chance to tutor and act as a practical demonstrator.

These were all seamless, in hindsight, compared to the mammoth task of lecturing. They did, however, prepare me for the job I am privileged to hold now: lecturing. The training (by Dr. Louw) I received made me very aware of my shortfalls when it came to teaching. Nothing, however, prepares you for the imposter syndrome that hits you when you are lecturing in the same department you have previously been a student in, and where most of the students who have seen you as a student, now have to be lectured by you.

This, by far, was the most significant adjustment, coupled with the fact that as a lecturer, I am solely in charge of the module I am lecturing and can no longer wait for instructions to be issued because the instructions have to come from me. This resulted in many admin-related duties I had not envisaged.

I suppose the second significant adjustment was that I set, mark, and give feedback, something I had never experienced as a postgraduate tutor. My last colossal adjustment was understanding that students are not my friends; I must confess, this was the toughest of them all. I am learning to create healthy boundaries that maintain a healthy and lively learning environment while remaining a figure of authority during lectures.

The sessions with Dr. Louw have gone a long way in remedying this. What I suppose I never really factored in is that I am no longer a student, so I cannot throw tantrums and expect someone else to fix my mess; I need to wear my “big boy” pants, which is easier said than done.

Regarding the Student Feedback on Teaching Survey (SFTS) (phew!) - Dr. Louw and my mentors, Dr. Mehlomakhulu and Prof. Duodu, will attest to this - I was beside myself when I received the first assessment from my class. While it was not what I anticipated, I was grateful for it. It is a very relevant tool for people passionate about remaining in academia as teachers/lecturers. You always believe you have everything figured out, just like I did. I needed the feedback to alert me of all the bits I still lack, a vital learning curve for pedagogues.

While some of the feedback was harsh, when I took time to look beyond the delivery of the feedback and further into the content, I realised I had a lot of lessons to take from the feedback. I suppose I am still learning, and in my mother's words, who doubled as my primary school English teacher, “the only time one should stop learning is when they breathe their last”. I am a lifelong student, which has further been affirmed by the SFTS comments I received. It made even more sense when I reached out to my mentors and Dr. Louw, because they helped me learn never to take feedback personally but to use it as a growing curve.

In a nutshell, I am learning and hopefully becoming better, but I am a better lecturer today than I was barely two months ago when I started. The transition to lecturing is a huge one for me, and I have a history in tutoring; I can only imagine what it looks like for people with no teaching experience.

I believe the training sessions with Dr. Louw should be part of a compulsory starter pack for all lecturers every year, because she reiterated recently what she had taught me in 2017, when I was a tutor in Mamelodi and at the Department of Consumer and Food Sciences. The only way to test the efficiency of these sessions, mainly for the betterment of the lecturer and for the benefit of the students, is through the feedback one receives: the SFTS.

Note from the editor-in-Chief:

This sounds like an advert for my services, but it is not. John is such an eager learner and I loved how he made use of the available support. Ina

Learn, relearn, and unlearn as new lecturers in Mathematics at UP

Belinda Stapelberg, Mihaja Ramanantoanina, and Valisoa Rakotonarivo stories shared by Ina Louw

#mentors #SFTS #development



I interviewed (via Zoom) three young, energetic ladies at Mathematics. They joined the department at different times. Belinda joined in February 2020, when COVID-19 became a rumour and escalated into a reality. Mihaja joined in March 2021 while we were still within the COVID pandemic, and Valisoa joined in May 2023, only 5 months ago. They all have PhDs in mathematics and serve as lecturers in the department.

The purpose of the interview was to determine how easy/difficult it is to find one's feet when you start as a lecturer at UP. I discovered that they had quite similar experiences. The two colleagues who joined during COVID-19 both remembered the isolation they felt, but also all the extra efforts that went into making videos, setting multiple versions of a test, and doing weird and wonderful things online to try and maintain interest from the students.

Assessing online with all those challenges added stress and pressure on them, but when we returned to face-to-face teaching, they got a shock. Suddenly they had to unlearn their ways of online teaching and had to relearn how to deal with a venue packed with young, eager minds.

