eLFA2020

Abstract Book

eLearning Forum Asia (eLFA) is a conference that aims to advance the application of information technology in teaching and learning, with special emphasis on the opportunities and challenges faced by institutions in the Asian region. As one of the eLearning pioneers, Centre for Learning Enhancement And Research of the Chinese University of Hong Kong is delighted to host the 15th eLFA this year. The conference will take place completely online from 7th to 8th December 2020 (Hong Kong Time, UTC +8) and will be the first-ever virtual eLFA.

Conference Theme

"Enhanced Teaching and Learning with Technology: Present and Future"

We are now facing one of the most staggering threats to global education. As the COVID-19 pandemic continues to unfold, nearly 80% of the world's enrolled students are out of school due to social distancing measures. Despite the unprecedented challenges and turmoil, it has been inspiring to see educators around the globe are trying their best to utilize available technologies to deliver live online classes and create contents for students in all sectors. Innovative instruction modes and e-assessment strategies that we have never seen or imagined before are being experimented and employed to mitigate the loss of face-to-face learning.

Amidst the current crisis, the importance and powerful potential of technology in education could not be more apparent. It opens up new possibilities for students and teachers to do things differently and flexibly, resulting in exciting learning opportunities and discoveries in the past few months. In spite of worldwide closures of schools and universities, our curious nature and passion for learning continue to be supported through various MOOC platforms (new enrollments surged by multiple times compared to the same period last year). However, while we rely heavily on online strategies and technological solutions, we may intensify the problem of educational inequality as this kind of learning may only reach learners from better-off families.

There are still a lot of things we can do with technology to make our education systems more resilient, not only to the present pandemic situation but also unforeseeable challenges in the future. For example, how to harness big data in education to offer personalized learning and cater for learner diversities? How can we make quality education accessible to everyone through open online resources? How can

we as educators prepare ourselves for the next threat? In this forum, we will gather members of the educational community to share their experiences and approaches in these endeavours. The scope of the conference includes (but not limited to) the following sub-themes:

Pedagogy Involving Technology
Diversity and Inclusivity for eLearning
Open Educational Resources (OER) and Massive Open Online Course (MOOC)
Emerging Educational Technology (AR, VR, MR, educational robotics, etc)
Artificial Intelligence, Personalised Learning Platform and Tool for Smart Learning
Design for Education Landscape and Future Campus
Big Data in Education and Learning Analytics
Technology-Enhanced Assessment and Evaluation in Education
Technology for Training or Professional Development

More information about eLFA2020

Website: http://elfasia.org/2020/
Contact Conference Secretariat: elfa2020@elfasia.org

eLearning Forum Asia 2020

Programme
(Online format)

7 to 8 December 2020 (Hong Kong Time)

Day One - 7 December 2020 (Monday)

<table>
<tr><th>Hong Kong Time (UTC +8)</th><th colspan="5">Details</th></tr>
<tr><td>10:00-10:25</td><td colspan="5">Opening Ceremony

Welcoming Speech by Professor Rocky S. TUAN, Vice-Chancellor of CUHK (pre-recorded speech)
Welcoming Speech by Professor Alan K.L. CHAN, Provost of CUHK (Live speech)
Greeting from Dr Daniel TAN, Chair of eLFAsia
Greeting from Professor Paul LAM, Chair of eLFA2020

Other Officiating Guests:
Professor POON Wai-yin, Pro-Vice-Chancellor (Teaching and Learning) of CUHK
Professor Cecilia CHUN, Director of CLEAR, CUHK
Members of eLFA2020 Organizing Committee
Keynote and Plenary Speakers</td></tr>
<tr><td>10:25-11:15</td><td colspan="5">Keynote Session I

Title: Toward Digital Learning Strategic Agility

Dr Greg WINSLETT
Deputy Director (Digital Learning)
Institute for Teaching and Learning Innovation
The University of Queensland</td></tr>
<tr><td>11:15-11:25</td><td colspan="5">Break</td></tr>
<tr><td>11:25-12:15</td><td colspan="5">Plenary Session I

Title: Technology-Enhanced Higher Education: Opportunities and Challenges Beyond 2020

Dr Toru IIYOSHI
Director & Professor
Center for the Promotion of Excellence in Higher Education
Professor, Graduate School of Education
Kyoto University</td></tr>
<tr><td>12:15-12:45</td><td colspan="5">Sponsor Sessions

Platinum Sponsor - Kaltura

Gold Sponsor – Open LMS</td></tr>
<tr><td rowspan="2">12:45-16:55</td><td colspan="5">Parallel Sessions
(Oral Presentations)</td></tr>
<tr><td>Track 1</td><td>Track 2</td><td>Track 3</td><td>Track 4</td><td>Track 5</td></tr>
<tr><td>12:45-13:05</td><td rowspan="4">Big Data in Education and Learning Analytics I
(Paper ID 41, 33, 26 & 46)</td><td rowspan="4">Peer Learning and Collaboration
(Paper ID 8, 79, 123 & 43)</td><td rowspan="4">Online Learning Materials and Online Courses
(Paper ID 22, 35, 134 & 108)</td><td rowspan="4">Technology-Enhanced Assessment and Evaluation in Education I
(Paper ID 95, 107, 15 & 82)</td><td rowspan="4">Tools, Practice and Platforms I
(Paper ID 30, 32, 121 & 113)</td></tr>
<tr><td>13:05-13:25</td></tr>
<tr><td>13:25-13:45</td></tr>
<tr><td>13:45-14:05</td></tr>
<tr><td>14:05-14:20</td><td colspan="5">Break</td></tr>
<tr><td>14:20-14:40</td><td rowspan="4">Big Data in Education and Learning Analytics II
(Paper ID 65, 111, 101 & 116)</td><td rowspan="4">Specific Situation and Needs
(Paper ID 36, 74, 96 & 131)</td><td rowspan="4">MOOC and SPOC
(Paper ID 50, 68, 119 & 59)</td><td rowspan="4">Technology-Enhanced Assessment and Evaluation in Education II
(Paper ID 4, 61, 122 & 125)</td><td rowspan="4">Games and Activities
(Paper ID 97, 45, 63 & 24)</td></tr>
<tr><td>14:40-15:00</td></tr>
<tr><td>15:00-15:20</td></tr>
<tr><td>15:20-15:40</td></tr>
<tr><td>15:40-15:55</td><td colspan="5">Break</td></tr>
<tr><td>15:55-16:15</td><td rowspan="3">Design for Education Landscape and Future Campus
(Paper ID 77, 7 & 115)</td><td rowspan="3">Learning and Skills
(Paper ID 37, 29 & 39)</td><td rowspan="3">Artificial Intelligence (AI)
(Paper ID 3, 19 & 62)</td><td rowspan="3">Technology-Enhanced Assessment and Evaluation in Education III
(Paper ID 114, 16 & 25)</td><td>Tools, Practice and Platforms II
(Paper ID 136 & 21)</td></tr>
<tr><td>16:15-16:35</td><td></td></tr>
<tr><td>16:35-16:55</td><td></td></tr>
<tr><td>16:55-17:00</td><td colspan="5">Break</td></tr>
<tr><td>17:00-18:00</td><td colspan="5">Panel Discussion I

Topic: From Band-aid to Sustainable Transformation

- Panel Chair -

Professor Paul LAM
Centre for Learning Enhancemnt And Research
The Chinese Univresity of Hong Kong

- Panelist Members -

Dr Susan BRIDGES
Centre for the Enhancement of Teaching and Learning
The University of Hong Kong

Dr Kevin CHAN
Department of Applied Social Sciences
The Hong Kong Polytechnic University

Dr King CHONG
Teaching and Learning Centre
Lingnan University

Dr Beatrice CHU
Center for Education Innovation,
Hong Kong University of Science and Technology

Dr Anna KWAN
President, HERDSA HK Branch

Dr Theresa KWONG
Centre for Holistic Teaching and Learning
Hong Kong Baptist University

Dr Crusher WONG
Office of the Chief Information Officer
City University of Hong Kong</td></tr>
<tr><td colspan="6">End of Conference Day 1</td></tr>
</table>

eLearning Forum Asia 2020

Programme
(Online format)

7 to 8 December 2020 (Hong Kong Time)

Day Two - 8 December 2020 (Tuesday)

Hong Kong Time (UTC +8)	Details				
9:30-10:15	Keynote Session II Title: Innovative Education with Artificial Intelligence Professor Irwin KING Chairman & Professor, Department of Computer Science & Engineering Director, Centre for eLearning Innovation and Technology The Chinese University of Hong Kong				
10:15-10:25	*Break*				
	Parallel Sessions **(Oral Presentations)**				
10:25-12:40	Track 1	Track 2	Track 3	Track 4	Track 5
10:25-10:45 10:45-11:05 11:05-11:25	Practice in COVID-19 I *(Paper ID 28, 112 & 72)*	The Change I *(Paper ID 9, 44 & 127)*	Virtual Reality (VR) and Augmented Reality (AR) I *(Paper ID 132, 47 & 48)*	Diversity & Inclusivity for eLearning I *(Paper ID 56, 12 & 106)*	Virtual Reality (VR): Chatbot and Robot *(Paper ID 53, 18 & 103)*
11:25-11:40	Break				
11:40-12:00 12:00-12:20 12:20-12:40	Practice in COVID-19 II *(Paper ID 73, 104 & 23)*	The Change II *(Paper ID 98, 92 & 31)*	Virtual Reality (VR) and Augmented Reality (AR) II *(Paper ID 83, 78 & 64)*	Diversity & Inclusivity for eLearning II *(Pape ID 110, 126 & 71)*	Virtual Reality (VR): Location & Game *(Paper ID 88, 120 & 133)*
12:40-12:50	*Break*				
12:50-13:50	Panel Discussion II Topic: Implementing Changes in Assessment - Panel Chair - Professor Chetwyn CHAN Associate Vice President (Learning and Teaching) The Hong Kong Polytechnic University – Panel Members – Professor Ruay-Shiung CHANG President, National Taipei University of Business Dr Albert CHAU Vice-President (Teaching and Learning), Hong Kong Baptist University Professor Erle Chuen-Hian LIM Vice Provost (Teaching Innovation & Quality) National University of Singapore				
13:50-14:05	*Break*				
14:05-14:50	**Parallel Sessions** **(Poster Presentations)**				
	Track 1	Track 2	Track 3	Track 4	
	Diversity & Inclusivity for eLearning *(Paper ID 14, 60, 55, 57 & 13)*	Emerging Educational Technology (AR, VR, MR, educational robotics, etc) *(Paper ID 70, 69, 11 & 40)*	Big Data in Education & Learning Analytics, and OER and MOOC *(Paper ID 66, 10, 42 & 99)*	Pedagogy Involving Technology & Planning for the Future *(Paper ID 94, 17, 117, 90 & 91)*	
14:50-15:25	Sponsor Sessions Silver Sponsor – Respondus Gold Sponsor – IntelliBoard Platinum Sponsor – Blackboard				
15:25-15:30	*Break*				
15:30-16:20	Plenary Session II Title: COVID-19 and other Disruptors: Challenges and Opportunities for E-Learning Professor Erle Chuen-Hian LIM Vice Provost (Teaching Innovation & Quality) National University of Singapore				
	Video Engagement - Gold Sponsor: Open LMS (pre-recorded video provided by sponsor)				
16:30-17:20	Keynote Session III Title: Enhancing Teaching and Learning with AI Technology and Human Intelligence Professor Rosemary LUCKIN Professor of Learner Centred Design UCL Knowledge Lab, UCL Institute of Education University College London				
17:25-18.:15	**eLFA2020 Awards Presentation** **&** **Closing Ceremony**				
End of Conference Day 2					

Oral Presentations

Day 1
(7 December 2020)

Track 1
12:45 - 14:05

Session Theme:
Big Data in Education and Learning Analytics I

Paper ID: 41

The Use of Analytics for Learning Impact in a Self-help Community Group

Ji Zhi LI[1], Sylvia CHONG[1,*] and Siti Khadijah Bte SETYO R S [2]

[1]Singapore University of Social Sciences, Singapore
[2]Yayasan MENDAKI, Singapore

*Corresponding author(s)

Abstract

Educational organisations are inundated with data on teaching and learning processes, however there is a need to convert the data into strategic knowledge and information. The use of data to inform teaching and learning has positive effects on teacher satisfaction, instruction, and student achievement (Newton, 2019[1]). Analysis of the data offers decision makers insights to formulate hypotheses, to challenge assumptions, and to pose further queries (Kayz & Earl, 2010)[2]. This paper reports on a project collaboration between a Singapore university and MENDAKI, a self-help group. The primary aim of the collaboration is to leverage on the use analytics to enhance the teaching and learning of disadvantaged Malay students in Singapore.

The Malay community in Singapore has made significant social and economic progress over the years. Figures over a 10-year period released by Ministry of Education, Singapore show the increased representation of Malay students in post-secondary institutions. However research highlights the "under-attainment" of Singapore Malays. The community's educational performance for key national examinations is generally lower than that of other ethnic groups. The community is committed to close the educational gaps in national examinations in the education system Yayasan MENDAKI was established in 1983 'to empower the community through excellence in education' (Yayasan MENDAKI, 2018)[3]. The MENDAKI Tuition Scheme (MTS), MENDAKI's flagship programme, provides highly subsidised tuition to support socioeconomically disadvantaged students in their learning. Data analytics provide insights from MENDAKI's student and instructor-centric data to inform pedagogical development and decisions.

The collaborative project profiled 12,871 MTS students as well as identified determinants of their academic performance. A total of 131 variables were used. These include students' demographic,

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[1] Newton, W. (2019). *A Framework for Data Management in Schools: How Academically Successful, Low-Income Schools Manage and Distribute Student Data to Teachers* (Doctoral dissertation, Indiana State University).

[2] Katz, S., & Earl, L. (2010). Learning about networked learning communities. *School effectiveness and school improvement*, *21*(1), 27-51.

[3] Yayasan MENDAKI (2018). About MENDAKI. Accessed 10 September 2020, from http://www.mendaki.org.sg/about-mendaki/general

academic, socioeconomic-status (SES) and MTS information. K-means and Model-based Clustering methods were applied to explore the characteristics of different groupings within this dataset. The findings indicated a strong association between MTS students' academic performance and their socioeconomic background. Aside from student's academic ability, his/her academic performance is highly influenced by the complicated interaction between the many happenings in the student's life such as a family's financial status, access to learning resources, availability of conducive home learning environment, parents' time and many more. It is important to understand the circumstances behind this phenomenon and the effects it has on educational attainment. While MENDAKI develops and enhances the MTS, there is a need to encompass a wider range of student support that consisted of various types of educational, social and workforce development.

Keywords: Malays; Low performing community; Learning analytics

Paper ID: 33

Responding To COVID-19 in Transitioning to Online Teaching in Higher Education: A Data Analytic Approach to Explore the Effectiveness of Online Teaching and Learning at a University in Hong Kong

Kannass CHAN*, Ada TSE* and Joseph CHOW

The Hong Kong Polytechnic University, Hong Kong

*Corresponding author(s)

Abstract

The pandemic of coronavirus disease (COVID-19) has been affecting higher education sector worldwide, causing dramatic changes to many higher education institutions moving their courses from face-to-face to online. Universities in Hong Kong are at no exceptions. This study attempted to explore online teaching and learning behaviours from both teachers and students as a result of a rapid transition from face-to-face to fully online environment. In particular, this study examined the effectiveness of online teaching and student learning using a data analytic approach at a government-funded university in Hong Kong during 2020 Spring. Teaching and learning (T&L) activities were conducted through a number of systems/ platforms including the University's Learning Management System (LMS) in Blackboard (Bb), Blackboard Collaborate Ultra, Microsoft Teams, Zoom and uRewind (video platform supported by Panopto). Contents put in the Blackboard courses, activity logs for both teachers and students were captured in the analytics, of which data were extracted and analyzed at the university level to reflect the situation of online teaching and student learning at the university. Courses with both undergraduate and postgraduate studies were included, with over 2200 Blackboard courses in the analytics during the entire semester.

Results showed that students were gradually increasing their access to the Bb courses after the first week of teaching commenced, with an average of over 80% of enrolled students accessed their Bb courses on a weekly basis. Teachers seemed to use the announcement in the Bb courses regularly – with an average of over 85% of Bb course had at least one or more announcement released after 5th week of the semester. By the end of the 15-week teaching, around 85 content materials on average, were made per Bb course, with 80% of students clicked on content materials with an average of 12.7 clicks per week. Comparatively, a larger proportion of teachers were using synchronize sessions (via zoom, Bb Collaborate Ultra, Microsoft Teams) to deliver their courses including lectures, tutorials, laboratories and practical sessions. Overall, approximately two-third of Bb course have at least one synchronous session per week, of which 78% of students joined at least one session, and the average length of these sessions per Bb course ranged from 150 to 230 minutes. While the learning analytic demonstrated some good teaching and learning behaviors at the university, this study provides

recommendations for future improvement on and effectiveness of teaching and learning in online environment.

Keywords: Learning analytics; Higher education; COVID-19; Online teaching and learning

Paper ID: 26

Team Interaction, Team Communication and Team Project Performance: A Data-driven Approach Using WhatsApp Chats

Fedor DUZHIN* and Joo-Seng TAN

Nayang Technology University, Singapore

*Corresponding author(s)

Abstract

This paper is a major extension of our preliminary study presented at ELFA 2019 on tracking interaction within learning teams by processing WhatsApp chats. We have processed a dataset of 26K WhatsApp messages written by 394 students in 79 learning teams from 5 courses in business and mathematics degree programmes. Specifically, we found that

(1) There is an "optimal" word count of about 12 words in a WhatsApp message that is linked to a most vivid and productive discussion and, ultimately, higher team project score.

(2) There is a positive correlation between intensity of discussion (mean number of messages per participant) and the team project score.

(3) There is no clear visible relationship between team effectiveness and centralization of its communication network.

A question that still remains open is to explain our third finding that goes contrary to some known and accepted studies in network science.
We will explore the content of WhatsApp messages written by students to see to what extent unsupervised machine learning algorithms can shed light onto how students communicate over WhatsApp and what they discuss. The ultimate goal for future research is devising practical AI-based tools that will help the course instructor to quickly grasp student interaction within learning teams to be in a better position to evaluate teamwork and provide timely feedback.

Keywords: Learning analytics; WhatsApp; Teamwork; Collaboration; Collaborative learning; Cooperative learning

Paper ID: 46

Preliminary Analysis of Learners' Behaviors on Chula MOOC, A Platform for Lifelong Learning in Thailand

Suporn PONGNUMKUL[1,*], Nagul COOHAROJANANONE[2], Pattamon BOONRAM[2], Yupin PUANGNGAM[2] and Patrachart KOMOLKITI[2]

[1]National Electronics and Computer Technology Center, Thailand

[2]Chulalongkorn University, Thailand

*Corresponding author(s)

Abstract

On the occasion of our centennial celebration in 2017, Chulalongkorn University, the first University of Thailand, launched an online course platform, known as Chula MOOC, which aims at promoting lifelong learning in Thailand, under the vision of "Anyone Can Learn." The courses offered on Chula MOOC are taught by Chulalongkorn University professors, and cover a wide range of subjects, divided into 5 categories, namely business management, computer science, language, art and personal development, and health. Chula MOOC courses are designed as batches, which means that each course is opened for enrollment on a scheduled date with a specified seat capacity and learners have 2 months to complete the course. Many courses reached the maximum capacity in only a few hours after they were opened. For example, Introduction to English, opened for 2,000 learners, was full in 2 hours, and Introduction to Data Analytics, opened for 2,000 learners, was full in 5 hours. The full enrollments show the success of Chula MOOC and many courses were reopened in response to popular demand. Introduction to Data Analytics was opened 5 times and was full in all batches. After 2 years of operation, Chula MOOC's learner's completion rate was 19.53%, which was higher than average completion rate of MOOC platforms. The data from the platform was analyzed and interesting behaviors were found from batch-based course design. Many failed learners re-enrolled in the same course and improved. For example, 78% of the active repeated learners who did not make sufficient progress (80%) in Introduction to Data Analytics the first time improved the second time they enrolled. Furthermore, other intriguing relationships were also found. Social network activities of learners have influence on course activity of other learners in the same batch. Such insights from data analytics will be used to improve Chula MOOC.

