

Day 1 Breakout Session I (11.10am - 11.50am)**Venue:** SR 6.05**[76] Enhancing student learning and engagement with Data-enabled modified 5E model for Flipped Learning****Author/s:** Pratima Majal, Maria Teresa Abelanos, Siang Chuei Koo and Irene Chan

Abstract: Flip learning has become a widespread pedagogical strategy for educators in the wake of the pandemic. With Flipped Learning, lecturers are faced with the crucial task of ensuring students learn and are engaged online as well as in class. However, engaging students, especially online, can be very challenging (Hew & Lo, 2018). Thus, Lesson design and facilitation become critical to enhancing student learning and engagement. One approach to lesson design involves incorporating Temasek Polytechnic's Data-enabled Flipped Learning model, which integrates the 5E Inquiry model and leverages Learning Analytics for responsive teaching. This framework is designed to seamlessly integrate both the out-of-class and in-class components of a flipped learning lesson. The 5E model comprises the following phases Engage, Explore, Explain, Elaborate and Evaluate. This model is a well-established active learning inquiry-based model introduced by Bybee (1993) and has been incorporated into Flipped Learning design in recent years (Jensen, Kummer & Godoy, 2015; Svensson & Adawi, 2015; Lo, 2017; Lai & Hew, 2019). At Temasek Polytechnic, the use of Learning Analytics is an integral part of teaching students online as well as face-to-face by incorporating the learning analytics strategy called ALeRT. Thus, the Data-enabled Flipped Learning framework has been designed to incorporate the 5E model along with the learning analytics strategy to scaffold faculty in designing effective Flipped Learning lessons.

This study focuses on implementing the Data-enabled Flipped Learning framework in three subjects in the School of Engineering and the School of Business at Temasek Polytechnic. Both the quantitative and qualitative data collection methods, such as student surveys and interviews, were used to gain a comprehensive understanding of the effectiveness of this framework in engaging the learners. The authors also share the insights gained from the experiences of the teaching teams involved in incorporating the framework in their flipped learning lessons. Through this study, we will share examples of lessons that have been designed using the Data-enabled Flipped learning framework. Additionally, we will explore the challenges faced by lecturers during implementation and the strategies they employed to overcome them. Moreover, feedback from students regarding their experience of learning in a flipped format will also be shared.

[89] Igniting Learner Success: Unleashing the Potential of the Lectorial Approach in Flipped Learning Environments**Author/s:** Annie Yin Ni Ng, Shi Ying Cai, Terence Chin, Gia Wen Sim and Jia Ying Yong

Abstract: This research addresses the challenges of learner engagement in flipped-learning environments by introducing the innovative Lectorial Approach—a fusion of lecture and tutorial delivery aimed at fostering learner engagement on a large scale. Over 200 learners from Nanyang Polytechnic's School of Applied Science, ranging from year 0 (Poly Foundation Programme) to year 2, participated in the study. Three quizzes were conducted: pre-e-learning, post-e-materials, and following face-to-face activities.

Results revealed a remarkable average improvement of over 50% in quiz scores after learners engaged with e-materials, demonstrating the effectiveness of the Lectorial Approach in bridging

learning gaps and enhancing comprehension. The learners' pre-e-learning quiz scores indicated that the e-material topics were initially new to most students.

However, their scores significantly improved after engaging with the e-materials, showcasing the impact of the Lectorial Approach on knowledge acquisition and retention.

Additionally, the post-face-to-face activities witnessed a minimum 10% improvement in quiz scores across four out of six modules, reaffirming the approach's positive impact on learner understanding. The interactive and engaging face-to-face sessions effectively complemented the e-learning materials, creating a holistic and immersive learning experience.

Learners' survey responses expressed enthusiasm and excitement towards the Lectorial Approach, praising its interactive, enjoyable, and easily understandable nature. The engaging face-to-face activities were credited for stimulating heightened interest and motivation in the subject matter.