They mentioned that they felt as if they started at UP twice. Suddenly documentation came to the party. They all laughed at how they struggled to find the yellow slips (test attendance slips), how intimidating it was to face large groups, and how unfamiliar it felt to make copies of tests and "arrange" invigilators. For an established academic this may sound ridiculous, but for these new colleagues, it was an uphill battle. They did not know who could support them or who was allowed to support them. This could have been avoided if they had a mentor. One of them had a mentor for a short while, but the person retired and left. The other two never had a mentor.

Lesson one to all of us: Please match new staff members with a mentor and spell out the rules of the game. Both parties should know what their roles are and how the support should take place.

For example, these ladies all mentioned how devastating it was to see their first Student Feedback on Teaching Survey (STFS) results. They immediately internalised the negative comments and completely read over many positive ones. If a mentor could sit and give perspective to a young colleague, the experience would be very different.

Managing the Learning Management System was something they managed quite easily, probably because they are sharp pencils. One said she picked it up from watching the module coordinator. The administrative matters seemed to be the little devils that almost killed our colleagues. One colleague, who started in her first semester, had to manage a module all on her own, including the coordination, without support.

It felt like she was thrown into the deep end. They all mentioned repeatedly that they were lucky because their colleagues in the department were kind and helpful, and if one asked, people helped. It is just an awkward position to be in, to have to approach someone and ask for help. The campus is large and having to figure out where lecture and tutorial venues are, was also a struggle. Audiovisual aids in lecture venues are still an ongoing frustration.

When I asked them what their biggest joy/exciting moment at UP was, Belinda immediately responded that it was a FLY@NAS event where Mia van Rooy spoke about teaching with the brain in mind. Mihaja mentioned that it was UP's teaching approach of "before-during-after" that she listened to at the Induction and suddenly clicked that this was exactly what she had been doing all along.

Valisoa said she was very excited when a student came to her last semester after the marks were published to thank her for her input in his success. He said it was because of her teaching style that he was successful. What a huge and rare compliment from a student!

We shared aspects around time management, preparation for lectures, imposter syndrome, student feedback on teaching surveys (SFTS), assessment, and many other relevant topics. To conclude the discussion, I asked them what they needed to make their lives easier at UP and their answers were:

- Support in my module
- A mentor so that I can have someone to complain to when I feel overwhelmed
- An induction that is better aimed at people in STEM modules
- A different system to evaluate newly appointed lecturers. The current system is alienating to new colleagues, and they do not have someone to debrief them.

My dream is that heads of departments would take note of these comments and, at the very least, give all newly appointed academics a mentor to soften their landing.

Becoming 007 to guard academic excellence

Michael Kleynhans

Department of Physiology

#ExamIntegrity #Cheating



In pursuit of academic excellence, institutions often face challenges in maintaining exam integrity. This is a recount of an incident that unfolded during a second-year module exam in the Natural and Agricultural Sciences faculty, highlighting the cheating discovery, response, and lessons learned.

During an invigilated exam on clickUP, suspicions arose when one student's answers to essay questions seemed unusually detailed and beyond the lecture content. To investigate, the lecturer used ZeroGPT, which revealed high scores (71.98%) suggesting text generation by ChatGPT. More suspicion was raised when we saw high typing speed in some questions (66 words per minute vs 22 words per minute in others) as well as a long period of inactivity on one of the questions.

After logged access was requested, it was noted that the exam was accessed from two different IP addresses, leading to the suspicion that they left the exam venue without submitting the exam and re-entering the exam from another computer elsewhere on campus, enabling them to make use of study material and ChatGPT to answer questions.

The incident was reported to the department head and escalated to Prof. Bloomer. After a thorough investigation, the student was found guilty of cheating, resulting in module mark forfeiture, a one-year suspension, and the need to reapply for admission. The department implemented improved security measures, like a visible confirmation message upon exam

submission that needed confirmation by an invigilator before a student could leave the venue. We also tried to enforce changes to passwords when a student logs in a second time.

However, the latter measure had to be adapted after realising the challenge of changing the password when a test or exam is interrupted due to load shedding because distributing the new password to all the venues and getting students to log in again when power is restored can be disruptive and stressful to students and invigilators.