Keywords: ChulaMOOC; MOOC; Data Analytics; Learning Behaviors; Lifelong Learning;

Oral Presentations

Day 1
(7 December 2020)

Track 1
14:20 - 15:40

Session Theme:
Big Data in Education and Learning Analytics II

Paper ID: 65

The Use of Learning Analytics in the Institution During the COVID-19 Pandemic

Ada TSE*, Kannass CHAN and Joseph CHOW

The Hong Kong Polytechnic University, Hong Kong

*Corresponding author(s)

Abstract

Due to the pandemic of coronavirus disease (COVID-19), many higher education institutions have been affected, leading to the widespread suspension of face-to-face teaching and learning. Almost all teaching and learning are moving online. The rapid use of educational technology in response to the COVID-19 situation has generated large volume of teaching and learning data, which can be collected by institutions. This study described the process of how learning analytics was being used at a government-funded university in Hong Kong during 2020 Spring to help the university and teachers in understanding and enhancing the online environment so that support to students can be identified.

As fully online teaching was implemented, teaching and learning (T&L) activities were conducted mainly through several systems/platforms including the University's Learning Management System (LMS) in Blackboard (Bb), Blackboard Collaborate Ultra, Microsoft Teams, Zoom and video platform supported by Panopto. Activity logs for both teachers and students were captured, extracted and analyzed at the university level. Weekly Reports were provided to the university and Departments to reflect the situation of online teaching and student learning at the university. This could help ensure that courses were conducted online smoothly and students were engaged in the online learning activities.

Moreover, a customized learning analytics report called the Subject e-Engagement Report (SeER) was first piloted in the whole university. The SeER was a simple interactive report in Excel providing visualizations (e.g., line and bar charts) and tables of weekly usage figures for commonly used LMS tools (i.e., content pages, announcements, grade centre, test/survey, assignment, discussion forum, group, Turnitin) and a list of students who had not accessed the courses for previous week. This SeER was released weekly and designed to help teachers understand what students have done in their courses and identify students that needed follow-up. Overall, during this large-scale pilot, instructors/teaching assistants from 20% of Bb courses had accessed the SeER. From the user comments received (n=45 teaching staff), three quarters of them claimed that the SeER was useful, especially identifying inactive students at the early stage. To further improve, users suggested to include more useful figures, enhance the report format (simpler and easier to understand) and use a more convenient way to access the reports. With the experience and user comments received, this study presents the opportunities for

higher education institutions on how to utilise learning analytics to help the university and teachers improve online teaching and learning.

Keywords: Learning analytics; Higher education; COVID-19; Online teaching and learning

Paper ID: 111

The Application of Data Mining in Predicting Student`s Probability of Passing Semestral Course Using Decision Tree Algorithm Thru Utilization of Academic Information Systems Amid to the New Norm

Anabella C. DOCTOR

University of Santo Tomas – Main Campus, Philippines

Abstract

The existence of the utilization of integrated academic information systems has been proven in helping educational institutions to become more effective, reliable, and efficient in improving educations quality. This practice generates vast data where educational data mining techniques can be utilized in analyzing the data exists and discover new knowledge on how to make those data into meaningful information useful for decision making in the education system. This study focused on discovering new knowledge through data mining concepts and techniques in predicting students` probability to pass their current subjects taken at the early stage of the semester. To achieve the goal of the study, CRISP-DM methodology has been thoroughly followed, aiming to discover a high potential prediction model which can be helpful to any educational institutions' faculty and administrators to improve the process of imparting knowledge and their student's academic performance with a high acceptability results in predictions` accurateness, and precision. This study used and adopted classification for data mining techniques and decision tree for the algorithm. By the utilization of the model, the prediction of students' probabilities to pass the subject gives 0.7619 accuracy, 0.8333 precision, 0.8823 recall, and 0.8571 f1 score, which indicated that the model used in the prediction is highly reliable, accurate and recommendable. Considering the indicators and their results, it can be noted that the prediction model used in this study is highly acceptable. Future studies and integration of the prediction processes to the integrated academic information systems are highly recommended to fully automate the prediction results available for students, educators, and institutions administrators for faster management decision making. It is also recommended that the inclusion and manipulation of academic criteria indicators where the students can adjust which criteria, they have to improve more for them to pass their subjects taken at the end of the semester as early as midterm period.

Keywords: Integrated Academic Information System; Data Mining; Education Data Mining, CRSIP-DM; Classification, Decision Tree Algorithm

Paper ID:101

Learning Analytics for Programme Review: An Example from a Science Discipline

Theresa KWONG[1,*] and Patrick YUE[2]

[1]Centre for Holistic Teaching and Learning, Hong Kong Baptist University, Hong Kong S.A.R.

[2]Department of Biology, Hong Kong Baptist University, Hong Kong S.A.R.

*Corresponding author(s)

Abstract

Learning analytics (LA) is a relatively new discipline, and is defined as the collection, analysis and reporting of learning data in order to understand and optimise learning experience. Most of the research studies and developments that have begun to apply LA in higher education have focused on academic success and retention, rather than as an approach to curriculum review of the course of an undergraduate degree. This study is part of a cross institutional learning and teaching project that applies learning analytics methods to data to address programme review questions. While the project references a new four-year undergraduate curriculum mandated by a government department of Hong Kong, the programme review methodology, analytic techniques and outputs are widely applicable. The graduation of the first three cohorts from the four-year curriculum since academic year 2015/16 presented an opportunity for programme review, in regard to how different aspects of the curriculum affect students' progress and success.

Making use of an in-house developed Excel Add-in analytics review tool, the current study is intended to identify significant predictors of academic achievement of a science programme in a research led liberal arts university in Hong Kong. Specifically, the relationship between pre-admission exam scores, performance of courses at different levels during the course of entire degree, etc. with students' graduataion grade point average (GPA) was examined. A total of around 100 students' information and data from three cohorts were analysed. Linear regression, network analyses and other parametric statistics analyses, e.g. correlation were performed. Findings from learning analytics programme review showed that the graduation GPA could be best predicted with students' performance in three semesters as well as the pre-admission exam scores of students in the science programme under study.

This presentation reports the analyses and findings of the programme review of a science discipline and identifies factors that contribute to past students' successes and failures that can be measured and monitored to benefit current students. This presentation also describes major benefits and challenges in the use of analytics review tool by the programme leader.

Keywords: Curriculum review; Learning analytics; Programme review; Review tools

Paper ID: 116

Predicting Student Performance in Higher Education from Moodle Data Using Learning Analytics

Manish JOSHI* and Sushil SHRESTHA

[1]Digital Learning Research Lab, Department of Computer Science and Engineering, Kathmandu University, Nepal

*Corresponding author(s)

Abstract

E-Learning activity started at Kathmandu University (KU) in the year 2011. Using an e-learning platform i.e. Moodle, various faculties provide tutorials, quizzes and assessment to the students in their respected subjects. However, the system was not popular and was not extensively used. This problem is prevalent not only in KU, but in different organizations across the globe. So, the purpose of this research is to find the problems in the e-learning system from usability perspective of the educators and to integrate Knowledge Management (KM) tools and techniques to overcome those problems. Therefore, a survey was administered (65 respondents) to know educator's perspective on e-learning platform that was offered in their respective departments. The results of survey gave insights into the current situation and helped to develop recommendations. The proposed recommendation is an integration of the two approaches: Educational Data Mining (EDM) and Learning Analytics (LA). This integration mainly improves information obtained by instructors by incorporating the knowledge gained from previous deployments, teachers' experience and activity completion rate in the course by students. A Moodle tool was developed using EDM and LA approaches, which predicts the student's performance in the system. To develop this tool, the log data of three years (2016 - 2019) was collected from Moodle platform used in KU. These log data was cleaned and was analyzed using four different decision tree algorithms, J48, PART, JRIP and Decision Table. Cross-validation and split-percentage methods were used for testing the accuracy of each classifier. During analysis of the given log data, classifier generated using J48 was found to be effective. Hence, the final tool in this research is developed by using J48 algorithm. This tool helps educators get information about student's performance in their courses. The developed tool also resolved the usability issues (student activity tracking) in the Moodle system as indicated by survey results and was found to be useful by the educators during the post-survey.

Keywords: Knowledge Management; Educational Data Mining; Usability; Learning Analytics

Oral Presentations

Day 1
7 December 2020

Track 1
15:55 - 16:55

Session Theme:
Design for Education Landscape and Future Campus

Paper ID: 77

Can Schools Keep Up? Insights from a Webinar Series that Used an Evolving Heuristic Framework for In-Service Teachers to Imagine the Pedagogy of the New Normal

Donne Jone SODUSTA, Jessie LABISTE, Jr., Jonevee AMPARO and Early Sol GADONG*

Division of Physical Education, College of Arts and Sciences, University of the Philippines Visayas, Philippines

*Corresponding author(s)

Abstract

In this paper, we reflect on the insights that were collectively generated in a series of interactive webinars conducted among in-service teachers in Iloilo Province, The Philippines during the period of the COVID-19 community lockdown, which brought school classes to a halt. These webinars, possibly the first of their kind in a country beset with slow internet connection and schools with limited technological resources, offered a heuristic framework for teachers to consider that could help them compare and contrast the Old Normal pedagogy with their notions of what ought to be the New Normal pedagogy considering the impending re-opening of schools. They were invited to consider the three main components and subcomponents of the framework: assumptions, approaches, and assessments. Initial entries to the framework, based on a consensus among the researchers, were presented to the various groups of webinar participants, who were then asked to provide their own entries. The evolving nature of this heuristic framework was explained to them, highlighting how its collaborative design may allow components to be changed accordingly. Transcripts and filled out activity sheets from the webinar series were collected, organized, and subjected to thematic analysis. Data from the initial analysis revealed that while they expressed general agreement with the changes on educational goals, nature of learners, teacher roles, and educational values, their concerns were mainly on how to they could institutionally implement the prospective new approaches and means of assessment. While they think that such changes have long been overdue even before the pandemic, they were not entirely convinced of their schools' readiness, adaptability, and resources. Despite being in the New Normal, the school system still insists on accomplishing educational goals set by the conditions of the Old Normal.

Keywords: New normal; pedagogy; Collaborative design; Interactive webinar; Heuristic framework

Paper ID: 7

Design for Education Landscape and Future Learning: A Hong Kong Case Study

Frankie HAR

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Abstract

In the first-year university course "English for Academic Purposes", how to help freshmen use appropriate Academic English, use citations and reference sources as well as summarizing and paraphrasing skills are the main learning objectives. This case study explores how a flipped classroom, which is considered to be a promising future learning approach, supported first-year students' engagement and learning by way of an end-of-semester online survey, and a narrative account of teachers' experiences of enacting the active learning strategies. Analysis of survey data showed that while the majority of student respondents reported a high level of engagement with videos and online quizzes and believed that these modes supported their learning, opinions varied as to whether a flipped classroom was preferred over traditional face-to-face teaching. Also, reflections on how freshmen students engaged with the active learning strategies revealed that significant time was required at the beginning of lessons to review key concepts since students appeared reluctant to engage independently with the planned activities, particularly those that involved more challenging concepts such as summarizing and paraphrasing. Based on these findings, an active learning continuum that fosters different levels of student-centred learning autonomy, depending on diverse students' learning needs and their readiness for a flipped learning approach is proposed. In the context of the first-year English for Academic Purpose course experience, some teacher-led instruction may be appropriate in a flipped classroom to support students' transition of learning from high school setting to tertiary education.

Keywords: English for Academic Purposes; flipped classroom; student engagement

Paper ID: 115

Pandemic-Responsive *e*-learning Strategies for the Natural Sciences: Insights from Biologists Teaching in Tertiary Education

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Abstract

Quarantine restrictions rattled global tertiary education in early 2020, forcing many universities to implement haphazard emergency online classes. In the natural sciences, this unfortunately meant many adjustments are needed to provide appropriate, yet meaningful experiences for learning, without laboratory access or field exposures. In this presentation, we intend to share collective experiences of selected Biology faculty and administrators from the University of Santo Tomas in response to pandemic limitations. Content delivered through good practices, like the flipped classroom approach, gave students necessary breathing space for self-paced learning. This greatly removed the stress caused by unstable internet connections in typical live online lectures. Instead, synchronous sessions became opportunities to promote active learning and interactions. However, recording lectures meant that teachers needed to create content of reasonable length and breadth to avoid teacher and student burnout. It also meant providing multiple options, such as streaming and low bandwidth downloads, to address internet limitations. To monitor student engagement, short checkpoint tests acted as formative feedback before allowing access to lectures. These lessons come with weekly targets to guide students in independent learning. For this set-up, faculty utilized the performance-based conditional availability options of Blackboard Learning Management System (LMS). Student evaluation focused more on outcomes-based content creation tasks rather than solely live online exams. Guidelines for these summative assessments are given two weeks ahead of time. This leeway helped students avoid psychological strain when dealing with disruptive internet connections. In addition, reasonable limits in the number of assessments are set by administrators to ensure that students are not overloaded from expectations for different subjects. Cheating is also discouraged through the use of SafeAssign, a built-in plagiarism checker within the Blackboard LMS. Overall, assuring high quality of teaching and learning through the use of educational technologies in these difficult times require continuous dialogue between teachers, administrators, and students. The

selection and implementation of e-learning strategies appropriate to the Philippine setting are a work-in-progress. However, a testament that we are moving towards the right direction comes in the few negative feedbacks from students regarding implementation of these techniques. To date, periodic consultations are done with all parties involved to ensure that both educators and students have the best possible experience despite the current situation. We need to remember that we are not working or studying from home, but rather we are working and studying in spite of the threat of a global health crisis.

Keywords: flipped classroom approach; self-paced learning; Blackboard LMS; SafeAssign

Oral Presentations

Day 1
(7 December 2020)

Track 2
12:45 - 14:05

Session Theme:
Peer Learning and Collaboration

Paper ID: 8

The Effects of Task Variations on L2 Learners' Zoom-mediated Synchronous Collaborative Writing Performance

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Abstract

In accordance with the rapid development of e-learning platform, the past decade has witnessed a series of studies that explored the pedagogical efficacy of web-based language learning. The recent pandemic triggered by the COVID-19 added a fuel to this line of enquiry, and Zoom, originally developed as a video-conference tool, is at the center of the debate. Alongside the increasing interest in online learning, the advancement of Web 2.0 technology such as Google Docs and Wiki has also propelled research into the web-based collaborative writing, premised on the theoretical ground that peer interaction raises learners' meta-cognitive and linguistic awareness and facilitates literacy development.

Against this background, the present study explored pedagogical potential of Zoom as a platform for web-based collaborative writing, and how different task features would affect learners' performance. In a Zoom-mediated weekly course, 21 university students collaboratively wrote suggestions for improvement to their peers' presentations using Office 365. The suggestion-giving task was compared in terms of the reasoning demands (i.e., writing bullet-pointed sentences vs. composing a polite letter) and the interactional demands (i.e., two vs. three or four members in each group). Data consisted of audio recordings of the students' interactions, their written products, and survey responses.

The results revealed that (a) students perceived writing a polite letter more demanding than listing bullet-pointed sentences; (b) they became more interactive when working in pairs than in groups of three or four, and when writing bullet-pointed sentences than when writing a polite letter; (c) linguistic complexity of the written products was comparable across the task conditions; and (d) students were highly satisfied with the Zoom-mediated and Office 365-supported collaborative writing task, but network instability remained as a major technical constraint.

This study suggests that Zoom as a user-friendly web-based tool for collaborative learning, provided that network is strong and stable enough. In addition, the findings from this study reveal that different task requirements, task features, and group assignments can alter the way learners engage in the task, and hence affect the amount of learning opportunities. In order to spell out the pedagogical potential of Zoom-mediated collaboration in language learning, more empirical studies with diverse ways of

task manipulation would be imperative.

Keywords: Zoom; Web-based synchronous collaborative writing; Task effects

Paper ID: 79

Conceptualization, Measurement and Preliminary Validation of Students' Collaborative Problem-based Learning and Peer Assessment Strategies Using Interactive Whiteboards

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Abstract

This study attempts to conceptualize and measure students' perceptions of their collaborative problem-based learning and peer assessment strategies using interactive whiteboards. Drawing on the extant literature, we integrate collaborative, problem-based and peer assessment learning strategies and propose a new model, the Collaborative Problem-based Learning and Peer Assessment (Co-PBLa-PA) conceptual framework, which formed the basis of the instrument development process including the design, development and validation of a new psychometrically-sound and conceptually-based scale, the Collaborative Problem-based Peer Assessment Strategies Inventory (CO-PBL-PA-SI). The development and validation of the CO-PBL-PA-SI, based on the conceptual underpinnings, involved identifying four scales: capacity to collaborate, readiness to engage, task-based interest and peer-feedback usefulness. Following an extensive review of the literature, an item pool of 20 items was generated and verified by two panels using a formalized card sorting procedure.

Keywords: Motivational orientation; Collaborative problem-based learning; Peer assessment; Interactive whiteboards; Capacity to collaborate, Readiness to engage, Task-based interest; Peer-feedback usefulness

Paper ID: 123

Investigating Student Nurses' Satisfaction of Home-based Learning Using the Community of Inquiry (COI) and Digital Literacy Model (DLM) frameworks

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Abstract

Background: Home-based learning has been adapted by nursing educational institutions in view of the COVID-19 situation. This involves using mobile devices or laptops to access lesson materials and participate in learning activities in face-to-face as well as online settings. This flexible mode of delivery aims to prepare the future nurse graduates for self-directed learning which will help them adapt to the rapidly evolving healthcare landscape (Sedgwick, Awosoga, & Grigg, 2017).

The Community of Inquiry (COI) framework was used to investigate the nursing students' learning satisfaction through 3 components: teaching, social and cognitive presences (Garrison, Anderson, & Archer, 2010). Similarly, the Digital Literacy Model (DLM) was used to assess technical, cognitive, social-emotional and learning satisfaction in HBL (Ng, 2012). These 2 frameworks can inform educators on how their students interact and learn with technology, the effectiveness and students' satisfaction of HBL. They have implications on designing HBL experiences for the future.

Aims: To study the relationship between COI and DLM frameworks on the nursing students' satisfaction. To understand if the frameworks affect students' satisfaction level, as well as managing learners' needs and support.

Methods: This was a quantitative, descriptive cross-sectional study. A voluntary sample of 181 Year One and 364 Year Three Diploma Nursing students from Ngee Ann Polytechnic were recruited for online questionnaires using 5 point likert scale for the following the DLM (17) and the COI (33) questions respectively. The other 9 questions were assessed for satisfaction.