The Lectorial Approach emerges as a transformative solution to elevate learner engagement in flipped-learning environments. By creatively redesigning lesson delivery, it nurtures a profound and immersive learning experience, bolstering learners' academic performance and confidence. As we navigate the evolving landscape of education, this research underscores the Lectorial Approach's potential to reshape the future of flipped learning, fostering a generation of empowered and inquisitive learners. By harnessing the synergistic blend of technology and interactive activities, the Lectorial Approach redefines learners' interaction with course materials, fueling their passion for learning and inspiring a lifelong thirst for knowledge. The findings demonstrate the Lectorial Approach's efficacy in enhancing learner engagement, laying the groundwork for future innovations in flipped learning and learner-centered education.

Day 1 Breakout Session I (11.10am - 11.50am)**Venue:** [SR 6.06](#)**[91] Learning Initiative to promote self-regulated learning by Using MOOCs-lesson learnt from Taipei Medical University****Author/s:** Yu-Fang Hsu, Hsu-Tien Wan and Min-Yu Wu

Abstract: This study explores the motivation behind self-regulated learning through Massive Open Online Courses (MOOCs) at Taipei Medical University (TMU). Since 2018, TMU has been collaborating with digital learning platforms like Coursera, FutureLearn, and edX to offer digital self-regulated learning courses, leading to a significant increase in student completion rates. The ARCS model is used to classify student motivation in this context.

Increase in Course Adoption: The number of students taking digital self-regulated learning courses at TMU has grown from 311 in 2018 to 1,701 in 2021, accounting for 47.87% of TMU students.

Improved Completion Rate: The percentage of students completing these courses has risen from 16.72% to 58.3%, showing a significant increase in course completion.

Freshman Engagement: The proportion of freshmen taking these courses increased from 8% in 2018 to 59% in 2021, indicating improved engagement among new students.

Emphasis on Relevance: TMU has increased the recognition of interdisciplinary (60 in 2018) and professional (118 in 2021) courses, enhancing the correlation between courses and students' own learning.

Confidence Factors: Students with higher average learning scores and better English proficiency are more likely to successfully complete the courses. Peer cooperation is suggested as a strategy to further motivate students.

Higher Satisfaction: The completion rate has risen from 25% in 2018 to 70% in 2021, and the average completed credits have increased from 2.7 to 3.7, indicating higher satisfaction and engagement among students.

The findings support the effectiveness of the digital self-regulated learning initiative at TMU and highlight the importance of understanding student motivation to enhance the implementation of such policies. Monitoring these indicators aids in assessing the success of the initiative and its impact on student learning outcomes.

[134] Relationship of Blended Learning Satisfaction with Self-Efficacy and Work Readiness of Nursing Graduates

Author/s: Rowena Escolar Chua, Charito Malong-Consolacion, Francis Roy Gonzales, Cheyene Franchesca Go, Millena Maia Gonzales, Sweetheart Angela Gonzales, Andrea Gregorio, Mari Anne Estefani Guerra, J-Ross Guillermo and Nelsie Faith Gumapos

Abstract: Background and Purpose: The Coronavirus Disease 2019 pandemic has dramatically transformed the landscape of higher education institutions globally. Blended learning (BL) is a recently introduced teaching-learning approach that is thought to be promising in ensuring quality nursing education during the pandemic. The study aims to determine the relationship of BL satisfaction with self-efficacy (SE) and work readiness (WR) of nursing graduates.

Methods: The study utilized a quantitative descriptive-correlational design. Using consecutive sampling, nursing graduates (n=208) who underwent BL in their senior year of the academic year

2021-2022, were regular students, and completed 47 academic units in their senior year answered questionnaires on BL satisfaction, nursing SE, and nursing WR. Data were analyzed using descriptive statistics and structural equation modeling.

Results: The level of BL satisfaction had an overall mean score of 2.88 (SD=0.45), the level of SE with 3.25 (SD=0.35), and the level of WR having 3.34 (SD=0.34). A modified model was found to be better fitting, with SE increasing with BL satisfaction ($p=0.16$) and a direct impact on WR ($p=0.73$). BL satisfaction does not have a direct influence on WR ($p=-0.03$) but has a mediated effect on WR through SE ($p=0.009$).