Thus, in the case where we know load shedding will disrupt the test and to make re-entering the test easier, we do not change the password and instead enforce a 30-minute waiting period before students can leave the venue. Additionally, a text column in the clickUP grade centre was created and used to identify students who have not started the assessment within the first 15 minutes, thus making it easy to flag unusual activity.

There's still a potential risk where students might collaborate outside the venue to distribute passwords, allowing an outside party to access exams. To mitigate this, IP address filtering in clickUP is needed, which will result in even more layers of administration for staff.

This incident emphasised the need for constant vigilance and adaptation to ensure academic integrity and the value of education in the face of creative cheating attempts.

The elephant in the room - Mitigating controls for using ChatGPT in Social Work Practice teaching

Gerna Wessels, Elmien Claassens and

Leanne Jordaan

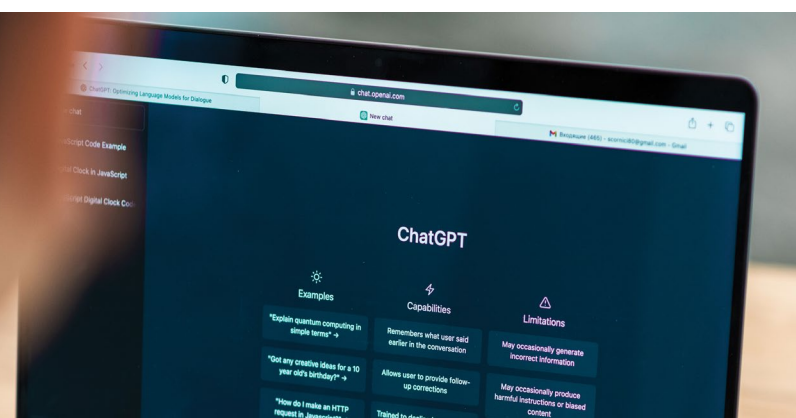
Department of Social Work & Criminology

#foodforthought #ChatGPT



The Bachelor of Social Work (BSW) is a four-year, professional degree consisting of Social Work Theory and Social Work in Practice modules on all year levels. Students are expected to integrate theoretical knowledge in their practice modules. They engage with service users in different contexts and after each contact, they are required to reflect on key elements of the engagement. Artificial intelligence (AI) provides a wealth of opportunities to enhance students' learning experiences in the Social Work in Practice modules, for example by providing in-depth information of the phenomenon at hand and suggesting possible themes to explore.

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As educators, we need to be aware of the risk factors inherent in the misuse of AI in Social Work in Practice modules and proactively develop mitigating controls for this purpose.

The answer to prevent students from misrepresenting AI-generated work as their own is to apply authentic assessment approaches to submitted reflective assignments. When all assessments are clearly contextualised within the student's unique working environment it becomes difficult to submit generic, artificially generated reflections. Practice

educators need to ensure that students are challenged to critically reflect on their own experiences during the intervention process, and also to justify their actions based on their taught theory. Students will make use of AI-generated knowledge; it is the responsibility of the practice educator to develop authentic assessment methods to ensure the development of ethical social work practitioners. Artificial intelligence is here to stay but social work students need to be prepared to become ethical practitioners with their use of AI once they leave the University.

The implications of AI in doctoral supervision in Statistics

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#AI #statistics #supervision #ChatGPT

Artificial Intelligence (AI) has become widely used in academics, through the guise of generative pre-trained transformer language models like ChatGPT. However, language model capabilities and value still need to be evaluated within varying contexts, as with any new technology presented to users. For postgraduate research supervisors in academic Statistics departments, the pathways in guiding students in its use (or even against its use) are not yet clear due to the challenging capacity limitations in these departments in South Africa.

These limitations are due to a strong industry pull of graduates which, for many Statistics departments across South Africa, has left a large gap between the few experienced Statistics professors (many of whom are reaching retirement) and the early-/mid-career Statistics academics with little or no doctoral supervision experience.