Results: The study showed a significant positive correlation between the COI, DLM and students' learning satisfaction ($p<.001$). There was a positive Pearson correlation between COI and perceived students' satisfaction ($p<0.05$, $r = .687$). Similarly, there was a positive Pearson correlation between DLM and perceived students' satisfaction ($p<0.05$, $r = .594$).

Conclusion: The results showed that both COI and DLM were related to students' satisfaction. These findings will guide educators to improve students' satisfaction for future HBL courses.

Recommendations: Future research to consider to include nursing students from other levels in NP and outside of NP to analyse if there is a difference in students' satisfaction. Evaluate the effectiveness of the curriculum as well as learning outcomes.

Keywords: Home-based Learning; Community of Inquiry; Digital Literacy Model; Nursing; Singapore

Paper ID: 43

Reaching out: Cultivating a Learning Community to Facilitate Video-based Peer Coaching on Teaching Practice in the 'Extended' Classroom

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Abstract

This exploratory, qualitative case study investigated four university teachers' experiences of video-based peer coaching and their understanding and potential enactment of a learning community that may develop around this approach. It also explored teachers' perceptions of the 'extended' classroom or hybrid teaching, an approach in which the same instructor teaches on-campus and online students at the same time.

Video-based peer coaching was seen as efficient, focused and characterised by peer support, provided peers had sufficient background information regarding each observed lesson. Participants agreed that the approach could be effective within a cross-departmental learning community, although leadership and institutional recognition would be required to ensure focus and a sustainable culture of collaboration. In spite of multiple challenges, such as how to address students' needs in two distinct modes simultaneously and manage high cognitive load and complex technologies, participants viewed the extended classroom as a positive development which afforded flexibility and new, richer forms of interaction.

Keywords: Video; Peer coaching; Learning communities; Extended classroom; Hybrid teaching

Oral Presentations

Day 1
(7 December 2020)

Track 2
14:20 - 15:40

Session Theme:
Specific Situation and Needs

Paper ID: 36

A Look at Distance Learning Strategies for Special Educational Needs (SEN) Education

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Abstract

Every child, including those with learning challenges, can discover their true potential if they can be provided with the right learning environment and a high quality of education. Applied Behavior Analysis (ABA) is an effective pedagogy used for students with special education needs (SEN), especially those with autism special disorders (ASD). ABA break downs the target learning tasks into small and manageable steps for SEN students to enhance their learning and mastering of meaningful new behaviours. ABA is the scientific approach of changing human behavior in their natural environment. Using ABA, therapists could identify the children's motivations and develop programs and procedures to best fit their needs through analyzing and tracking their behavior.

An effective ABA based intervention program always requires one on one intensive training. However, a shortage of therapists and high tuition are the major challenges for a SEN student to receive such training. Covid-19 creates more complications as face to face interaction is not encouraged. General online learning platforms cannot provide a suitable learning environment for SEN students to continue their learning at home.

In this talk, Dennis will share his idea on conducting ABA at students' homes. He will highlight the current status and major challenges faced by the Education industry in doing so, and how emerging technologies such as artificial intelligence (AI) and the Internet of Things (IoT), might provide the solutions in overcoming the challenges through individualized education program and real-time virtual support. He will also talk about his experience in engaging educational practitioners, parents or caregivers; as well as a method to accelerate the assessment process, and thus creating a more effective individualized MOOC-like experience for students with special education needs.

Keywords: Special education needs; Artificial Intelligence; Distant learning; Applied Behavior Analytics; Internet of Things; MOOC

Paper ID: 74

Virtual Lab Infrastructure (VLI) – Taking eLearning Mainstream for Lab-based Teaching in view of Post-COVID-19 New Normal

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Abstract

eLearning has been in the forefront of higher education for decades. It has helped advanced technological and pedagogical innovation in many teaching and learning areas. These may include: Learning Management System (LMS), Classroom Recording and Video Chunking, Social Media, Mobile and Collaborative Learning, Learning Analytics, Adaptive and Flipped Learning. The global adoption of Massive Open Online Course (MOOC)/Small Private Online Course (SPOC) in recent years demonstrated the coming of age of eLearning. It also suggests that the era of fully digitalized teaching and learning may have arrived. For instance, EdX offers MicroBachelors programs in Computer Science, and Coursera, a full-fledge BSc degree in Computer Science by the University of London. The question is: is Higher Education ready to embrace eLearning as being equivalent to F2F learning? This question gained further urgency and importance in view of the COVID-19 pandemic. When avoiding physical contact becomes a norm, the need of physical space has become a barrier, rather than a facilitator. Indeed, globally we have seen a new wave of adoption of synchronous online meeting tools for conducting online classes. A similar wide adoption of online lab should be paralleled for those requiring lab learning. In this paper, we explain what Virtual Lab infrastructure (VLI) is, how it can be developed to meet the need of online lab and thus, close the gap for mainstreaming eLearning. In fact, the development of VLI has been started as early as that of the distance learning for continuing education. We review the various models of VLIs during its development until its most modern form. We also propose a reference model of VLI that can fulfill the fundamental requirements of lab-based teaching and learning with the perspectives of the teachers, the students as well as the lab support team. We then demonstrate how this reference model can be implemented by on-premises and Cloud computing technologies. Lastly, we report a case study at Singapore University of Social Sciences (SUSS) where VLI has been deployed for 4 programming courses on Structure, Object-oriented, Data, and Web programming. Issues encountered and their current and future solutions are discussed. We conclude the paper by highlighting the potential for learning science to be advanced through evidence-based teaching via learning analytics based on activity logs of VLI. With the support of a VLI, we argue that the time has arrived for making eLearning a full-fledged alternative to class room teaching for programming courses.

Keywords: Virtual Lab Infrastructure (VLI); eLearning; Programming Courses; Massive Open Online Course (MOOC).

Paper ID: 96

Delivery of a Laboratory and Field-Based Course During State of Emergencies: Teaching Ecology Using Open Educational Resources Amidst COVID-19 Pandemic in the Philippines

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Abstract

General Ecology Laboratory (BIO426L), originally covers laboratory and field exercises to supplement its lecture corequisite (i.e. BIO426), is an interdisciplinary course that enables undergraduate students to apply research and standard methods in understanding interactions between organisms and its environment at different ecological hierarchical structures. However, necessary adjustments in content delivery and assessment strategies were made to adapt with public health challenge imposed by COVID-19 pandemic on educational setting in many countries like the Philippines. Although the University of Santo Tomas has been one of the first institutions in the country to utilize eLearning platform with Blackboard Learn™ in 2002, the full online class delivery of Term 1 Academic Year 2020-2021, which maintains physical distancing among its academic community has challenged laboratory and field-based courses (e.g. BIO426L) in the University. As such, this study aims to assess the effectivity and highlight the advantage of three teaching and learning strategies (i.e. subscription-free software, open-access simulation, and virtual and home experiments) employed during the online offering of BIO426L to students under Bachelor of Science in Biology program with various majors (i.e. Medical, Environmental, Industrial). These Open Educational Resources (OERs) include free access to mapping and canopy analysis software (i.e. QGIS, DIVA-GIS, CanopOn) and online simulation of carbon cycle and climate changes, aquatic and terrestrial sampling techniques, species interactions, population and community ecology and conservation ecology. These OERs were successfully used by a total of 341 students from nine laboratory classes with access to personal computer devices and internet connection. Furthermore, virtual laboratory and home set-ups have allowed students to apply and practice selected and feasible standard ecological methods without compromising safety during experiments. With the use of existing learning management system of the University, the students' outcomes-based performance (e.g. modelling, data analysis, research reports) have been effectively assessed with standardized rubrics. This present study

underscores the advantage and accessibility of OERs as effective supplementary or alternative during state of emergencies (e.g. pandemic, natural disasters) that may disrupt regular classroom and laboratory classes. This further implies the need for OERs and innovative techniques in delivering quality education both in private and state universities or colleges regardless of fund availability for virtual laboratory subscription and learning management system. The threats and consequences of public health crisis to higher education have enabled the academe to revisit its educational continuity plan and consider paradigm shift on sustainable and flexible global education.

Keywords: Biology; Virtual laboratory; Higher education; Learning management system; Ecology laboratory

Paper ID: 131

Teaching Conference Interpreting Online: Methods, Modes, Settings and Technologies

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Abstract

With the lasting pandemic, a significant number of international and local conferences as well as interpreting classes have been moved online. This has changed conference interpreting industry and interpreting education significantly. Interpreting trainers who are usually interpreting practitioner themselves now faces two urgent challenges: 1) to teach students interpreting skills remotely by using various teaching technologies and platforms; 2) to learn and use the necessary technologies for remote interpreting via different conference organization platforms. The paper demonstrates the know-how, advantages and disadvantages of different conference interpreting and interpreting teaching platforms as well as relevant technologies involved. Many of these are applicable to both interpreting and foreign language online teaching that involves listening and speaking. Each specific platform and relevant technologies can be used in distinctive ways serving different pedagogical purposes and accommodating various course designs. By comparing and matching, this paper discusses teaching methods to be used for different modes of interpreting (simultaneous, and consecutive) and more specifically methods that can be used under different settings of online interpreting classroom (mock conference, individual training, peer feedback and group discussions). It further discusses how the technologies could be applied to interpreting online assessment and the requirements and equipment needed for the online class setup. The paper concluded by summarizing the possible scenarios of online conference interpreting classrooms and the teaching methods required. Each of these scenarios can be further spin off into in-class online activities serving different components of language teaching. Future directions see the incorporation interpreting working and teaching platforms and technologies which will serve both education and conference industry better. This combination will also get students more familiarized with the remote interpreting technologies that they will use in the job market. Recommendations are made on easy to use online activities in both interpreting and language classes.

Keywords: Conference interpreting; Online teaching and assessment; Technologies and methods.

Oral Presentations

Day 1
(7 December 2020)

Track 2
15:55 - 16:55

Session Theme:
Learning and Skills

Paper ID: 37

Impacts of Instructional Technologies on Primary Four Students' Self-directed Learning and Collaborative Learning: A Singapore Study

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Abstract

Writing researchers have long recognized that a challenge for children learning to write for academic purposes is to develop the ability to incorporate thinking processes to enact genre practices, self-directed learning, and collaborative learning into the education. This study investigates how elementary school teachers implement a socio-cognitive and motivation-and-learning (SCML) approach in their classes to improve teaching, assisted by technologies such as Padlet and Grammarly, and how the SCML approach impacts students' performance in writing and their assimilation of self-directed and collaborative learning. While there is no lack of research on intervention teaching programmes, self-directed learning, and collaborative learning in general for university and secondary-school students, there is scant research on teachers' implementation of the SCML approach specifically to teaching writing, as well as the impact of this approach on the learning of primary school students. The two-year study uses multiple data sources, including classroom observations, pre- and post-writing tests, and student questionnaires. It seeks to examine the effectiveness of the SCML approach to teaching English language compositions to a broad spectrum of Grade Four students across ability levels at four elementary schools in Singapore. In this presentation, we will report on part of a larger study that examined Primary four pupils' perceptions of self-directed learning and collaborative learning using a validated questionnaire. This paper aims to examine if there are any significant differences between Singapore primary school students (N = 326) in control and experimental groups on their perceptions of motivation to learn towards self-directed learning and collaborative learning with and without technologies. SPSS was used to analyze the quantitative data. Findings from the first year of the questionnaire data from one participating school show that students improved in collaborative learning as a result of using technologies. The SCML approach applied in the experimental group has higher mean values than the traditional writing method adopted by the control group. Students in the experimental group perceived learning to be more meaningful, as indicated in the scores in task value. This paper concludes by highlighting the contribution of the interdisciplinary project in terms of writing pedagogy and learning technologies for students at a critical early stage of their educational development. Implications of the study in terms of research and practice as well as future research directions will be discussed.

Keywords: Collaborative learning; Grammarly; Padlet; Primary four student; Self-directed learning

Paper ID: 29

Accelerating Learning in Online Training

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Abstract

The speed with which employees learn new skills and developed at the workplace is far more critical now to meet the challenges of industry 4.0 and the digital revolution amidst a fast-paced business environment. This presentation describes key strategies to accelerate workplace learning through online training. The presentation is based on research with 85 world-class leaders hailing from over 70 global organizations spread in 7 countries, spanning over 40 industries and a wide range of skills, job types and contexts. The goal of the research was to understand how organizations accelerated performance of the employees and learners. A total of 66 start-to-end project case studies and success stories were gathered through qualitative interviews. An extensive qualitative research study was conducted, and data were analyzed using thematic analysis and matrix analysis. Within-case and across case analysis was conducted. The research revealed that three major strategies contributed heavily to accelerating the learning of the learners in online training. This included embedding real-world cases into the curriculum, using technology-based performance support systems and chunking of learning with spacing and interleaving. The findings suggested that not all online training includes such elements faithfully which in turn hampers the speed of learning.

Keywords: Accelerating learning; Online training; elearning

Paper ID: 39

Using Padlet to Facilitate Primary School Students' Development of Collaborative Learning Skills in the Writing Classroom in Singapore

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Abstract

The purpose of this article is to report on part of a larger study that investigated primary school students' abilities to provide peer feedback using Padlet in class. A sample of 140 primary four students from two Singapore schools participated in the intervention to facilitate their writing of narratives with the use of Social-Cognitive and Motivation-and-Learning approach. The intervention comprised five units. Each unit ranged from 60 to 90 minutes. Throughout the intervention, students learned to use ICT tools to develop and improve their writing. It started with a writing template to guide the students to formulate their ideas based on three pictures. Students were asked to define the topic of the narrative and the expected audience at the beginning of Units 1, 2 and 3. In Unit 4, students were asked to independently check their drafts and make further improvements based on the feedback provided. The students' drafts of their narratives were posted on Padlet at the end of Unit 4. Before Unit 5, they were assigned to review one to two narratives written by their peers on Padlet. This online bulletin board tool was selected as it was relatively easy for students to pick up the skills and widely accessible by teachers. The purpose of Unit 5 was to promote collaborative learning among peers through providing constructive feedback on Padlet. When reviewing the feedback from the participating students, the results were mixed. Many students were able to use the guiding questions provided and posted constructive feedback to their peers. For example, some students were able to post comments such as "I think this is a lovely composition but there is still room for improvement. I think you are lacking some feelings, thoughts, actions and reactions on the exciting parts … one thing I like is the story plot. Keep up the good work!" However, some students posted generic comments such as "There are many grammar mistakes" without further explaining to their peers how they could improve their narratives. Feedback from teachers was positive as the students were actively participating in the Unit. Overall, students were willing to share their ideas with their peers. The findings are consistent with the previous research results on the importance of scaffolding and teacher support in developing collaborative learning skills. Recommendations for future research will be discussed.

Keywords: Collaborative learning; Padlet; Technology enabled learning, Primary students;

Oral Presentations

Day 1
(7 December 2020)

Track 3
12:45 - 14:05

Session Theme:
Online Learning Materials and Online Courses

Paper ID: 22

Learning Biochemical Pathways in a Fun Way: The Development of Pre-class and Post-class Micromodules

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Abstract

Students always think that studying biochemical pathways is challenging. They usually just memorize the steps in the pathways instead of having a solid understanding of the function of each pathway, the reactions involved, and the inter-relationship between different metabolic pathways. It is also difficult for teachers to present the whole picture to students without a learning aid.

The *Metabolism Metro* is a self-learning tool which aims to arouse students' interest in exploring human metabolic pathways. This courseware includes the pre-class "*Story Mode*" and the post-class "*Revision Mode*".

In the *Story Mode,* metabolic pathways are packaged as micromodules and presented as metro-lines in different "islands", including the *Sweetieland* (carbohydrate metabolism), the *Powerland* (oxidative phosphorylation), the *Laminolegoland* (amino acid metabolism), and the *AG City* (nucleotide metabolism). Students are expected to spend less than 15 minutes to go through each micromodule so that they can be more focused, and to gain the basic knowledge in a short span of time (bite-sized learning). In the *Story mode*, students can learn abstract concepts through animations, narrations and videos. They are expected to go through the micromodule before they learn a particular metabolic pathway in class. In order to strengthen their concepts, teachers will guide the students to re-visit the micromodule again during class after introducing each pathway.

In the "*Revision Mode*", metabolic pathways are presented as railway lines on a metro map. Metabolites are shown as railway stations. By choosing a station, students can review the chemical structure and function of each molecule, and understand how the molecule links multiple pathways together in a flashcard.

By using this courseware, students can learn biochemical pathways in an interactive and fun way. In near future, other metabolic pathway modules will also be developed.

Keywords: Biochemical pathways, metabolism, biochemistry, micromodules, bite-sized learning

Paper ID: 35

How Do University Teachers Develop TPACK through MOOC Teaching?

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Abstract

MOOC teaching provides an opportunity for university teachers to develop Technological Pedagogical Content Knowledge (TPACK). However, most university teachers continue to "move" classroom teaching in online teaching, which fails to make full use of online learning, and the development of TPACK is not apparent. Therefore, it is necessary to explore how TPACK develops in MOOC teaching practices from the university teachers' perspective. Based on the field data collected through in-depth interviews and observation, this paper analyzes TPACK development of four Chinese university teachers in MOOC teaching based on the theory of teachers' practical knowledge and PCK (Pedagogical Content Knowledge). It is found that, through various problems and situations in MOOC teaching process, university teachers can integrate existing knowledge, newly generated technology knowledge, and relevant Knowledge about students through the reflection in action, team cooperation, learning analysis and research, training, and support, and observing other MOOCs. Furthermore, they generate knowledge of instructional strategies with ICT, such as content representation, learning activities, and learning support. Online teaching, including MOOC teaching, is becoming the new norm of higher education in the world. All colleges and universities' departments can cooperate in providing professional support for teachers and improving their TPACK level. Specific measures include: guide teachers to regard problem situations as the opportunities of learning and TPACK development, provide teachers with student-centered training and support in TPK(Technological Pedagogical Knowledge) and learning design, and encourage teachers to establish various cooperative relationships with their peers in a broader range, to form a teacher professional development culture and cross-border learning culture based on technical context, and promote the formation of integrated and systematic TPACK.

Keywords: TPACK; University Teachers Professional Development ; MOOC; Online Teaching

Paper ID: 134

Mini Lectures To Enhance English Knowledge Across The Disciplines (MiLEE)

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Abstract

Technology has radically affected students' attention span, especially when it comes to language learning. From our experience of developing various online interactive learning materials and systems, in order to ensure a captive audience, the online lessons have to be accessible, limited in length; and fresh and modern in their design and content. The type of materials they are interested in/what engages them may include a blend of video and a variety of question sets to check comprehension. Designed and conducted by language professionals and discipline instructors to introduce key terminology and concepts at the beginning of each unit throughout the course that are discipline specific. We use a top down/bottom up approach analysing both the content providers and learners to design and develop authentic mini-lectures to bridge the gap of what they may know and what is going to be covered in upcoming lectures and tutorials. These videos, (most three to five minutes long) help students prepare so they will able to contribute more effectively in class/tutorial sessions. Mini-lectures can be made available online via video channel, Moodle, EDX, etc. so students may access them as many times as they need to.