Discussion: The levels of BL satisfaction, SE, and WR were high among the nursing graduates that underwent BL in their senior year. Increased BL satisfaction yields higher SE. Students feel more prepared for work when they perceive themselves as confident and competent. SE is an essential factor in becoming work-ready, which is also honed by satisfaction with the teaching-learning approach.

Conclusion: The BL approach has the potential to increase the SE of the nursing students through their perceived satisfaction with it, which as-well aids them in preparation to become work-ready.

Day 1 Breakout Session I (11.10am - 11.50am)**Venue:** SR 6.07**[111] Improving syntactic complexity of undergraduates's academic writing through a customised Generative AI chatbot****Author/s:** Simon Wang, Nancy Guo and Junxin Huang

Abstract: Syntactic complexity is often used as a marker of a writer's proficiency and has been extensively studied in various contexts (e.g. Lu, 2010; Lu & Ai, 2015). It has been observed that the level of syntactic complexity can differ across academic disciplines and language backgrounds (Lu et al., 2021; Ziaeiian & Golparvar, 2022). However, studies specifically intervening to enhance syntactic complexity are relatively limited. Bruno and Trembath (2006) assessed an aided language stimulation program for children using augmentative communication systems, finding mixed outcomes. In contrast, Zhou and Lü (2022) investigated the impact of form-focused instruction on syntactic complexity in Chinese as a second language learners, highlighting the significance of instructional intensity and feedback. This study explores the utilization of a customised Generative AI chatbot, built on the platform poe.com, in enhancing the syntactic complexity of undergraduate academic writing. The chatbot is equipped with several modules that are designed to aid students in refining their writing skills. The modules are tailored to identify complex linguistic features in model essays and guide students in integrating these features into their work. Additionally, the chatbot is programmed to review and encourage revisions of students' practice essays, prompting the inclusion of advanced features. It also tests students' aptitude for articulating the features and their reflective understanding of utilising such features to achieve specific rhetorical goals. Furthermore, qualitative interviews with students have suggested the chatbot's usefulness in facilitating their understanding and application of complex syntactic structures. However, some students raised concerns about the potential for plagiarism, emphasizing the need for clear guidelines and ethical considerations in using AI-supported tools. In summary, this study introduces a novel approach to boosting syntactic complexity in undergraduate academic writing through a customised Generative AI chatbot. The chatbot's modules provide a holistic strategy for improving students' writing competencies. Future research is encouraged to evaluate the effectiveness of this intervention and address plagiarism-related concerns.

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[163] Introducing WeCheck!: A Groundbreaking Deep-Learning System Tailored for Grammar and Style Correction Among Chinese English Learners

Author/s: Chun Sang Chan, Linda Lin, Julia Chen, Jacky Chau, James Strang and Stanley Wong

Abstract: Our presentation will introduce a groundbreaking deep-learning-based system, called WeCheck!, developed to correct English grammar and style errors tailored to Chinese learners, many of whom reside in different cities in Asia. One of the most challenging aspects of second language use in academic writing is the use of appropriate registers. In addition to grammatical error detection, our system addresses register problems that arise from first-language transfer, second-language teaching experience and transfer from English medium popular culture. This need has hitherto remained largely unfulfilled given market-available systems' shortcomings in adapting to the unique learning curve of this demographic. Apart from the technical system evaluation, surveys and interviews with teachers and students were also conducted to understand user satisfaction qualitatively and quantitatively. The results showed a high level of satisfaction with the system. An analysis of the initial user surveys revealed the system is effective and easy to use, contributing to improved academic performance and digital-enabled learning. In particular, the system surpasses existing market counterparts by providing extensive feedback based on examples of student errors made by Chinese learners of English with detailed suggestions and explanations, thereby developing a comprehensive model of English language support. A second trial confirmed that further development of the system has increased student satisfaction. Students responded that they would use WeCheck! in the future. Additional evidence from interviews with students and teachers affirmed the system's efficacy. A typical student responded WeCheck! is able to identify the English writing errors the student has made, explain the mistakes and provide enough examples for the student to learn. Teacher comments also corroborated these findings. We are now striving to enhance the flexibility and scalability of the system to manage concurrent users and increase algorithmic accuracy. In addition, as computer-assisted language learning is increasingly becoming incorporated into language curriculums, our system is unique in providing teachers with a complete record of students' initial inputs and outputs, which is being incorporated into taught courses and autonomous student learning. Our deep-learning-based system not only signifies a significant step forward in English language support but also models a sustainable future for digital English language education.