We are part of a research group, StatSNetSA, which works on supervision capacity in academic Statistics in South Africa. The group has had numerous discussions pertaining to the use of AI in postgraduate Statistics research, where different experiences have been shared. We have recognised that with the availability of this new tool for students, it is essential to develop usage guidelines for novice supervisors. Whether or



not the supervisor and student explicitly use GPT models, it is important to acknowledge the advantages and disadvantages of the use of the tool in postgraduate research, as well as an institution's intellectual property (IP) risk.

There are clear benefits to using AI in postgraduate research. For the student, it provides on-demand access to information, a platform for brainstorming ideas, as well as useful writing and programming tools, with both language models and specific coding models able to create and streamline code in any number of programming languages. It can also take on the role of a supervisor in certain aspects, where it can offer an impartial, non-judgemental platform for students to express their thoughts and uncertainties. These uses can assist in speeding up the initial stages of the student's research, thereby allowing more time for more in-depth research.

These uses can also assist the supervisor with saving time in supervision involvement. However, with these benefits come disadvantages as the information given to the student may not always be 100% correct. Students should therefore use caution and apply insight during the interpretation and application of the results given, for example, referencing capabilities. The authors asked ChatGPT to provide an abstract pertaining to this article's title and incorporate references into it. While ChatGPT did a reasonable job of writing the abstract, which included some standard keywords and the strengths and limitations of using AI in postgraduate studies, the references were made up. In addition, when asked to create a specific program using R programming language, it regularly produced

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code that did not work. Thus, we believe that it is essential for a supervisor to be familiar with the limitations of GPT language models in order to correctly guide the student in using it ethically. Students should also be aware of its limitations and learn to engage with it, prompting the information required.

Further to GPT language models not always producing correct information, there are also ethical and IP considerations. Content generated by these tools is typically owned by the user who generated it. However, some AI platforms might have terms of use that grant the platform owner certain rights to the

content. Therefore, it is important to review the terms of use of the specific AI tool to understand who owns the generated content. Overall, GPT models are useful tools to both the student and supervisor; however, while it may save time in some areas of research, it may also result in additional time needed at another stage. Guidance needs to be embedded at every stage of the doctoral journey; however, it still requires clear guidance strategies as a new tool. Furthermore, the detection of AI-generated text in research is a skill that still needs development, especially amongst novice supervisors, and should be considered in supervision training.

Sci-Enza “a science holiday destination”

Busisiwe Hadebe-Ziqubu – Sci-Enza Science Centre

#holidayfun #scienceisfun #playandlearn



Sci-Enza Science Centre offers a school holiday programme called "Science is Fun" for learners in grades R through 9. The programme has Science, Technology, Engineering, Art, Math, and Innovation (STEAMI)-related themes to give learners the platform to explore and learn about the wonders of the world and beyond. It exposes learners to a variety of sciences and experts, and it has a hands-on aspect to make science more tangible, which is an experience that one does not normally get in school.

A day-in holiday programme includes hands-on workshops, talks by experts and researchers, and shows by the centre's staff with fun as an integral part of the programme. The passionate and enthusiastic Sci-Enza team strategically develops the programmes to apply interactive and participatory teaching methods to get the learners involved in the subject matter. The activities offered ensure the engagement of the learners and encourage them to think outside the box, which is a necessary skill to have as a future problem solver (see photos).

The holiday programme has been running for almost three decades! It makes sense to say that over the years, Sci-Enza has covered a large range of themes that are too numerous to mention in this article. The variety of themes, just to mention a few, include Math's Mania, Coding and Robotics, Sound, Science of Art, Biomimicry, Ancient Science, and the latest, Space Week. It is a beloved programme, hosting over a hundred learners every school holiday.

What sets Sci-Enza apart is the fact that learners get to meet, engage with, and interact with real scientists and various expert guests because it is a university-based centre with the support of other departments and faculties. As the Sci-Enza team, we look forward to meeting more experts and hosting more holiday programmes to keep inspiring future generations.

To learn more about Sci-Enza programmes, visit our website at <https://www.up.ac.za/sci-enza> and/or follow us on our social media platforms for updates.