Keywords: Blended Learning; Flipped; MALL; CALL

Paper ID: 108

What Is the Gap Between 'Them' And The Standards For Quality Course Design: A Mixed Research on The National Award-Winning Blended Courses

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Abstract

The purpose of this study is to analyze what progress has been made and what major issues still exist currently in blended course design in China. It also aims to identify the instructional concepts and design thinking reflected in the instructors' course design practices. A mixed method of quantitative and qualitative research was used. First, FD-QM Online Course Quality Rubric was applied to review and evaluate 30 courses in China, which won the "National Blended Teaching Design Innovation Competition" award in 2019, with a focus on course objectives, learning activities and assessment design, to identify to what degree they meet the FD-QM Rubric Standards, and to analyze the design trend and main issues. Next, some instructors were interviewed to verify the results gained from the quantitative research and identify their thinking behind the course design, and then explore the relationship between the theoretical description of pedagogy and the action concept of educational practitioners. The overall finding is that when evaluated against FD-QM Rubric standards, these courses achieved (much) lower scores in the design of learning activities as well as assessment and measurement. In addition, despite the fact that almost all the instructors support and strive to expand learning opportunities for students through more diverse learning activities and more frequent formative assessments, not enough attention was paid to providing clear policies and expectations for teaching and learning in course design, which reflects the lack in fully understanding the mode of blended teaching. There are two contradictory teaching concepts of "Student-centered" and "Teacher-centered" presented in the course design. At the same time, the local blended teaching reform at this stage is still limited to a relatively single and solid mode. In the context of ongoing transformation of university teaching paradigm, it becomes increasingly important and necessary for all educators to reflect on some fundamental issues such as the teaching-and-learning relationship, the rights of instructors and students, learning responsibility etc.

Key words: Blended Learning; Course Design; Online Course Quality Standards; Student-centered

Oral Presentation

Day 1
(7 December 2020)

Track 3
14:20 - 15:40

Session Theme:
MOOC and SPOC

Paper ID: 50

Interdisciplinary Innovations for Population Ageing

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Abstract

Rapid population ageing as a global trend underscores the importance of better preparing future professionals with ageing-related knowledge, skills, multidisciplinary competency and innovation for working with older adults. In response to educational needs for our ageing population, we develop a Massive Open Online Courses (MOOC) using an active ageing and interdisciplinary approach. This MOOC aims to enable a deeper understanding of how social policy, psychology, technology and design thinking can contribute to more innovative and collaborative responses to the emerging needs of ageing societies. With the collaboration among three schools/departments in social science, design, and engineering at The Hong Kong Polytechnic University, the current MOOC includes 6 modules: Community Psychology / Social Policy, Social Care, and Social Entrepreneurship /Technologies for Smart and Active Ageing/ Successful Examples of Technology for Smart and Active Ageing/ Observing the Needs of the Ageing Population/ Opportunities for Design Innovation in an Ageing Society. Incorporating an interdisciplinary perspective, this MOOC adopts problem solving models, case studies, and formative assessments towards empowering learners to formulate innovative strategies for the ageing population in their own sociocultural contexts. This MOOC provides continuous learning opportunities for human service professionals and other potential learners, which may create great educational and social impact.

Keywords: Ageing; Applied social science; Design; Interdisciplinary studies; Mooc; Technology

Paper ID: 68

Research on Application of Open Educational Resources (OER) and Massive Open Online Course (MOOC) in Higher Education in Mainland China

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Abstract

MOOCs have been used in Higher education in China for nearly 40 years, a huge amount of OER and MOOCs have been accumulated in higher education in mainland China. The COVID-19 epidemic in 2020 has pushed OER and MOOC to a new peak of universal application.

This paper attempts to find out the similarities and differences through the research and analysis of different development and construction concept and application practices of OER and MOOC in mainland China and European and American as to put forward instructive suggestions for the construction and application of OER and MOOC in mainland China's higher education system.

After the study, the author found that in European and American higher education, OER development and use are paid more attention to, and open educational resources are widely and fully introduced in daily teaching to make teaching more effective and efficient. However, MOOC does not exist as a substitute for daily classroom teaching in higher education in Europe and America. It is more like a demonstration of the academic status and image of MOOC production units, and a contribution to students in developing countries where educational resources are scarce. In mainland China, university administrators and teachers pay more to MOOCs than OER, and in many cases, MOOCs are seen as substitutes for classroom teaching.

Therefore, the author proposes how to guide and train university administrators and teachers in mainland China, implement the Student-Centered education concept, and make full use of OER from the beginning of curriculum design to obtain more efficient and effective teaching results.

Keywords: Higher education; Mainland China; Open educational resources; Massive open online course

Paper ID: 119

Proposal of the Platform for Continuity of Distance Learning in African Schools and Universities in the Aftermath of the Political-Military Crisis in the Face of Covid-19: The Case of The Central African Republic

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Abstract

In this article we propose a platform for continuity of educational activities in the Central African Republic. This platform has been tested in the Higher Institute of Technology (Department of Computer Engineering and Telecommunications) of the University of Bangui and has enabled the partial resumption of educational activities in this institution despite travel restrictions imposed by the COVID-2019 pandemic. It has been applied in the field of STEM (stands for science, technology, engineering, and math), it can be extended to other disciplines. It guarantees the confidentiality and security of user data thanks to one of the most secure VPNs in the world. Access to resources is effective thanks to the coupling of the WireGuard VPN server and the Apache Guacamole server which is a gateway using standard protocols via a browser. It also uses the VXLAN technology which brings the subnet of the WireGuard VPN server from layer 3 of the OSI model to layer 2 and allows the organization of practical work that requires to be in the same local subnet. Access to this platform allows Central African learners to have a complete and secure distance learning environment for courses, practical work and tutorials. The teacher will be able to control the students' computers remotely and manipulate them as if they were physically in the same place with them thanks to WirGuard's secure tunnel, and also to the gateway.

Keywords: Educational business continuity; COVID-2019; WireGuard VPN Server; Guacamole Apache server; VXLAN

Paper ID: 59

Using Small Private Online Course (SPOC) for Intergenerational Learning Experience

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Abstract

The phenomenon of ageing population has become more prevalent. Therefore, the importance of creating opportunities for elderly to learn with younger generations should not be overlooked, and it is also very important for the younger generation to better understand the elderly. In fact, older generation and younger generation can maintain the intergenerational relationship well. Intergeneration education is one of the examples which is beneficial to both stakeholders. For the older adults, they get the chances to share their experiences and thoughts to the younger ones. On the other hand, the younger people can develop positive mentality to face challenges now and in the future. In order to achieve the purpose of intergenerational understanding and intergenerational integration, SPOC helps the two generations to establish a win-win relationship through different aspects of analysis and interpretation. The course is divided into six modules, namely the psychological aspects, physical and neuropsychological development, social and community aspects, sociology and intergenerational concepts, leisure, as well as technology. Through various exercises, learners can gain your understanding towards the issues and enhance your communication across the generations. They can help to arouse one's own critical thinking towards issues of intergeneration, mainly from the perspective of psychology and sociology. The course offers great opportunities to see how these aspects help to narrow the generation gap, and then use the knowledge to better engage in related occupations, helping the people around you to create a harmonious society.

Keywords: SPOC; Intergenerational learning experience; Platform; Perspective; Modules

Oral Presentations

Day 1
(7 December 2020)

Track 3
15:55 - 16:55

Session Theme:
Artificial Intelligence (AI)

Paper ID: 3

Transcrobes: An Open, Web-scalable Platform for Radically Personalised L2 Development

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Abstract

This presentation describes a new platform consisting of a set of server and client technologies implementing a Personalised User Model for Lifelong, Lifewide Learning (PUML) for developing second/foreign language (L2) proficiency. Transcrobes is first and foremost a tool that allows learners to meaningfully interact with arbitrary, authentic digital L2, secondly a tool implementing state-of-the-art learning techniques (spaced-repetition, noticing, meta-cognitive support, etc.) on top of this authentic material for achieving learner-defined learning goals, and thirdly a platform for research, data collection and analysis feeding back into the two primary functions.

Due to the critical role reading has in L2 development, the initial development focus is on learner selected, free, extensive reading and tools for building, evolving and presenting sophisticated learner models based on natural interaction with these texts. Texts are analysed using Natural Language Processing, enriched with personalised comprehension aids chosen by the learner and then replaced with rich hypertext in place in real-time using a plugin architecture in popular content consumption applications (browsers, e-readers, etc.). Other modalities such as audio and video are planned. Learners can inspect and interact with the information that the system collects, giving them crucial visibility and control over their data. Learners can then choose to expose parts of that data to other stakeholders, such as caregivers, teachers or solution providers in raw or aggregated form.

The system is an attempt to radically personalise and contextualise the L2 learning process. By giving learners free reign over the both the content and pedagogical focus, yet also providing quantification and metrics that allow them to measure themselves against commonly used benchmarks, they are empowered to explore ideal L2 selves and new L2 identities on their own terms, in their own time. The particular interests, motivations and optimal learning methods for a learner may vary very widely over a typical L2 learning journey, and the tool is designed to adapt transparently with the learner, as the learner's needs evolve over time.

By acting as a layer between learners and authentic digital material and providing the tools for the learner to get meaning from the content, and also a set of learning tools on top of the material, the

system will generate potentially very large quantities of real language development data, allowing for the large-scale analysis of real, long-term learner behaviour and L2 development.

Keywords: ICALL; Personalized learning; Extensive reading; Learner modelling; PUML

Paper ID: 19

Using Artificial Intelligence in Learning English as a Foreign Language: An Examination of IELTS LIULISHUO as an Online Platform

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Abstract

EFL (English as a foreign language) learners seem destined to make errors and continuously need testing of their changing language levels. However, the unbalance between supply and demand always exists in the process of learning English. Teachers sometimes are also tired of doing repetitive jobs to correct the same mistakes of nonnative speakers. Therefore, many researchers tend to improve the efficiency of learning and teaching processes by using computer-assisted instruction. Specifically, artificial intelligence software is an unstoppable trend to solve this problem. This study aims to find which characteristics in IETLS Liulishuo (an artificial English-learning app to improve IELTS performance) are following the elements of Computer-Assisted Language Learning (CALL) pedagogy, mobile-assisted language learning (MALL) principles and some concepts of AI-powered foreign language software, as put forward by Chapelle (2003) , Stockwell (2013) and Pokrivcakova (2019). The results showed that IELTS Liulishuo has affordability to use as an online platform for foreign English learning. More importantly, it shed some light on CALL pedagogy and the design of artificial applications of foreign language learning.

Keywords: T Artificial Intelligence; Personalised Learning Platform; Tool for Smart Learning; Technology-Enhanced Assessment; Evaluation in Education

Paper ID: 62

Comparing the Effectiveness of Learning about Artificial Intelligence between Unplugged Activities and Online Learning

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Abstract

Artificial intelligence (AI) is a technology that is gaining a lot of attention, therefore AI education is important. However, the concept of AI is complex, so AI education requires innovative approaches. An approach for teaching AI is to use unplugged activities to help students learn by asking them to complete some activities, which makes learning both fun and engaging. An example is the Sweet Learning Computer activity where learners learn about a type of Artificial intelligence technology that learns from them mistakes through a game. But in the current situation, there has been a COVID-19 outbreak, making the teaching and learning switch format to online, reducing activities that require physical contacts. As a result, it is difficult to use AI unplugged activities for learning because they normally require multiple players. On top of that, some unplugged activities require many equipment that must be prepared for the activities. Therefore, it is difficult to do AI Unplugged activities, causing some activities to be made online as a website for playing instead.

We are therefore asking whether online game-based learning of the same activity is as effective as their counterpart unplugged activities. Which method is more suitable for learning? We will test through the Sweet Learning Computer activities. The activity has many required equipment that must be prepared and it's difficult to play alone. We made this activity a game to play on the website. An experiment is conducted to compare the AI unplugged activities and the website by testing on 2 groups of participants. The control group consists of 6 participants that learns through AI unplugged activities, and the experimental group of 6 participants learns through the same games on the website. The results are measured with a questionnaire to learn which of them was better at learning artificial intelligence technology. The hypothesis of this study is that learning from games on the website is better than learning through AI unplugged activity.

Keywords: Artificial intelligence (AI); Unplugged activities; Online game-based learning; The Sweet Learning Computer activities

Oral Presentations

Day 1
(7 December 2020)

Track 4
12:45 - 14:05

Session Theme:
Technology-Enhanced Assessment and Evaluation in Education I

Paper ID: 95

Stepping Up Digital Technology Supported Teaching and Assessment in Times of Crisis and Beyond

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Abstract

As inspired by a series of unprecedented events in the academic year 2019/20, universities worldwide implement arrangements for online teaching and assessment to replace traditional examinations, as a means to mimise the spread and impact of COVID-19 while ensuring that students could continue with their study. The pandemic has presented a golden opportunity for teachers to rethink and redesign the teaching and assessment approaches to become more authentic. As on-campus teaching and learning has been seriously interrupted in pandemic times, the shift to digital technology supported authentic learning activities and assessment has gained more momentum. To better prepare academic and teaching staff for immediate transition, virtual professional development workshops with peer-sharing from teachers who have successfully implemented synchronous online classes and digital technology supported assessment were organized, in addition to a resilient IT infrastructure and all sorts of e-learning support. This approach was conducive to creating a cultural of fast-track e-learning adoption in a university in Hong Kong. By correlating the usage data of the online class tools with the workshop attendance, it was noted that participants who had joined the virtual workshops held their own synchronous online classes and adopt alternative assessment methods with the support of technology. It is also observed that the synergy of formative and summative assessments helped enhance student learning, in addition to evaluate and document students' learning process and outcomes. Besides, data showed that with the appropriate deployment of advanced technologies, practices such as peer review and use of analytics to give feedback on students' real-time performance have become more feasible.

This presentation shares how a university steps up e-learning initiatives in times of crisis and identifies determining factors and challenges of technology supported teaching and assessment at a university in Hong Kong. The presentation also explores new design and implement good fit-for-purpose educational practices that lead to lasting transformation and sustain beyond the immediate dilemmas posed by the pandemic.

Keywords: E-assessment; Online teaching; Technology supported teaching; Times of crisis

Paper ID: 107

Augmenting Skills Assessment using Artificial Intelligence: Pedagogical Hindsight, Insights, and Foresight

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Abstract

Currently, determining and tracking a learner's or worker's proficiency levels by a battery of "stop and test" quizzes, exams and questionnaires remain a time-consuming affair for human assessors. AI can help unburden labour and time-intensive evaluation especially for determining gaps in skills and competencies required for academic and career progression. It is also better at compiling a training attainment record that can be retrieved and updated almost instantaneously. The goal of smart, responsive and personalised automated evaluation has tremendous potential in higher education and workplace training. This is even more so for evaluating tertiary learners' and adults' skills and competencies, as this is a current gap.

The study presents an AI-assisted skills assessment engine for identifying, determining and assessing skills proficiencies, aligned with Singapore's national skills standards. The AI assessment engine is a web service that deploys an AI-enhanced adaptive test, a virtual chatbot as an automated testing agent and interviewer and an automated skills profile report with recommendations for skills improvement. It uses various AI techniques from machine learning, deep learning and natural language processing algorithms as well as AI models and frameworks. In hindsight, the experiments done as well as the various AI methods tried while designing the AI engine could be more efficient. The learning value here from developing the project can assist other AI researchers and instructional designers.

The engine was deployed in two instances. The first was for assessing 757 early admission candidates' business aptitudes. It assessed the greatest potential for academic success against skills benchmarks and profiles of current learners in the diplomas. Learners were better identified for their relevant course of study. The second was to assist 893 Year 1 learners to help them track their communication skills proficiency. After using the AI-assisted tests, a sizable number of learners showed a marked improvement of five percentage points, which is equivalent to a grade. The learning value here focuses more on the pedagogical insights. AI demonstrated a promising possibility to upskill learners through increased self-efficacy by automating grading and rubrics.

As the AI skills assessment engine is further trained, retrained and refined, it offers new possibilities to increase its future features and capabilities to augment skill development. The learning value here

is foresight as degrees of automation, governance and human-machine control surface to the fore. These trends and considerations are also impacted by new AI technologies, methods, models and frameworks.

Keywords: Artificial intelligence in assessment; AI; Skills assessment; Competency-based learning

Paper ID: 15

Reduction in Error: An Implementation of E-practical Assessment Tool for Nursing Skills Tests

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Abstract

Purpose: Assessment integrity is crucial in an education institution and it is important that all students are awarded with accurate grades. The current practical assessment process is for an assessor (lecturer 'a') to ensure that all assessment criteria components are graded and then manually tabulate the scores using paper and pen, while a checker (lecturer 'b'), checks through and calculate the total score manually again to ensure accuracy. Despite these multiple checks, computation errors still exist due to various reasons, and the main reason for errors are due to miscalculation of marks. Hence, this project aims to enhance methodologies using technology to help nursing lecturers and students maintain standards for error- free assessment.

Methods: Quantitative data were collected in June 2019, by reviewing 480-hardcopy assessment forms. Of which, 40 scripts (8.33%) were identified to have errors. A cause-and-effect diagram was applied to map out the possible root causes of these errors. Thus, an "auto formulated smart digital assessment form" was designed and created as an innovative tool to bridge the error issues. The new innovative e-assessment form not only prevent errors arising from illegible handwriting, it also allowed for marks to be auto-calculated through formulae programing. Missing information during the assessment process was flagged out using colour codes, and assessors were not able to complete and save the file if the programmed system picked up any discrepancies in grading were amongst the many functions that the e-assessment form possessed.

Results: Data collected post solution implementation shown a 100% error free rate. The total cost savings in man- hours, materials, storage and disposal amounted to $23, 812.50 with 440 hours of man-hours saved per year. Lecturers also identified an increased in productivity as there were better work processes, positive organizational climate through efficient work process. While an increase in perceived confidence for novice teachers were recorded.

Conclusions: This project was the first in the nursing department and have helped to ease the workflow of nursing lecturers by having errorless calculations with consistency and accuracy in grading. The

auto formulated smart digital assessment form could also be edited to be used for other department's practical assessment. These edited assessment forms will also be utilized in students' industrial attachment modules.

Keywords: Practical assessments; Nursing; Smart digital assessment form.

Paper ID: 82

Journey into E-Examination: From Preliminary Pilot to Full-scale Emergency Response to COVID-19 Pandemic

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Abstract

The Singapore University of Social Sciences (SUSS) embarked upon their journey into e-Examination (eExam) in Nov 2018 when the University started a pilot to conduct high stake examination electronically for two courses from School of Business and School of Law respectively.

As one of the early proponents of eLearning in Singapore, SUSS continually leverages new and innovative technologies to deliver the best learning experience for their students. Some unique adoptions of learning technologies include pervasive use of interactive Study Guide (iSG) and eTextbook. iSG is a personal e-book that comes with every course in SUSS. Rich in content, embedded with video lessons, activities and quizzes, iSG is an invaluable learning resource that helps students prepare for lessons and assignments. eTextbook, on the other hand, is not just a digital version of a printed textbook for students and instructors. It is also a platform that fosters collaborative learning through shared annotation features.

Other than the intent to exploit good use of emerging technologies to prepare students for the new unknown world, the key rationale of evaluating eExam solutions is to identity a platform that can effectively support students' use of iSG and eTextbook during open book examinations, typically conducted on-site in examination hall. In addition, SUSS launched a new online learning initiative in 2019 that allows their students to take fully online courses without attending class in person. Arising from this recent development, there is a new objective to find a secured online proctoring platform for students to take eExam from remotely.

Several eExam products were carefully evaluated and SUSS deployed different platforms to administer open and closed book examinations both on campus and remotely from home. The unprecedented COVID-19 pandemic has expedited the deployment of large-scale eExam and the University scrambled to devise a working technical solution within a very short time frame to run take-home eExam for 35,000 exam takers in May 2020.