Day 1 Breakout Session I (11.10am - 11.50am)**Venue:** SR 6.08**[96] Creating 3D quality work with a 2.5G connection: Delivering literacy education to undergraduate teacher education students mid-pandemic in rural Sumatra****Author/s:** Adrian Rodgers and Andriansyah Andriansyah

Abstract: Purpose: This qualitative narrative case study was conducted mid-pandemic to determine how undergraduate pre-kindergarten teacher education students would respond to alternative literacy education instruction delivery in rural Sumatra.

Method: The participant-observer instructor delivered the third year, 15 week course using What's App text, videos, photos, and voice recordings. Although students had 4G smart phones because of their isolated and rural location they were using a 2.5 G connection which supported voice and text, with limited photo up- and downloads and no video. When students visited a village they might be able to secure a faster connection supporting video.

To demonstrate how literacy could be included in in teacher education courses, the instructor focused on three tasks: - Connecting the individual literate lives of pre-service teachers to their teaching practice. - Creation of a picture book. - Lesson planning and teaching demonstration using the picture book.

Data collection included instructor syllabi, lesson plans, curriculum samples, and notes. Student work sample photos featuring artistic drawings and writings, academic writing, and group texts. Data were analyzed in three phases: initial coding, analytic memos, and categorizing leading to pattern analysis (Glesne, 2006).

Results: Results of the data analysis pointed to several conclusions. Self-drawn picture book class projects motivate students to read and broaden their literary perspectives. Early childhood pre-service teachers must adapt their methods for instructing literacy. Online teaching and learning worked well for this study.

Conclusions: The instructor successfully demonstrated how to use visuals, audio, and voice recordings. This study also shows that pre-service teachers wrote and showed reader reaction through written response, extending Rosenblatt's theory. Moreover, students can acquire an awareness that they are an integrated component of the reading process through activities such as reading aloud with a friend, starting a book club, or playing reading-related games.

Future Directions: Southeast Asia is filled with thousands of isolated islands which have poor connectivity. This study demonstrates that students can complete innovative quality work despite that challenge. This work provides preservice teachers with opportunities to think critically, while still connecting to local cultures, values, and beliefs using self-created literary works.

Reference Glesne, C. (2006). *Becoming qualitative researchers: An introduction*. Boston: Pearson Education Press.

[105] An Robot-Assisted Scenario Training System for Students with Autism**Author/s:** Ka Yan Fung, Kuen Fung Sin, Tze Leung Rick Lui, Kwong Chiu Fung, Huamin Qu and Shenghui Song

Abstract: Students with autism often feel insecure in new environments due to sensory overload, difficulty with changes, social challenges, unfamiliarity, and lack of support or understanding. Also,