In this presentation, SUSS will walk through their experience from initiating a small-scale pilot for on-site eExam to campus-wide deployment of take-home eExam as part of emergency response to COVID-19 pandemic. Details on their technical support and training, together with the challenges

and issues encountered, feedback from students and faculty and future plans, will be shared. This experience sharing will serve as a good reference with useful takeaways and learning points for institutions looking into similar deployment of technology-enhanced assessment.

Keywords: Technology-Enhanced Assessment; e-Examination; Digital Assessment; Online Proctoring

Oral Presentations

Day 1
(7 December 2020)

Track 4
14:20 - 15:40

Session Theme:
Technology-Enhanced Assessment and Evaluation in Education II

Paper ID: 4

Justifying a Disinformation Response Competency Test Instrument

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Abstract

This paper aims to justify the development of a disinformation response competency test instrument. The instrument can be deployed either as a standalone to measure the competency of an individual of upper secondary education level and above at responding to disinformation, or as a pre- and post-test of programme evaluations on the effectiveness of fake news education initiatives. We call this test instrument the "DIsinformation REsponse Competency Test (DIRECT)". DIRECT is a purely quantitative test, and allows for the rapid evaluation of large numbers of individuals using survey hosting platforms like Qualtrics. DIRECT measures the competency of an individual at responding to disinformation. This competency consists of a cognitive and motivational dimension. The cognitive dimension consists in the ability to evaluate arguments. The motivational dimension consists in one's resistance to transmitting information as news for purposes other than informing others about what one believes to be true. Both dimensions should be assessed together for an adequate assessment of competency in responding to fake news. This is because the dimensions can come apart – the best fake news producers would obtain a high score for the cognitive dimension but a low score for the motivational dimension. Two recent examples of work relating to assessing individuals' competency at dealing with fake news are Pennycook and Rand's (2019) study of susceptibility to fake news and correlating with the Cognitive Reflection Test results, "bullshit receptivity" and the tendency to "overclaim"; and the Organisation for Economic Development and Cooperation's (OECD) Programme for International Student Assessment (PISA) Global Competence Test (2018), which tests for knowledge, cultural sensitivity and cognitive skills. These tests concentrate on assessing the cognitive dimension. The irony, then, is that individuals who score well on these tests can turn out to be very good producers of fake news because they can create convincing arguments and embellish their products with indicators of genuine news. In contrast, measures of moral competence like Rest's (1974) Defining Issues Test or Lind's (2008) Moral Competence Test are too general. They do not serve to identify individuals who would disseminate disinformation to promote what they believe to be moral goods. This paper serves to justify the development of DIRECT by enumerating significant attempts at testing disinformation response and moral competency, showing how these do not target

precisely the cognitive and motivational components that are relevant to disinformation response competency, and showing how DIRECT does so.

Keywords: Fake news; Misinformation; Measurement; Critical thinking; Moral reasoning

Paper ID: 61

Redesigning Assessment with Technology as an Enabler

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Abstract

The COVID-19 pandemic has brought much disruption to the way we carry out teaching and learning. In particular, assessing students learning has been met with challenges since most assessments have been designed for face-to-face classroom learning demanding the 'physical' presence of the lecturer, students and relevant tools. However, the need to align assessment with the learning outcomes and learning activities cannot be overstated. Hence, when all lessons were transitioned to Home-based Learning, there was a need to rethink about assessment design at the subject level without compromising its validity and authenticity given the absence of face-to-face delivery. At the same time, Home-based Learning provides opportunities to harness the potential of technology-enhanced strategies. Therefore, the assessment redesign also takes into consideration leveraging on technology as an enabler. In light of practice-based and skills education, the authors critically reviewed the methods of assessment by looking at how the inclusion of technology could prepare students for real-world performance in addition to meeting the learning outcomes.

The authors explored a shift towards more technology-enabled formative and summative assessments as a replacement strategy providing students with added opportunities to be self-directed in their learning. Recorded video site-visits and case-based formative assessment using padlet were explored as strategies for tertiary students and adult learners respectively. The results have shown better learning engagement and outcomes as students were assessed based on higher order thinking and problem-solving skills. Besides, the former video-based assessment developed transferable skills such as digital literacy, creativity, resourcefulness, and communication and teamwork skills in the course of working on the assignments amongst tertiary students. The latter assessment displayed outcomes of higher intrinsic motivation among adult learners encompassing inclusion, positive attitude, engagement and authenticity towards life-long learning. These are important skillsets that students need to acquire in order to prepare them to adapt to the fast-changing world where problems are complex and interdisciplinary.

Although the rethinking of assessment arose from the pandemic situation, these assessment methods are very much applicable in post-COVID when face-to-face delivery resumes. As long as the basic

principles of assessment are aligned, it is recommended that these be continued given the positive outcomes that have been observed among the students.

Keywords: Constructive alignment; Assessment design; Technology-enabled assessment

Paper ID: 122

eAssessment in Hong Kong: Current Realities and Future Directions

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Abstract

In Hong Kong, although electronic assessment (eAssessment) has been utilised by some teaching staff, the application and adoption of eAssessment approaches among different universities and departments is uneven and the competences of using eAssessment to assess, provide effective feedback and to foster active learning vary among individual staff and learners. The demand for using eAssessment in an effective and efficient way to provide reliable and valid assessments has become more urgent during the periods of face-to-face class suspension due to COVID-19 in the academic year 2019-2020 and shows no sign of weakening, as increasing adoption of eLearning in general, and particularly how to replace face-to-face interactions, weighs heavily in tertiary education. As with all innovations in high-stakes assessment, the importance of academic integrity and the apparent difficulties in ensuring it in online assessment are not to be understated, and we must also caution against thinking that technology alone can provide a solution to our urgent needs. This paper reports on an eAssessment project underway in a Hong Kong university, which addresses the above needs. The aim of the project is to identify eAssessment approaches, tools and strategies, and to develop eAssessment solutions for assuring various learning and teaching outcomes while maintaining academic integrity. This paper reports on the eAssessment needs expressed by key stakeholders in the University, looking at what eAssessment practices are currently carried out and how the stakeholders would like to see this area develop. It presents the experiences of teachers in the summer of 2020 carrying out high-stakes online proctored exams based on the University's initial guidelines, considering how these guidelines should be iterated on in the future to match the lived experiences of the learners and teachers involved. The summer 2020 experience points to the need for increased support and preparedness for both the teachers and the learners, while acknowledging how challenging this is in times of rapid deployment of solutions to meet urgent, pressing needs. This is balanced against the longer-term needs of a more holistic, less reactive approach, that also considers all the alternatives to closed book 'large hall' exams. The paper also describes a necessity for a move away from such exams, both in the 'large hall' and the 'online proctored' arenas, considering how eAssessment viewed in its widest terms of reference can help.

Keywords: eLearning; eAssessment; Online; Assessment

Paper ID: 125

Is the Digital Transformation and Assessment Techniques in Education Effective in COVID-19? - A Detailed Analysis

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Abstract

The present aeon of digital transformation has brought unprecedented changes to the modern education system. The nuances of technology and tools have seen to open up new possibilities of offering rapid assessment experiences. Digital transformation in education facilitates the scholars having expertise in the subject to embrace new methods to impart quality education adroitly. Advancement in technology should not be considered completely distinct and contrary to the traditional method of imparting knowledge. It should be identified as an auxiliary structure of the same education system with necessary improvements.

Assessment and evaluation in education are one of the most important elements in education. It is also one of the hardest to reform. Considering the current circumstances of Covid-19 pandemic, a question arises whether the assessment and evaluation criteria is outdated and has gone down the drain or the technology has come to the rescue. Per contra, it must be meticulously analysed as to how effective is the technology-based assessment and how it is different from the traditional assessment system. The traditional education system is on the verge of becoming obsolete with the exponential advancement in the digital transformation of knowledge. The quality of education provided in schools and colleges lacks credence due to the unavailability of qualified pedagogues in the system. Bringing digital interface would not only unsnarl this issue but also would augment the standards of understanding. In the current scenario, technology is playing a pivotal role in the classroom by increasing students engagement in virtual programmes. However, it has certain drawbacks too.

The research article comprehensively analyses the present and innovative assessment systems and practices and would enunciate the impact of digital transformation in COVID-19, along with the evolution of the modern education system. In furtherance, the authors would like to make a demarcation between the traditional and modern education systems techniques and critically analyse how effective it is in this pandemic situation.

Keywords: Digital transformation; Education system; Assessment; Technology

Oral Presentations

Day 1
(7 December 2020)

Track 4
15:55-16:55

Session Theme:
Technology-Enhanced Assessment and Evaluation in Education III

Paper ID: 114

e-Reflective Journals in Second Language Pronunciation Assessment

Vicky MAN

Hong Kong Baptist University, Hong Kong

Abstract

With the increasing use of English as a lingua franca (ELF) in global communication, and in a climate where learning-oriented and dynamic assessment is gaining currency in promoting teaching and learning, the past decade has witnessed a significant paradigm shift in second language (L2) pronunciation instruction and assessment. In particular, ELF-based pronunciation teaching and assessment have reoriented from the production of scripted speeches mainly for error correction and accent reduction purposes to the increasing adoption of meaning-based and self-reflective practice (Yang, 2017). In other words, pronunciation assessment is no longer confined to form-focused tasks where students are required to produce rehearsed speeches, often through semester-end oral examinations, or to read aloud passages that rarely resemble authentic communicative situations. The long turnaround time for feedback and lack of task authenticity associated with traditional assessments make fostering learning motivation and student engagement challenging, especially in the context of Hong Kong where students are hardly motivated to speak English in and outside the classroom. With an aim of promoting active and deep learning, technology-enhanced self-directed learning is adopted in assessing students on a 13-week English Pronunciation course at a Hong Kong university. Upon receiving an initial evaluation of their individual pronunciation needs, students are required to complete an electronic reflective journal, or an oral journal, where they orally document their learning process and outcomes while systematically working on their targeted pronunciation areas and evaluating the materials and strategies used in each of their pronunciation practices. The purpose of this paper is to examine how the affordances of digital technologies transform the learning and assessment of L2 pronunciation and promote autonomous learning. By encouraging students to orally reflect on and critique the effectiveness of their practices and learning approach, oral journals offer learners an additional avenue to practise speaking outside the classroom and allow them to take control over their own learning via self-monitoring and self-regulation. Evidence also suggests that 'hearing' students' reflections not only raises learners' awareness of their pronunciation weaknesses, but also informs instructional decisions by providing teachers with a more complete and nuanced picture of student needs.

Keywords: Technology-Enhanced Assessment; Second Language Pronunciation; Reflective Journals

Paper ID: 16

Co-Ordinating Student Learning Perceptions via Expanding Online Teaching Activities

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Abstract

In comparison with classroom teaching many CUHK students during early-2020 perceived online learning to be 'lower standard education'. Is this simply because they viewed the university (and so teachers) as putting so much attention on the need for face-to-face/classroom-based learning, or is it because they knew their teachers were inexperienced at using online tools? Or, are there other reasons for their standpoint?

Given such a backdrop this presentation intends to analyze why students held such perceptions of online teaching and learning within the context of the CUHK History curriculum, i.e. a curriculum that has long promoted students (at undergraduate and postgraduate levels) to develop knowledge (facts and skills) via weekly lectures and in-class exercises. In consequence the project explored the impact of student perceptions of the synchronous and asynchronous modes of online teaching within the History program during Term 2 of 2019-20 in order to, for instance, grasp how it may be possible to diminish the discrepancy between students' learning opinions and actual teaching realizations. Accordingly the results of the study, with findings obtained from questionnaires and interviews with both students and teachers, will be presented. Student attention to what 'good online' and 'bad online' teaching is will thus be discussed, and the means from the students' perspective to design and implement 'satisfactory education' made clear. In doing this it is envisaged that pedagogical elements aligned to teaching and learning will be made clear so as to inform, and possible shape, the online practices of instructors based in Hong Kong.

Key words: Pedagogy; Learner perceptions; Online teaching; History

Paper ID: 25

Online Teaching and Assessment: What We Have Learnt from a University-wide Study in Hong Kong

Carmen Ka Man LAU and Paul LAM

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Abstract

The Chinese University of Hong Kong has switched to online learning since February 2020 due to the pandemic outbreak. As a central teaching support unit, we had to act quickly to offer technical solutions and pedagogical advice to ensure a smooth transition. Many written guidelines and workshops were provided within a short period of time to help teachers and students adapt to the new teaching mode.

To understand how the new practices affected teaching and learning and the challenges faced by different faculties and students from different locations and study levels, we conducted a University-wide study between February and August 2020. Two rounds of surveys were conducted to collect students' and teachers' views on online learning and assessment. In addition, we interviewed 50 students and 19 students across all faculties to collect more in-depth narratives.

Some of the key findings are presented as follows:

- Teaching and learning effectiveness of online lessons using Zoom: It appeared that there was a gap between teachers' and students' perception of the effectiveness of Zoom lessons. Most teachers considered these lessons to be effective (over 65% for the 1st round and 40% for the 2nd round). Only about 35% of the students shared the same view in the two rounds of surveys.
- Student engagement in online lessons: For students, online lessons increased the difficulty for groupwork (agreed by 58.6%), interaction (agreed by 59.7%), and discussion (agreed by 68.6%). A sweeping majority of teacher respondents also agreed that arranging online class discussion was difficult. It was clear that maintaining high student engagement was a major challenge for online teaching and learning.
- Fairness of online assessment: There was a huge gap between teachers' and students' perception of the fairness of online assessment. Over 60% of the teacher respondents considered that their assessment method was fair, while only 27.4% had the same view.

To conclude, the study shows that the transition from in-person learning to online learning was smooth. There were a number of reasons contributing to the success, which will be discussed in the presentation. However, it seemed that there were critical obstacles to turning a traditional closed-book exam into an online proctored exam. Since these challenges cannot be easily overcome with the present proctoring technology, teachers may need to opt for other online assessment methods (e.g. open-book exam) or

plan the online proctored exam more carefully to ensure fairness.

Keywords: Online Teaching and Learning; Online Assessment; Responses to COVID-19 in Education

Oral Presentations

Day 1
(7 December 2020)

Track 5
12:45 - 14:05

Session Theme:
Tools, Practice and Platforms I

Paper ID: 30

Benefits and Limitations of Virtual Presentations

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Abstract

Internet-based tools are now commonly used in education. These include the use of online educational management systems to organize teaching materials; videos and other content from the internet for teaching purposes; and social media sites to facilitate learning in virtual classrooms. However, the use of virtual presentations in education institutions is still limited. The aim of this case study is to examine the use of virtual presentation on the internet as a replacement of traditional in-class presentation. For an assignment in a sports facility management module, students were required to submit a presentation on the use of a sports facility built for a major sporting event after the sporting event is over. They were also required to view and evaluate the presentations of the other students. At the end of the module, students were invited to submit qualitative feedback on the use of virtual presentation for the assignment. The qualitative comments show that students found virtual presentation interesting as it allowed them to be creative in their assignment. More importantly, virtual presentation provided students with the autonomy to decide when to learn and the opportunity to review the presentation where necessary. However, some students found the assignment more time-consuming when compared to working on traditional powerpoint slides as they were less familiar with the process of producing a virtual presentation. In addition, some students found virtual presentations to be less effective in their learning as they were not able to seek clarification from the presenters. This was especially so when the quality of the audio was poor and there was a lack of clear description or notes in the presentation. The findings from this case study suggest that while virtual presentations can be effective, its use must be complemented with a platform for clarification and discussion. If not, its advantage is limited only to autonomy in learning.

Keywords: Virtual presentation; Internet-based pedagogies; Learning autonomy

Paper ID: 32

Hong Kong University Students' Out-of-class English Learning through YouTube: A Multi-case Study from a Learner Autonomy Perspective

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Abstract

This paper examines university students' perceptions and practices of out-of-class English learning through YouTube. Since YouTube is popular in Hong Kong, and is the second most-visited website after Google, it is accessed by young people on a daily basis who spend more time out-of-class than in-class. However, so far little research has examined their digital practices on YouTube for language learning purposes. Based on a qualitative study of full-time undergraduate students in a Hong Kong university, this paper demonstrates how their perceptions of YouTube influence viewing habits and informal learning of English on this Web 2.0 platform. Three participants completing the questionnaire survey were selected for semi-structured interviews via Zoom. These focal case participants were asked why and how they learn English on YouTube, the criteria for good videos, and its impact on their English proficiency. Reflective journals were also collected to elicit data, which were then analyzed using Benson's (2011) autonomy model and Lai's (2013) analytical framework of university students' self-directed technology use for language learning. Results showed that students perceived YouTube to be primarily for entertainment but changes are evolving as learners began to see the potentials of some videos that facilitate autonomous language learning. Factors shaping perceptions include learner factors and learning condition factors. Learner perceptions due to disciplinary differences and personal interests also lead to variations in the perceived usefulness, educational compatibility, and language learning motivation. This affects the choices of videos and strategies to improve vocabulary, listening and presentation skills on YouTube. Subtitles are more widely used than interactive functions such as commenting. Using YouTube to supplement formal learning depends on learners' ability and willingness to do so. Implications for pedagogy are discussed, including the roles of teachers in out-of-class learning, material and learning activities design. Recommendations are developing students' abilities to perceive and to learn autonomously through digital/multi-literacies training and the provision of resources. Directions for future research are the extent to which learner perceptions shape autonomous language learning with this multimodal tool, its potentials for the nexus of the formal and the informal, in the 21st century learning.

Keywords: Informal learning; Learner autonomy; Out-of-class English learning; University students; YouTube videos

Paper ID: 121

A Novel Data Visualisation Tool for Student Academic Goal Setting and Planning

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Abstract

Developing a practical study plan and proper academic goal setting are some of the important tasks for academic success. This paper presents a novel data visualisation tool to help university students perform these tasks effectively. In particular, the tool contains an interactive heatmap that allows students to: (i) visualise their academic progression status in terms of Cumulative Grade Point Average (CGPA); (ii) predict one's CGPA based on a planned study load and targeted semestral results, and (iii) provide specific advice to help students make good decisions that lower the risk of academic termination.

The proposed interactive heatmap has the following features: (i) carefully chosen colours to enhance a student's cognitive ability for better understanding of his/her status of progress in an academic programme; (ii) interactivity that allows a student to explore the effects of different study loads on the expected outcomes, with the system being intelligent enough to advise whether a plan is achievable; (iii) a bird's-eye view of how one can make progress at various junctures of academic study; and finally, (iv) hiding complex calculations from a student, allowing the student to focus solely on the high-level tasks of planning his/her study.

Because of the above-mentioned features, the proposed tool has the following advantages: (i) it can serve as a self-help tool for students who prefer to plan study on their own; (ii) an academic advisor can make use of this tool to engage students and help them plan their study; (iii) students from less technical disciplines will find this tool useful since it does not require any prior knowledge in calculation one's CGPA.

To demonstrate the effectiveness of this tool, we present some experiences on how this tool was used to help students make good decisions and prevent undesirable outcomes. Some interesting examples include: (i) how to avoid getting low CGPA that resulted in one getting terminated? (ii) How to assess whether a study plan is practical and realistic? (iii) How to use the tool for student orientation briefing so that students are better informed for their study.
In sum, we believe this tool is a useful addition to our current resources to help students achieve greater academic success. We are current developing a mobile application to make this tool more accessible and usable to students.