they struggle with weak central coherence in cognitive processing and executive function [3]. Visual feedback can assist the social interaction of students with autism. Moreover, haptic feedback can deliver social cues to enable those students to stay focused on the visual and auditory dimensions of social situations. Despite the considerable efforts dedicated to supporting students in adapting to new environments and understanding appropriate behaviours in public settings, there remains a lack of interactive and personalized learning tools. In this work, we developed a robot-assisted scenario learning system with a user-centred design to facilitate inclusive learning and arouse students' learning interests. With multimodal interaction, such as visual cues or haptic feedback, the system can enhance the learning experience. The interactions cater to the specific sensory preferences and needs of students with autism. Moreover, the scenario learning system provides a more immersive and engaging learning environment. Specifically, the system implements Speech-to-Text (STT) to analyze students' inputs automatically. Also, a re-cap function is offered for the students to consolidate their memory. After finishing each scenario learning, the robot sings and dances to motivate students' learning interests. We further investigated two research questions with the developed tool: (1) How can a robot-assisted scenario learning system influence students' learning engagement? (2) How effectively can the system improve students' learning performance? To this end, we invited 13 students with autism to participate in an evaluation study. The analysis of covariance (ANCOVA) result revealed that learning with the developed scenario learning system can significantly arouse students' interest in intrinsic motivation (+28.74%, $p < 0.01$) and improve their behavioural (+11.57%), emotional (17.24%), and cognitive engagement (7.69%), respectively. Also, students with autism increased their learning performance by 8.33%. In the future, we will conduct a longitudinal study to assess the long-term effects of the scenario learning system on students with autism. This study will provide insights into the sustainability of the positive impact and its potential for fostering lasting improvements in learning engagement and performance.

Day 1 Breakout Session I – Award Nominee Presentations (11.10am to 11.50am)**Venue:** SR 6.12**Technology Innovation Award****Author/s:** Shu-Ping Chang, Yu-Hsiu Weng, Chun-Jung Ma, Sin-Jung Tsai, Sheng- Hsin Yu

Abstract: This study systematically developed and implemented a curriculum that integrates innovative technology and science into practical teaching needs. The XR distance live broadcasting course, combining aviation English with multicultural education, was developed using a blended teaching design and incorporating VR for interactive teaching.

Technology Innovation Award**Author/s:** Chen-Chieh Feng

Abstract: The project aims to transform learning experiences through the integral use of immersive virtual reality (VR) that affords visual and audio feedback and a mechanical device (i.e., a shaker board) that affords additional physical feedback. Earthquakes, a challenging topic to teach with existing classroom technologies because it is dynamic with long geological time frames and is often impossible to teach via fieldwork, is the subject matter for this project. Termed 4DVE (four-dimensional virtual earthquake), the VR-based learning environment developed in this project demonstrates the effectiveness of these technologies in teaching and learning by bringing the field to the classroom.

Day 1 Breakout Session I – Award Nominee Presentations (11.10am to 11.50am)**Venue:** SR 6.13**Technology Innovation Award****Author/s:** Fun Man Fung

Abstract: NuPOV (Nucleophile's Point of View) is an augmented reality (AR) mobile app that allows users to visualize and interact with molecular chemical science concepts in a 3D setting. It is developed by the National University of Singapore (NUS) Chemistry and NUS IT to address the limitations of 2D/3D molecular translations. With NuPOV, users can view, rotate, and zoom in on molecular structures from all angles, and even interact with them by hand. This allows them to gain a deeper understanding of the chemical concepts they are learning, such as molecular bonding, reactivity, and catalysis. NuPOV is also designed to be individualized and self-directed so that users can learn at their own pace and focus on the topics that are most relevant to them. It includes a variety of learning resources, such as interactive tutorials, quizzes, and games. Overall, NuPOV is a powerful and engaging tool for learning about molecular chemistry. It is particularly useful for students who are struggling to visualize and understand complex chemical concepts in 2D.

Technology Innovation Award

Author/s: Ma Carol Mae Protacio & Justine Anne Cua

Abstract: Aruga UST-OT clinic is the service and training arm of the UST-CRS Occupational Therapy Department that provides occupational therapy services through the utilization of telecommunication technologies. In the face of the pandemic, operations of the clinic were established in a fully virtual environment maximizing basic technology tools available to the institution. The clinic used ZOOM as the main avenue for the delivery of care, enabling faculty and students to translate face-to-face therapy sessions into virtual sessions for its clients as well as Google Workspace applications, allowing the clinic to have a systemized approach for documentation of services and digital inventory of its resources.