Keywords: Academic advisory; Academic termination; Study Plan; Goal Setting; Data Viualisation

Paper ID: 113

How Visual Feedback Can Facilitate Self Regualted Writing in Chinese Language Education

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Abstract

Feedback is inherently valuable but the positive effect on learning is maximized only when students understand and engage with the feedback. Research shows that new technology can enhance feedback practices for both efficency and efficacy (Race 2014; 2015; Cavaleri, Kawaguchi, Di Biase and Power; 2019). However, there is limited research focus on actual impact of technology-enhanced feedback on students' self regulated writing. This paper presents a study that examines the impact of the visual modes (using the e-learning tool called Explain Everything) on primary five students' engagement with visual feedback in different writing process in order to facilitate self-regulated writing. In this study, written and visual feedback is used in tandem which are recorded as media-rich presentations for guiding students' writing. The e-learning tool is used to record the visual explanation of the generic framework and the main writing skill of the writing. Then the visual demonstration of the generic framework will be used as the writing standards (i.e. rubrics) which allows students to *watch* the thinking process demonstration from start to finish can illuminate not only overall points, but how teachers arrived at it. Besides, the visual demonstration of the rubrics and checklists used in tandem to scaffold students' writing revision. As the research shows that students need to master the C(compare) D(diagnose) O(operate) revision strategy and make relative revisions according to genric framework by teacher's scaffolding（ Myhill & Jones，2007. Therefore, the visual feedback gives students a greater understanding of *why* they need to revise, not just that they need to. In the writing review and revision stage, students are able to review and revise their writings independently with the revision checklists (Bereiter & Scardamalia, 1987). This study employed a longitudinal, mixed method design to quantify impacts and explore perceptions of written feedback and recorded audio-visual feedback. It examines students' writing from primary 5 students who had received audio-visual feedback. In addition, student participants will take part in a semi-structured interview to help explain the findings of the analysis.

Keywords: Visual feedback; Writing revision; CDO strategy; Self regulated writing

Oral Presentations

Day 1
(7 December 2020)

Track 5
14:20 - 15:40

Session Theme:
Games and Activities

Paper ID: 97

Capstone Ninja – Supporting Final Year Project Writing via an Interactive Mobile App

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Abstract

The Capstone Project (CP) is the most important and challenging assignment that requires students to apply a broad range of writing and research skills including research mapping, synthesizing data from multiple sources, and articulating complex ideas in English. An examination of the Hong Kong undergraduate curriculum, however, suggests that there is a lack of structured and discipline-specific CP English writing support for final-year students (Chen, Chan, Man, & Tsang, 2020). Supervisors also complain about difficulties in reaching students and the paucity of resources to facilitate CP supervision. With an aim of delivering the best capstone experience and enhancing discipline- and program-specific academic literacy, a team of English specialists, faculty academics, and educational technologists from five universities created Capstone Ninja, a first-of-its-kind mobile app that combines communication, CP writing and management functions in a one-stop portal. Secure and trusted data communication is enabled via the built-in authentication capability supported by the Shibboleth software. A replicable development architecture is employed to support cross-institutional and discipline-specific contents. Adopting the integrated design model for mobile learning pedagogy and application, as well as the Students as Partners (SaP) approach, the user interface and learning modules in Capstone Ninja address the needs and requests raised by CP supervisors and supervisees. Text analyses of former students' CP as well as user feedback obtained from needs analyses, baseline data surveys, students' CPs, focus group interviews, and workshops informed the conceptualization and development of this discipline-specific mobile learning platform. In particular, multi-modal and bite-sized learning materials, gamified quizzes, instant chat with supervisors and fellow classmates, personalized To-Do Lists, and push reminders offer powerful, timely, and ubiquitous CP writing assistance and support during campus closure due to social unrest and the Covid-19 outbreak. This paper will present the m-learning pedagogical model adopted in the design of Capstone Ninja, show a pilot version of the app, and report how the app has succeeded in mediating undergraduate research

supervision and offering smart support to enhance students' self-learning, project management and communication skills.

Keywords: Mobile App; Capstone Project; Ubiquitous Learning; Dissertation Writing

Paper ID: 45

Painting and 3-Dimensional Model Training in Histology and Embryology Based on Blended Learning

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Abstract

Background: Conventional medical education methodologies have been considerably influenced by the introduction of new teaching approaches over the previous few decades. The transition from a conventional lecture-based curriculum to a competency-based curriculum and student-centred learning pattern has significant challenges for students and faculty in medical schools. Blended learning has received considerable attention. However, limited evidence is available for validating its effectiveness. Objective: Histology＆Embryology is an approach from basic medical course to clinic medical course. This study aimed to examine students' perceptions and opinions on painting and 3-dimensional (3D) model training in Histology＆Embryology based on blended learning.

Design: We investigated the perception of undergraduate medical students on the Rain classroom, painting, and 3D models, with 372 first-year medical students participating in a Rain classroom based on blended learning and 185 medical students continuing to use paintings and 3D models. An online survey was administered to collect students' opinions on the proposed pedagogical reform.

Results: The response rate of both the surveys was 77.5% (145/187) and 100% (185/185). The students strongly or moderately agreed with the following: 1) the Rain classroom was considerably helpful in enhancing autonomous learning (65.5%), time management ability (36.6%) , mastery of knowledge (39.3%) , and cultivation of good study habits (19.3%) by students; 2) paintings and 3D models could improve multiple abilities, such as innovation (62.2%), hands-on ability (97.3%), team collaboration (89.7%); 3) their teammates made significant and timely contributions to the project; and 4) the project contributed to acquiring new knowledge in histology and embryology. Moreover, the majority of the blended learning participants prepared more before class and were active in classroom learning.

Conclusions: These results suggest that students may benefit from using the blended learning mode. The increased teaching and learning activities improved the performance of the blended learning group, thereby demonstrating its successful implementation in a first-year medical school course. This mode is simple, flexible and affordable, is suitable to be applied and further in-depth study.

Keywords: Medical education; Blended learning; Painting; 3D model

Paper ID: 63

Game-based Learning (GBL) and Learning Outcomes in Higher Education: Relationship between Game Flow and Learning Strategies on Learning from a Digital Board Game

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Abstract

Background

Game-Based Learning (GBL) has been recognized as an integral vehicle towards engaging learners toward active and constructive learning in the past decade. While empirical findings demonstrated relationship between GBL and learning outcomes, existing research evidence tend to undermine interrelations among concepts related to GBL. Toward a holistic model for predicting determinants to effective GBL, this study adopted a Game Flow Framework to examine the roles of specific gaming characteristic and learning strategies affecting the learning outcomes in a higher education GBL context.

Methods

Effect of GBL with a board game about motivation in psychology was assessed with a regression model based on data collected from 61 undergraduate university students. We examine relationships between game flow, learning strategies, and learning outcome with a regression model of students' performance assessed with quiz score on a learning unit about motivation from an undergraduate level psychology course. The response variable quiz score is regressed on game flow constructs including game flow constructs and learning strategies.

Results & Discussion

The observed regression model demonstrated a moderate fit of the data with interrelations among constructs about GBL in game flow and learning strategies (r^2=0.28). Effective learning strategies (r=0.487, p=0.02), valuing feedback in GBL (r=0.91, p=0.04), valuing immersion in GBL (r=0.920, p=0.02), & valuing knowledge improvement from GBL (r=0.412, p=0.28) were identified as key variables in predicting learning outcomes from GBL.

Results suggested that learners tend to value GBL with flow elements such as feedback, immersion, and knowledge improvement from GBL, which correlates with their learning strategies and metacognitive outcomes. Findings from the current study informs GBL design towards optimizing not only learning experience but also learning outcomes derived from GBL.

Keywords: Flow; Undergraduate education; Game-Based Learning; Game Flow

Paper ID: 24

Enhancing Students' Skills in Working on Online Diversified Teams through an eTournament on Sustainable Development Goals

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Abstract

It has become obvious that we have to live with COVID-19 for quite some time. On one hand, the pandemic is a typical 21st century issue: being global and complex, and requiring collaborative efforts to deal with. On another hand, while social distancing still needs to be observed, work and study is still possible via online means. Working with other parties in entirely online contexts seems to become one of the skills our students need to equip for the "new normal". An inter-institutional project titled "Developing Multidisciplinary and Multicultural Competences through Gamification and Challenge-Based Collaborative Learning" ("CCGame Project") was led by Hong Kong Baptist University. To fulfil the main project objective of better preparing students to work in multidisciplinary and multicultural teams through gamified methodology, two runs of entirely online, team-based tournament (eTournament) were organised in 2019 and 2020, inviting students around the world to participate. Team formation was done so that each team was of a reasonable mix of students of different majors from different regions of the world, and that the teammates did not know each other in most of the cases. A two-stage "strategise-play" approach was deployed, in which teams were required to first get acquainted amongst the members and to discuss and work out game strategies with communication tools, and then to implement the strategies competed on a gamified platform. On the gamified platform, the teams were required to answer questions related to the United Nations Sustainable Development Goals (SDGs), which were chosen as the eTournament theme to promote students' awareness of global issues. The eTournament was well received, evidenced by the number of students enrolled in the 2020 run being 171% of that in the 2019 run, and the highly positive feedback from the post-game survey. In this presentation, the analyses from the data collected from the two runs of the eTournament, including the chat histories of team discussions, data from the gamified platform and the pre- and post-eTournament surveys will be discussed. These analyses provide some findings in students' enhancements to SDGs awareness, collaborative learning and intercultural competence through the eTournament. It is envisaged that through this presentation, participants will recognise the importance of enhancing the above-mentioned competences for their students.

Keywords: Challenge-based learning; Gamification; Multi-cultural; Multi-disciplinary

Oral Presentations

Day 1
(7 December 2020)

Track 5
15:55 - 16:35

Session Theme:
Tools, Practice and Platforms II

Paper ID: 136

Determinants of User Satisfaction and Continuance Intention to Use E-learning Platform

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Abstract

This study was intended to examine the determinants of user satisfaction and continuance intention to use e-learning platform in Indonesian context. More specifically, this study investigates the impact of system quality, information quality, confirmation, perceived usefulness, and self-efficacy on user satisfaction and continuance intention to use e-learning platform. Using expectation confirmation model, this study also incorporates technology acceptance model. The data for this study were collected from 340 university students who used modified moodle-based e-learning platform. The participants were recruited using convenience sampling. The hypotheses were tested using Structural Equation Modelling Partial Least Square. This study showed that information quality, perceived usefulness, self-efficacy, service quality, and system quality are the determinants of e-learning platform user satisfaction. Continuance intention to use was positively correlated with self-efficacy and user satisfaction. The findings also indicated that information quality was negatively correlated with user satisfaction. This study has several implications for higher education. Increased user satisfaction can be achieved if higher education institutions provide and maintain good service and technical support. Additionally, universities should inform their e-learning platform users about new features and functionality; thus, students can maximize the potentials of such features for their achievement. If students are satisfied with the platforms, they are more likely to continue using it.

Keywords: e-learning; User satisfaction; Continuance intention to use

Paper ID: 21

The Impact of Line-Assisted English Oral Training

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Abstract

Popular social media, Line has become a part of the communicative tool for socialization, business, and study, especially the current college students. Located in the offshore, National Penghu University of Science and Technology (NPU) has difficulty to recruit Native-English speaking teachers to provide students a whole English learning environment in learning General English. To solve the problem, 60 hours' Line-assisted online small group tutoring (5 in a group) was designed to provide 60 freshmen, whose TOEIC score is between 450 and 550 averagely, a native-like environment in order to raise students' interests and listening skill. 12 professional native-English speaking teachers were recruited as the online tutors. The research questions were: (1) if the listening skill being enhanced under Line assisted tutoring? And (2) if students' motivation and interests being raised with Line assisted tutoring? A mixed-method was adopted in this study. The research tools were: two tests (1 pre-listening, and 1 post-listening test), 4 satisfaction questionnaires (5-point Likert scale), and 60 one-on-one interviews. A paired T-test and descriptive statistical method were applied for quantitative data analysis using SPSS. The qualitative data were analyzed by Nvivo12. The results showed that students' average listening skills raised from 73 to 77 points. Most students held a positive attitude toward the training course. The average overall satisfaction score was 4.5. The interview results also showed that students generally believed that this method could enrich themselves and the course was lively and interesting and could improve their willingness and effectiveness of learning. They are willing to continue studying related courses.

Keywords: Line-assisted oral training; General English; online-tutoring

Oral Presentations

Day 2
(8 December 2020)

Track 1
10:25 - 11:25

Session Theme:
Practice in COVID-19 I

Paper ID: 28

Continuing STEM Education Amid Disruption Due to Pandemic

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Abstract

Science Technology Engineering and Mathematics (STEM) education is crucial for the innovations and sustaining development in any country. Any disruptions in STEM education can have a dire impact on the country's labour force and its economy. Most of the business continuity plans in place work well for technological or physical disruptions within a confined space, viz., an organization, building or campus. However, when an entire country or the whole world is disrupted, these business continuity plans need to be reconsidered. The recent COVID-19 pandemic is the most relevant example that has upturned the entire world. It had no warnings and a complete lockdown was never in the cards. The situation went south giving government and organizations a short time to react. The schools and universities were closed and this severely disrupted the education, including STEM education.

STEM courses are taught and learned through interactions with the faculty and through real-time experiences in the laboratory. The closure of the physical campus dented these on-site opportunities and interactions. The educational institutions had to effectively address these issues and provide alternate means to ensure learning is not compromised. In recent years, e-learning has been increasingly adopted in almost all institutions including STEM courses. The e-learning was regarded as a catalyst supplementing on-site learning by providing students with bite size information for easy consumption and allowing faculty to discuss complex topics. To many, e-learning has its limitations and will be unable to replace the lively and in-depth discussions and the real-time experiences acquired through the learning in schools and universities. Furthermore, learning has to be assessed through proper assessments. It is impossible to have normal assessments during this COVID-19 pandemic. The assessments had to be redesigned and there has to be a paradigm shift in our mindsets and predispositions towards e-learning.

In this paper, we discuss the impact of COVID-19 pandemic on the presentation of STEM courses in the School of Science and Technology (SST) at Singapore University of Social Sciences (SUSS). We outline the steps taken and measures implemented to deliver the courses, offer near real-time experience through virtual labs and conduct assessments. We do a sample comparison of results in courses before and after the pandemic. We hope the observations summarized in this paper will serve as a yardstick for institutions of higher learning to perceive e-learning in a new light, and to reimagine how e-learning can be harnessed for STEM education.

Keywords: STEM; Education; Disruption; learning during pandemic

Paper ID: 112

Student and Teacher Engagement in Online Courses: The Pandemic Experience beyond Technology

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Abstract

This paper presents our work-in-progress towards a study on improving student and teacher engagement in online synchronised sessions with a diversified population of university students across disciplines and years of study. The study began with examining the most frustrated and most enjoyable online learning experience of students. Pre-course surveys were administered to more than 300 undergraduate students across disciplines and levels. Vast majority of students reported that encountering technical and network issues were the most frustrating experience when attending online synchronised sessions, while the most enjoyable learning experience was on being flexible in time management and time saving, as well as accessing video recordings of the classes. We further analysed data collected in a pre-course survey on students' expectation and prior online learning experience, revealing that university freshman and senior students did not have much difference in their perception of online learning but some factors e.g., gender, mattered. While the technical infrastructure must be stable to deliver "good enough" user experience i.e., without causing disturbance to learning experience, regular interaction between students and teachers could effectively improve student and teacher engagement in the online session, thus establishing the social presence online. This is exemplified by the comments made by the majority of students (40%), asserting face to face interaction experience and instant response could not be replaced easily in an online mode, and the lack of opportunities to make new friends (learning peers) and to enjoy university life. To follow up with the students' feedback, we then compare and contrast with the findings in the teachers' online teaching diaries that recorded the experience and incidents during online synchronised sessions. A set of practices to improve students' online learning experience, particularly to overcome the lack of online social presence among students and teachers, is proposed to tackle the shortcomings of online teaching for better student and teacher engagement.

Keywords: Student engagement; Teacher engagement; Online social presence; Synchronised online learning

Paper ID: 72

Sliver line in the COVID Cloud: A Study on the School Teachers' Perspective on Adhering to Mobile Learning in Sri Lanka during COVID-19 Pandemic

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Abstract

Outcomes of COVID-19 has turned the traditional teacher-centred school education system upside down with the introduction of lockdown and social distancing concepts to fight the pandemic. The recommendation from the world bodies as well as the local administration to was to adhere to mobile learning (m-learning) to support the continuation of the educational process. In the Sri Lankan context, m-learning was not a preferred over the conventional classroom-based teaching in primary and secondary education through the teachers had to adhere to that during the lockdown. This study intends to find out the teachers' perspective on adhering to m-learning as a teaching tool for the school children in Sri Lanka during the lockdown time. Online questionnaire and interviews using mobile/online communication tools and social networking services (SNS) were used for data collection from a convenience sample of teachers in ongoing mobile learning research. The results show that only 12 % of the teachers have prior experience with m-learning and the rest needed the awareness on the pedagogy and tools which was a quite challenging as that knowledge has to be transferred via m-learning too where the teachers found the awareness process as stressful. However, the majority of the teachers (81.7 %) stated their willingness to adhere to m-learning as a teaching tool, while 97 % believes that m-learning can increase the flexibility of the learning process. Furthermore, 81 % of them believe it as an improvement of communication with the students outside the classroom, where 98 % of them believe that digital tools can enhance the effectiveness of their teaching. On the other hand, 15 % of the teachers have the idea that they are behind the knowledge of their co-staff members concerning the digital literacy and only 25 % of them have the literacy on m-learning and communication tools such as Zoom and Skype. The results further indicate that 56 % of the teachers are not aware of the recording and editing audio using a mobile phone or computer it is 60 % considering videos recording. Though the results show the high percentage of willingness towards adhering to m-learning pedagogy as a teaching tool, it is a necessity to improve mobile literacy as well as digital learning tools. Besides, further studies should be conducted to find out whether their perspective on m-learning changes in post COVID stage when they start conventional classroom-based teaching.

Keywords: Mobile learning; School teachers; COVID-19; Pedagogy

Oral Presentations

Day 2
(8 December 2020)

Track 1
11:40 - 12:40

Session Theme:
Practice in COVID-19 II

Paper ID: 73

Practices and Challenges of Online Teaching in higher institutions during COVID-19 Period

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Abstract

On the declaration of (COVID-19) outbreak as a pandemic (World Health Organization, n.d.), the urgent transition occurred from face-to-face to online teaching in 107 countries that affected about half of the global student population (UNESCO, 2020). This sudden change increased pressure in teaching to achieve the required learning outcomes of students (Njoki, 2020). All teachers have had to deliver lectures from their homes with no proper technical support (Zhang, Wang, Yang & Wang, 2020). They tried best at their own to continue students' learning (Fifield, 2020). However, teachers had to encounter several challenges to plan to teach in remote mode (Ning & Corcoran, 2020). This challenging situation in higher institutions makes compulsory to explore the practices and challenges they encounter in online teaching. Thereby a qualitative study was designed, followed by semi-structured online interviews which were analyzed through thematic analysis technique. The findings reveal that teachers have used different online applications for the purpose of instruction which includes live online classes, recorded videos, online assignments, online activities and textbook readings.

In contrast, the majority of the teachers found unfamiliar with the use of online teaching tools, and face several difficulties that include communication barrier with students, low internet connectivity, improper guidance, lack of resources, less student engagement, low motivation of students, parents' agnostic attitude, difficulty in explaining without using a whiteboard, and lack of accountability of online teaching. Accordingly, the study mainly suggests that teachers should be given opportunities to develop technical skills (Jacobs, 2013), classroom management skills, and allocates adequate resources for effective instruction. The accountability of online teaching is vital in order to attain maximum output. In that regard, well-developed learning management system (LMS) may allow management to evaluate remote teaching-learning. Furthermore, a contingency arrangement should be planned to tackle unexpected events of online education.

The present study also increases a concern for more discussion regarding online teaching and learning: What is transferred when teaching and learning are shifted to virtual form? This is an essential question of what impact information technology has brought to the mainstream education (Collins & Halverson, 2018). Furthermore, another study should be conducted to compare the competencies for efficient online and face-to-face teaching.

Keywords: Higher education; Online teaching; Pedagogical practices; Online teaching challenges

Paper ID: 104

Twelve Weeks of Online Learning and Teaching: Limitations and Best Practices from the Students' Point of View

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Abstract

At the end of January 2020, as celebrations welcoming the Year of the Rat wound down, the wider academic community in Hong Kong was greeted with an announcement from its leaders that classes would be conducted online for the rest of the semester in response to the rapid spread of the COVID-19 virus locally and worldwide. Thus began this journey into the (what was for many) unfamiliar world of online learning and teaching for students and teachers in Hong Kong at all levels. This study collects and presents evidence for the limitations and best practices in online learning and teaching from five business courses in the second semester of Academic Year 2019-20. Over a period of 12 weeks, from the first week of February to the last week of May 2020, these courses were conducted in 100% synchronous online mode using the Zoom video conferencing software and supplemented with synchronous and asynchronous online learning activities on platforms such as Moodle, Google Docs, and Kahoot!. Qualitative and quantitative student-centric data from course feedback questionnaires distributed at the end of the period, mid-course student surveys, and course assessment results reveal that students generally had a positive attitude towards this newly adopted learning mode and were appreciative of efforts taken by their teacher to provide opportunities for additional interaction. However, the data also shows that in an online learning environment, some students have developed higher expectations for attention and feedback from their teacher. In one course which had a significant experiential learning component, some students expressed disappointment at the limited number of opportunities for and challenges of learning experientially in online mode, despite giving the course and teaching methodologies used in the course generally favorable ratings. The study culminates with recommendations that seek to address student concerns and build on learning from the previous semester, primarily in preparation for the continued use of online teaching techniques to some degree in succeeding semesters.

Keywords: Online learning and teaching; e-learning; Blended learning

Paper ID: 23

Effects of a Blended Synchronous Career Development Course on Students' Career Awareness

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Abstract

Purpose of the study. Career development courses often rely on extensive face-to-face workshops, personalized counseling, and interview training. As a result of the COVID-19 pandemic, career development educators adopted a blended learning approach using interactive online activities such as online peer assessment, pre-reading materials, and interactive video lessons, to raise students' career awareness. The study aimed to address the potential of using the blended synchronous learning model to deliver a career development course and the effectiveness to improve students' career awareness. **Methods.** This study adopted a mixed-method, pretest-posttest research design. 163 sets of data were collected via online self-reported questionnaires before and after the 7-week course. 5 participants were invited to attend the interviews. Students' performance in the course was assessed by a 28-item, 5-point Likert scale covering 4 domains in occupational identity, including Identity Achievement, Identity Foreclosure, Identity Moratorium, and Identity Diffusion. Comments on the blended learning mode of the course were collected from the focus group interviews. **Results.** Paired sample t-tests indicated statistically significant differences in students' occupational identity achievement (t=3.13, df = 162, p=0.00), occupational identity moratorium (t=-2.97, df = 162, p=0.00) and occupational identity diffusion (t=-2.41, df = 162, p=0.02). Students reported positive feedback at the interviews that they were self-regulated to search for career-related information and to seek supporting service from the school after class. **Conclusions & Recommendations.** This is the first study to explore the effects of a career development course adopting a blended synchronous learning mode on the career awareness of sub-degree students in Hong Kong. It shows that the 7-week course was effective in assisting students to formulate their career decisions. The students were more advanced in occupational identity achievement and committed to a career choice after completing the course. Practical pedagogies involving technologies experience from the course facilitators would be discussed and shared. Future research of students' acceptance of eLearning technologies in career development courses and the factors in driving their motivation toward making career decisions is warranted.

Keywords**:** Blended Synchronous Learning; Career Education; Occupational Identity; Personal Development

Oral Presentations

Day 2
(8 December 2020)

Track 2
10:25 - 11:25

Session Theme:
The Change I

Paper ID: 9

Learning Process Management: Shifting Perspective from Learning Technologies to Learning Experience

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Abstract

With the rapid growth of learning and teaching technologies over the past decade, the learning activities are not limited to the physical classrooms inside the school walls anymore. Now, learners can interact with each other through their digital devices anytime, anywhere, and benefit from the vast ocean of online learning materials that no single library can hold in its physical space. The current pandemic has also expedited such a tendency for this technology-enhanced learning.

There are, however, invisible forces behind all these new learning and teaching technologies that make them become either as the mainstream or cast them into oblivion over time. Such invisible forces are mostly originated from the so-called "Learning Experience" of learners. This is because the learning experience is something that can't be measured directly, unlike those measurable grading rubrics or scoring guidelines generally used in interpreting the learning outcome. As the word "Experience" suggests, time is an indispensable element at its heart, showing the continuity of learning activity within a timespan. In other words, the learning experience is a learning process rather than anything with a single measurable output.

In this work, we try to look at different aspects of a learning experience and explore their differences with the beneath educational technologies that enrich them. These topics will be discussed as:

1- How technology-enhanced learning is different from digital online education.
2- How social learning experience can be different from what predictive learning analytics suggest
3- How the quality of learning experience may affect intelligent, personalized learning systems

With so much of the focus on the available technologies and tools in today's digital world, the main purpose of this work is to demonstrate the need for devising a suitable Learning Process Management (LPM), which is rooted in such learning experiences. The technology alone, as it has attracted many schools especially in this pandemic time, may not be able to overcome many learning bottlenecks without having a proper LPM.

Ultimately, this study would like to suggest on how, with having LPM in place, we will be able to leverage from the technology to shorten the learning curve or increase acquired skills and proficiency as the final outcome of this technology-enhanced learning process.
Keywords: Learning process management; Learning experience; Technology-enhanced learning; Knowledge management

Paper ID: 44

Turning on A Dime Going Online

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Abstract

From a worldwide health issue, the COVID-19 pandemic has grown to impact every significant aspect of human activity, drastically changing not only how individuals interact but also the way they work, play, learn and study.

The purpose of this research is to analyse how a worldwide health crisis transformed online learning into a viable, long-term and reliable opportunity for an academic institution to rethink its course delivery as well as expand and diversify the processes and technologies required to realise it. Using the case study method, the study first reviews how a 2017 online learning initiative went from playing a minor role at a tertiary education institution to becoming a mission-critical component of its business continuity management during the pandemic. It then describes and explores how a calibrated combination of pedagogy, training and technology allowed the institution to rapidly deploy for all the under and post-graduate programmes offered by the institution the online teaching and learning strategies that were initially intended and developed for a single undergraduate programme. This study then explores the techniques used by the institution to adapt to its nascent online learning environment, and manage the challenges faced by its faculty, students, and administrators. Overall, online learning has had an expanded, pervasive and lasting impact on the mindset of the institution's stakeholders, not only its top management but also its full and part-time faculty and students as well as the learning support services responsible for the technology and infrastructure needed to make and keep it effective. The article then concludes on the strategic role that online learning has gained during the pandemic and how it is likely to become even more interwoven with the very identity of that university, long after the COVID-19 has subsided. Given that the COVID-19 pandemic has disrupted traditional classroom teaching at a global level, the findings from the experience of this university could be useful to inform future practice, especially for other education institutions that find themselves in a similar situation where a large scale implementation of online teaching and learning needs to be carried out within a very short amount of time.

Keywords: Online learning; Business continuity management; Pedagogy; COVID-19

Paper ID: 127

Enhancing Student Learning Experiences in an Innovative Digital 'Third-space' Environment through Reflective and Responsive Teaching Pedagogies

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Abstract

Trends over the last decade show that university students are opting to learn off-campus, often due to work, family and social commitments. Studies suggest that students rely on asynchronous, on-line teaching approaches that provide flexible distance options for study (Bower, et.al, 2015). But we know that there are students who prefer the benefits of on-campus, face to face teaching (Churchill et.al, 2019). We know that the face to face students with whom we work value a relational, in-situ, real-time connection**.** Our project explores the ways in which teaching academics in our Bachelor of Education degree program have purposefully crafted an alternative, synchronous 'third-space' teaching and learning environment that accommodates the two approaches and enhances student learning experiences. This presentation reports on students' and academics' perceptions about, and engaged experiences with, a reconceptualised use of a live-streamed Integrated Systems-wide Learning (ISL) teaching and learning space. It focuses on the pedagogical and systemic approaches used by teaching academics to replicate a multi-campus, synchronous face to face teaching and learning space for students using ISL. It targets the ways in which academics identified, responded to, and met student learning needs.

The methodological focus uses surveys and focus group methods within a Participatory Action Research frame (Kemmis, McTaggart & Nixon, 2014) to explore and highlight the perceived strengths and challenges of the initiative. Survey and focus group data were gathered from participating academics prior to and after the delivery of targeted first and second year units. Survey data was gathered from participating students in similar timeframes. The findings were analysed using a "three resources" framework (Nasir & Cooks, 2009); materials and activities, relationships and professional identity. The findings confirm that academic and student experiences were both positive and negative. However, there is sufficient evidence to suggest that the synchronous "third-space" ISL technology, when used in combination with responsive, relational teaching pedagogies, provides a viable alternative for staff and students who are looking for a more personalised approach to on-line learning. The presentation highlights the ways in which the use of a live-streamed teaching space can optimise student learning experiences in a range of discipline areas in the broader context of higher education.

Keywords: Learning environments; Pedagogy; On-line learning; Synchronous learning environments

Oral Presentations

Day 2
(8 December 2020)

Track 2
11:40 - 12:40

Session Theme:
The Change II

Paper ID: 98

"A Paradigm Shift on the Educational Pedagogy of the UST Department of Political Science: Maintaining Quality Experiential Education amidst the Pandemic"

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Abstract

Prior to the emergence of the Covid-19 pandemic in the Philippines, it has been part of the curriculum of the University of Santo Tomas (UST) – Department of Political Science for its undergraduates to undergo practicum. As a prerequisite of the department, Political Science students are expected to immerse themselves in the realm of politics, and engage in practical application by serving as interns to certain institutions. Traditionally, practicum is conducted through the physical platform; but due to the challenges posited by the pandemic, physical immersion is no longer deemed feasible, and thus was forced to innovate alternative avenues in order to cope with the circumstance. The main purpose of this article is to provide an account of how the procedures for the course of Practicum have transitioned from the physical platform to the online platform. Although this academic pedagogy is at its infancy, the article argues that practicum conducted in the online sphere will not merely achieve its desired output, but may prove to be more effective with the utilization of skills that the political science students have honed years prior. This proposition of alternative measures formulated by the department will not merely serve its purpose in its application in practicum, but will also serve as the backbone for establishing the UST Political Science Policy Center. In essence, the UST Political Science Policy Center would soon cater to the political needs of various administrative entities on what they require in their field of work. The method utilized to assess this article would solely be anchored on feedback from both the Assigned Administrative Clients, and Professors under the UST-Department of Political Science. It is in these feedbacks from said entities that the quality of the outputs of the students can be properly strengthened and assessed. The results to be expected from said academic innovation would strengthen the feasibility of administering the practicum course through virtual means, at the same time, the quality of the outputs would also be refined in terms of its essence to the curriculum. In conclusion, the current avenue of education allows the Practicum course to still be experiential in nature despite it being administered virtually. Hence, the physicality of the course would not hinder the students from the UST Political Science on having a quality experiential education.

Keywords: Online Education; Academic Integration; Paradigm Shift; Experiential Education

Paper ID: 92

Technology in Education – The Shift in How to Learn

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Abstract

Technology has fundamentally altered the ways in which information is accessed, communicated, and transferred in society. Education is future-oriented and excellence in education requires that technology be seamlessly integrated throughout the education program. Nowadays, students already rely on technology in their everyday lives. Integrating technology in daily teaching will let the students learn in a creative and innovative way. Technology also helps teachers in designing personalized learning (Differentiated Teaching) which allows students study at their own pace. A study has been conducted with objectives that how technology helps teachers in designing student-centric curriculum and how much student benefit from it. Two Grade 8 Math classes with 25 students each have been taught for one month in two different ways namely traditional approach with less technology integrated and online teaching with heavy technology integrated. During the one month, two classes have been taught the same topics. The chapter test result after one month has shown that the distinction rate of the online teaching class has reached 60% while the other class got 20%. 90% of at-risk students (D and E graders) in the online teaching class have improved 2 or 3 grades higher. The study has supported that technology in education improves students' learning experience in a positive way. Students became more engaged in the class. Technology not only helps students improve their academic results but also provide a chance for students to practice their collaboration and communication skills through various types of class activities.

Keywords: Student-centric curriculum; Differentiated teaching

Paper ID: 31

Is Virtual Classroom More Effective Than Blended e-learning as a Learning Platform?

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Abstract

The virtual classroom seems promising as an effective learning platform as it can be accessed easily and, at the same time, offer collaborative learning opportunities. Some educational institutions have started to roll out the virtual classroom for learning purpose. For example, Singapore Unversity of Social Sciences (SUSS) has rolled out virtual courses, or full e-courses, a few years ago, long before Covid-19 arm-twisted many schools and universities to offer home-based learning (HBL).

Despite positive findings that suggest that new technology can facilitate learning, it is nevertheless unclear whether the virtual classroom can effectively help achieve desired learning outcomes.

In January 2020 semester, SUSS rolled out a full e-course *Writing of Online News*. It was actually revamped from an existing blended e-course *Writing for Print and Emerging Media*. This course is conducted entirely online using the interactive platform Zoom in Canvas. Students receive guidance and support from online instructors via discussion forums and emails. There are no face-to-face sessions. Discussion Board has been counted as part of the Overall Continous Assessment Score (OCAS). The predecessor was a blended e-course which combine both face-to-face sessions and self-study components.

Students' evaluation on the course and its predecessor have been compared and further analysed. The reports show that students perceived to have a significantly more positive learning experience with virtual classroom platform (using the 5-points Likert Scale), compared to the blended e-learning platform:

The course met its intended learning outcomes 4.29 (virtual classroom) vs 4.02 (blended e-learning)

The learning materials provided for this course are helpful in supporting my understanding of the subject matter: 4.26 (virtual classroom) vs 3.92 (blended e-learning)

The course has equipped me with knowledge and skills that can be applied in the real world: 4.26 (virtual classroom) vs 3.97 (blended e-learning).

Keywords: Virtual classroom; Zoom; Home-based learning

Oral Presentations

Day 2
(8 December 2020)

Track 3
10:25 - 11:25

Session Theme:
Virtual Reality (VR) and Augmented Reality (AR) I

Paper ID: 132

Virtual Reality Experience in the Urban Area in Hong Kong

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Abstract

Virtual Reality (VR) has gained its popularity in higher education. In the early days, VR technology was primarily used in professional training (i.e. flight simulator training). The rapid advancement in internet connection and significant technology cost reduction in the last decades have enabled various industries to adopt VR technology to improve their business and services. In education, a number of educators has adopted VR technology as an education tool. VR can replicate the real-life situation and provide interactive learning environment. It can enhance students' interest and motivation, facilitating retention of knowledge. Meanwhile, field trip has been regarded as a precious learning experience in urban economics courses. Students can directly observe the application of economic theories in an urban area through the field trip. It provides students the chances to understand complex urban economics theories and to experience the atmosphere that are difficult to produce in the classroom settings. Nevertheless, it has been challenging to bring a big group of students for a field trip. The instructor needs to ensure the safety of the students, not to mention the weather conditions. The VR technology can alleviate the challenges of physical field trip. Besides, it is cost-effective. It can be used countless time once it is produced. The purpose of this study is to examine the effectiveness of using VR to enhance the students understanding of the urban economics in Hong Kong. We develop VR360° video to replicate the physical field trip. The students can view it using VR headsets or mobile devices, in the classroom or online. We use the experimental study by asking the students to answer the pre-test and post-test questions. T-test statistics are used to compare the pre-test and post-test students' performance. After the post-test, the students will be asked to complete the questionnaire survey to examine their perception of adopting VR as alternative field trip in the urban area in Hong Kong. The feedback from the students will facilitate the future development of VR as an alternative field trip. Our study will contribute to the literature of education innovation in geography discipline general, and in urban economics in particular.

Keywords: Virtual reality; Field trip; Urban area; Urban economics; Hong Kong

Paper ID: 47

Effectiveness of using VR360 Live Streaming of a Video Production Lecture

Jonathan FOO, June TAY and Keng Hao CHEW

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Abstract

The advent of the fourth industrial revolution brings forth technologies that will enhance, enrich and revolutionize the way we live and work. In recent years, organizations such as healthcare, engineering, entertainment and education explore the use of VR (Virtual Reality), VR360, AR (Augmented Reality), MR (Mixed Reality) and XR (Extended Reality) to provide customers/users with a more immersive experience. The Internet speed has increased tremendously in the last decade and with the coming 5G network, there is no lack of bandwidth and the potential for doing high data rate live streaming is immense. VR360 is an audio and visual simulation of an altered environment that surrounds the user. The 360-degree video can be captured on 360 degrees camera and can be viewed on 360-compatible devices including smart phones and computers. The expectation from streaming VR360 is not very different from web-based video streaming. The audio and visual clarity is of paramount importance.

With Covid-19, our education landscape has evolved from predominantly a traditional face-to-face learning environment to either a full online learning environment or blended learning environment complemented with electronic media resources. The continuous quest is on to find innovative ways to engage with students and enhance students' learning experiences. This paper explores the use of VR360 Live streaming as part of the blended learning environment in a video production lecture. The students' perception on the use of VR in learning are captured and studied. From the students' angle, we gathered feedback on the degree of acceptance to the introduction of VR360 Live stream, the perceived goal of VR360 Live stream delivery, perceived quality of VR360 Live Stream, opportunities to participate in VR360 Live stream session, and the advantages and disadvantages presented in VR360 Live stream. This study also takes into consideration the lecturer's objectives of a VR360 Live stream and the proposed framework aims to align the lecturer's objectives and students' perspectives to increase the effectiveness of using VR360 Live streaming in a video production lecture.

Keywords: Virtual Reality; VR360; Live Streaming; Video Production

Paper ID: 48

Immersive VR Production as Summative Assessment for Overseas Experiential Learning

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Abstract

This action research examines the usage of Virtual Reality (VR) production as an assessment tool for university students on an Overseas Experiential Learning (OEL) trip. Twenty-Nine students from various faculties across the Singapore University of Social Sciences applied for and were selected to participate in an OEL to Hangzhou, China. Over a period of 10 days, the students participated in corporate visits, business networking, local lectures, site seeing and project work. As part of their course assignments, they were tasked to work in groups of 3-4 students on several graded group-based assignments including one to capture and present the entire trip or a chosen part or element of the trip as an immersive VR360 photo slideshow expedition or VR360 video.

The students would shoot VR360 photos or videos during the period of the OEL and they would return home to complete the post-production process. Throughout the OEL, researchers would collect observational data focused on student engagement and depth of learning. Qualitative data would be collected from all participants through individual surveys as well as group-based interviews within their project groups. Scores from the results of their completed VR project would also be collected for analysis.

This study hypothesizes that; (1) immersive VR production used as a Summative Assessment for experiential courses such as the OEL would help the student to better understand its purpose and learning outcomes, (2) Students will have a preference for producing a VR production over other traditional post-trip reports such as PowerPoint or regular video, and (3) A post-trip VR production as assessment can increase the Media Literacy Skills of university students.

Keywords: Virtual Reality; Summative Assessment; Overseas Experiential Learning; Media Literacy

Oral Presentations

Day 2
(8 December 2020)

Track 3
11:40 - 12:40

Session Theme:
Virtual Reality (VR) and Augmented Reality (AR) II

Paper ID: 83

Student Centered Learning Experiences with An Augmented Reality Based Digital Application

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Abstract

Background: Advances in Internet Communications Technology (ICT) have transformed passive learners in one-way lectures to active learners who interact with digital media in the classroom. This has led to the evolution of a new paradigm known as mobile learning which helps students to achieve "future-ready" competencies, such as thinking critically and collaborating with others. (Yang, 2016). Augmented Reality (AR)-Hearts is one of the first augmented reality based digital applications on the cardiovascular system developed for Ngee Ann Polytechnic, Singapore.

Aims:

1. To compare self directed learning and facilitator guided learning using this novel application.
2. To improve educational courseware design for effective teaching and learning.

Methods: A quasi–experimental study design with 15 validated multiple choice questions (MCQs) and Motivated Strategies for Learning Questionnaire (Pintrich et al.,1993) were analysed through standard statistical tests. 210 freshmen students from diploma in nursing explored the app as self-directed learning for 2 weeks followed by facilitator guided usage of the app in the classroom.

Results: Although baseline data showed no significant difference in psychometric parameters between the traditional learning methods and the AR-Heart application ($P > .05$), there was a significant improvement in student's self-efficacy ($P < .001$), total motivation ($P = .007$), task value ($P = .024$), engagement ($P = .009$) and test performance ($P = .032$) after lecturers facilitated the usage of the application in the classroom.

Conclusion: Though students readily access mobile applications for self-directed learning, the crux of the success is mainly dependent on effective facilitation by educators that contributes to positive learning experiences for the students.

Future Directions:

1. Improved application design- 'marker-less' application.
2. Extended and affordable reality (XR)- including virtual and mixed reality.

3. Improved design of assessments and data analytics.
4. Seamless integration of mobile based learning into the curriculum.
5. Further research to include perspective of educators facilitating AR guided learning, with criteria such as gender, age, personality types and satisfaction to enable educator to have more insight on the effectiveness of AR guided learning.

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Keywords: Augmented Reality; Mobile application; Self-directed learning; Facilitation

Paper ID: 78

An Innovative Animal Handling Training for Biomedical Research: An Application of Immersive Virtual Reality Technology

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Abstract

Purpose
The use of animals in experiments is a common practice in clinical laboratory research. It raises concerns related to animal welfare and ethics in animal research.
Training the techniques in biomedical research requires students to have hands-on experience that allow students to lead the critical thinking on how the intended outcomes proves the hypothesis.

We have investigated the impact of the immersive virtual reality (iVR) technology which applies to create an alternative training environment and educate the junior biomedical sciences undergraduates in animal handling with experiential learning. As iVR is a computer- generated interactive virtual-interface game which can serve as a good innovative simulation tool and provide an alternative electronic delivery method for support the training among students.

Methods and Results
Our team constructed the three-dimensional (3D) virtual learning environments by using the latest system of HTC Vive®. We have developed the virtual animal holding and testing gamified stimulator (iVAS), which focuses on learning of the regulations on the usage of animals by testing stimulating the students' a series of technical skills on a range of affordances in the 3D environment.

Results
The benefit of the iVAS to students can facilitate effective learning, speed up the training process without unexpected accidents happening, e.g., students may be bitten by the mice. Most importantly, no training processes related to animal abuse is performed concerning the concept of animal ethics. Students' voices using iVAS for the animal handling are very positive, they are easy to catch up the skills of mouse handling for the intraperitoneal injection and feel competent while they are learning the challenging technique. We have performed the courseware evaluation which is based on questionnaires and group interviews and explored that it is a good sense of participation in an immersive virtual environment gaining hands-on experience.

Conclusion and Recommendations

The setup of iVAS is designed to enhance the students' spatial and experiential learning, increase their engagement in the training on the handling skills, and improve their contextual understanding of how to use experimental animals. We also emphasize the importance of the iVR training design for the achieving realization of animal handling.

The iVR technology can be the good system to choose for teaching the difficult conceptual knowledge and topics with ethical concerns. It can be applied and used as an educational tool for the training of technical skills and can facilitate and deepen the experiential experience of the new learners.

Keywords: Immersive Virtual Reality Technology; Effective Learning; Gamified Simulator; Animal Handling; Techniques in Biomedical Research; Educational Tool

Paper ID: 64

Simulating the Object: A Framework for Designing Virtual Experiential Learning

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Abstract

The purpose of this presentation is to showcase a framework for the design of virtual experiential learning courses. With the advancement of digital information technologies, virtual reality and other online means of learning have emerged to challenge the monopoly of traditional pedagogies in framing experiential learning courses and programmes. Instead of treating them as mutually-exclusive approaches towards learning, the above-mentioned framework offers a way to combine the real and the virtual in designing new virtual experiential learning courses and converting existing conventional to virtual ones. This presentation consists of three parts. It will first show how David Kolb's experiential learning cycle theory, the anthropology of education, and ethnographies of craft apprenticeship have been integrated to create this framework that has been used the development of overseas experiential learning programmes and courses. This would be followed by a more detailed discussion of how its two core components, namely, the "object" of experience and the "theme" of a course, serve as a premise from which the other components like assessments and itinerary of an experiential course are derived. Finally, this presentation demonstrates, using case studies, how a focus on the object of experience rather than skills allows for the identification of the learning processes that could be converted or enhanced with digital technologies, how to do so, and when not to.

Keywords: Experiential learning; Virtual reality; Anthropology of education; Craft; Apprenticeship

Oral Presentations

Day 2
(8 December 2020)

Track 4
10:25 - 11:25

Session Theme:
Diversity & Inclusivity for eLearning I

Paper ID: 56

Impact of COVID-19 on Teaching and Training in Higher Education and Adult Learning

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Abstract

The COVID-19 global crisis has with its physical closure of university and college premises around the world brought to the fore questions pertaining to the future delivery of higher education and adult learning. This paper reports key broad findings from a recent survey with adult educators (n= 1553) working in the High Education (HE) and Training and Adult Education (TAE) sector in Singapore. It explores adult educators' perspectives on how the rapid move to online learning, teaching and assessment is producing long-term, if not permanent changes to the delivery of higher education and adult learning due to the COVID-19 pandemic.

The survey was administered through the online tool Qualtrics during the lock-down period from May to June 2020. We find that the future of adult learning and higher education is going more digital. During the pandemic, the percentage of respondents who reported frequent use online platforms increased more than 4 times from 14% to 63%. 7 out of 10 respondents viewed online learning and teaching as the future of adult learning and higher education.

For many of our respondents, a digital revolution for education so long in the making and so long resisted has arrived, and with permanent effect. The permanence of this shift is articulated very clearly in the terms of cost-affordances but also that there is cautiously no negative impact on effectiveness of such provision – though the negative impact is contested by other respondents.

The long-term impact of COVID-19 will be in the permanent digitalization of higher education and adult learning. COVID-19 is viewed as representing an opportunity for paradigm-change which HE/TAE organizations and educators should grasp. Respondents caution that those who fail to make the necessary digital-leap will be those left behind. Approximately a third of respondents expressed concerns about the potential threat to losing their jobs. More than half (56%) of respondents expressed need to significantly improve their knowledge and skills in online delivery to remain employable in higher learning and adult education. However, there are also concerns that increased popularity for digital learning will necessitate increased performance-based evaluation and regulatory mechanisms.

This paper gives us a quick snapshot of the adult educators' perception about the rapid change in teaching and learning due to the pandemic and identify challenges and impact of moving to online mode. The implications for post-COVID HE/TAE practice and policy are discussed.

Keywords: Impact of COVID-19; Online learning; Higher Education; Training and Adult Education; Digitalization

Paper ID: 12

A True Experiment Comparing Student Performance and Satisfaction Between Face To Face and Online Education: Case Study of a Common Core Science Course in a Residential Liberal Arts University

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Abstract

This study realizes a true experiment to assess differences in student performance and satisfaction across online and face-to-face classroom settings. Data were collected from 747 students enrolled in a common core science course in a residential liberal arts university. The instructor, course materials, and assessments were consistent between the two delivery modes. Based on the employment of qualitative and quantitative analysis, the learning outcomes of the major course assessments (i.e., midterm and research report) and student perception were compared. This study reveals that students achieved comparable in medium order analytical skills (i.e. midterm) between the two delivery modes. Compared with face to face settings, online education obtained pronounced higher score in high-order analytical skills development (i.e. research report), but had lower score of student satisfaction. These findings are interpreted that online education can achieve comparable or even better outcomes when the course is designed with sound pedagogical practice. Both faculty and students need time to adopt online education especially in the context of Liberal Arts University, which emphasis on close faculty-student interaction.

Keywords: Science teaching; Online education; Common core; Liberal arts; COVID-19

Paper ID: 106

"I'm Not Against Online Teaching, But What About Us?": ICT in Ghana Post Covid-19

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Abstract

Globally, Information and Communication Technology (ICT) is regarded as a dependable vehicle for facilitating educational reform and development, a platform for communication, and as a means to achieve the Sustainable Development Goal Four (SDG 4). Since the enactment of the No Child Left Behind Act (NCLB) and declaration of the SDG 4, many countries have opted to embrace the lifelong education for all by integrating ICT in teaching and learning at all school levels. The Ghanaian Government's initiative to ensure "education anytime anywhere for everyone" by revolutionizing teaching and learning through ICT has faced a lot of challenges and criticisms. The main mission of the Ghana ICT for Accelerated Development (ICT4AD) in 2003 was to transform Ghana into an information and technology-driven high-income economy through education, but this goal is yet to be realized. In the wake of the Covid-19 which has forced many countries and educational sectors to adopt online learning, there is a need to discuss the effectiveness of online learning and barriers to online learning in the developing contexts, and how to successfully integrate ICT in schools for online learning, especially rural schools where students' educational careers are in jeopardy because they benefit less from online learning. The paper identifies critical factors that affect online learning, recommends post COVID-19 strategies to promote e-learning for policymakers in education and the government, and concludes with a conceptual model for emergency transition to e-learning.

Keywords: Online learning; E-learning; ICT; ICT Integration; Distance Education; Ghana

Oral Presentations

Day 2
(8 December 2020)

Track 4
11:40 - 12:40

Session Theme:
Diversity & Inclusivity for eLearning II

Paper ID: 110

Smooth Transition between Online and Face-to-face Learning via Flipped Classroom Strategy

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Abstract

The COVID-19 pandemic has greatly changed the course mode in higher education. Almost all classrooms had been moved to Internet. Some teachers and students regard this upheaval as a temporary interrupt, but indeed it will impact the mode of teaching and learning essentially. For years, Blended Learning has been used to combine the advantages of both online and face-to-face learning, in which students could control their own learning process and benefit from in-person interactions at the same time. But does face-to-face learning only occur in brick-and-mortar classroom? In fact, many courses have been taught by instant messaging tools or online meeting tools (e.g. Zoom) during past 9 months. This kind of live online teaching and learning is hard to be accepted as autonomous learning part in blended learning. Conversely, it is one kind of face-to-face learning, —by an online virtual way. So, a hypothesis has been proposed: different parts in Blended Learning should be distinguished by the pedagogy used, not technical features. To verify this hypothesis, an empirical study has been conducted on 2 engineering courses. One typical blended learning model, Flipped Classroom strategy, had been implemented on both 2 courses. The online autonomous learning part includes watching micro-lecture videos, literature reading and self-testing; the face-to-face part includes group discussion and live lecture. The only difference is in first course face-to-face part was carried out via online meeting platform, whilst in the other one teacher and students were in a real classroom. The data about students' learning outcome in 2 courses has been collected and analyzed, include final scores of whole class, the self-evaluations of individuals and the evidence of students' engagement. The results show that although the effect of virtual face-to-face teaching is not as good as that of real face-to-face teaching, it can also be used as a substitute for teaching in brick-and-mortar environment. This conclusion not only provides the possibility of smooth transition between online learning and face-to-face learning under the uncertain epidemic conditions in the future, but also makes the blended teaching more inclusive and can provide diversified learning experience for students who have different technical resources.

Keywords: Blended Learning, Flipped Classroom, Online Teaching and Learning

Paper ID: 126

Aligning Technology with Strategies in Resilient Teaching in times of Crisis

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Abstract

Teaching and learning in developing countries in Asia is in sudden change in elearning. Learners in Asia face certain difficulties in utilizing elearning resources. Around 35% asians relied to cellphone, this is low compared to cellphone usage in the US (77%) and Western Europe, (65%). Poor access to internet connection and limited educational technology experts especially in remote areas are very singnificant issues too. The COVID -19 pandemic quicly led to closure of universities around the world, to flatten the curve and reduce total fatalities from the disease, which led to disruption of learning. Universities immediately transition to online teaching, without realizing that we are on crisis, thus emergeny remote-resilient teaching, is a more appropriate approach. There is a big difference between ERT and Online learning. Online learning is a method of instruction over the internet, not in a classroom setting. Emergency remote teaching is a temporary shift from the normal modes of teaching. By looking at this lens of reality, we embrace resilient learning.

Resilient teaching is the strategy to facilitate learning experiences designed to quickly adapt to change and disruptions. It is dynamic in context and may require new forms of interactions between teachers, students, content, and tools. The three principles in designing resilient teaching plan are designing for extensibility, the ability to foresee changes, required or optional. Designing for flexibility, to respond to potential changes in a learning environment. Designing for redundancy, to identify and create pieces that could perform similar operations. Then coupled with care-centered approach for instructors to put on top the well being and equity of the learners. With these kind of bundled approach, ERT designed in three (3) resilient strategies, we can now align our technological decisions with these practical guide questions.

Which of the school functions and processes should be online, face to face or hybrid?
Which of these content, interactions, must be centralized or accessible by all?
How much should be spent on ICT to achieve the minimum online experience?
How to establish IT governance for easy integraton and communication?
Which of these resources, is a must have or nice to have?
What security and privacy risks should be covered?

Aligning technology with approaches in designing learning content, interaction s and goals is essential in part of strategic planning and should become a permanent process on how academic organizations address crisis and change.

Keywords: resilient remote teaching, technology alignment with approaches, care-centered approach

Paper ID: 71

Determining Learning Style Scores to Identify Learners Preferences

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Abstract

Most Learning Management Systems (LMSs) or similar systems are concerned with presenting the same course materials to numerous learners. However, learners come with differences in their learning preferences. So, the learner's behavior analysis is very useful to the instructors to identify the student's preferred learning styles. The purpose of this research is to develop the clusters based on learning styles and to calculate its score based on student's log data. Hence the research is divided into two parts. The first is to develop the clusters and the second is to develop the learning analytics tool to calculate the learning style scores. To develop the clusters, data were collected from the students based on three different learning styles i.e. Grasha Riechmann (GR), VARK, and Felder Silverman Learning Style Model (FSLSM). The experiment was conducted in one of the courses offered by the Department of Computer Science and Engineering at Kathmandu University, Nepal and the participants in this study were undergraduate students (n=108). Standard questionnaires of learning styles were used to collect the student responses to develop the clusters using a spectral clustering method. The developed clusters were matched with the student's log data and the model was developed to determine the learning style scores. The model takes the live log data as input and returns the learning style score. A learning analytics tool was developed and integrated into the moodle system to send the live log data to the model and to receive the calculated learning style scores of students in the course. This learning style scores are displayed in an interactive dashboard in the moodle system used in this research. Instructors can use the result of this research to customize their course content according to the students learning preferences. This study proposes that the study of learning styles will provide a platform for an adaptive learning environment. The spectral clustering was found to be a better approach to develop the clusters.

Keywords: Learning styles; Moodle; Clustering; Learning analytics

Oral Presentations

Day 2
(8 December 2020)

Track 5
10:25 - 11:25

Session Theme:
Virtual Reality (VR): Chatbot and Robot

Paper ID: 53

Automatic Responding for Frequent Ask Questions (FAQs) Chatbot for Chula MOOC homepage

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Abstract

The number of access to the Chula MOOC homepage during the Covid-19 lockdown increased one hundredfold from before the lockdown. The number of access stepped up from a hundred access per day to ten thousand access per day when Chula MOOC launched a new course. The access not only is from Thailand but also from abroad. With tremendous access, the Learning Innovation Center of Chulalongkorn University (LIC) staff had to respond to inquiries from users. With a limited number of LIC staff, LIC is introducing a Chatbot that helps LIC staff to answer questions about Chula MOOC. Our Chatbot is developed using Dialogflow. Questions from users are collected and classified as FAQs. FAQs are further grouped into categories such as how to register, general information, and how to earn a certification. Users can inquiry by either from selection choices from the graphics menu or manually type in Thai or English. However, to understand the meaning of what users type is very challenging. One of the popular FAQs is about asking for a second chance to take an examination to pass the examination. Users can freely type a sentence to ask. Here are the example, “Is there any re-exam?”, “If fail an exam, can I re-do?”, or “What should I do, if I fail an exam”. To be able to handle, we also created a corpus so that our chatbot can handle various types of inquiries. We also use artificial intelligence to analyze the meaning of what users ask. Those questions from users are analyzed to understand user's needs and the result will be used for LIC to improve MOOCs on both process, interface design, and the content.

Keywords: Chula MOOC; MOOC; Data Analytics; Chatbot

Paper ID: 18

Piloting Social Robot to Engage Student Learning in Teaching Law Courses

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Abstract

The paper aims to present the rationale, findings of and recommendations from piloting an Artificial Intelligence technology – a social robot 'Zenbo' to engage student learning in law courses. One of the most important learning outcomes of legal courses is the development of students' critical thinking and analytical abilities in examining cases by using a variety of legal rules and principles. Case studies and role-play are usually the two approaches to enhance students' comprehension of legal knowledge and improve their capacity of analysis.

Student participation in such case-based learning may not be sound and active in practice, resulted from two interrelated causes. First, traditional way of didactic explanation of case facts may not effectively arouse student interests, given the learning diversity of student population. Our students are usually digital and visual learners, showing differences in learning abilities and styles, and preferring activity-based group works. Second, many students in Lingnan are too shy to share their own opinions with peers.

AI has changed the practice of law profession with growing and tangible impacts. It is envisaged that the current e-learning platform seems generating interactions only after the learners access the system. The robots, however, possess built-in autonomous recognition and sensor system to initiate different interactive responses to learners. Second, unlike online learning, robots occur in physical space and offer wide flexibility in providing immersive and stimulating environment for learning. Third, robots can exhibit human-like behaviors to engage learners. Therefore a social robot is anticipated to motivate and engage students through participating in case discussion, analysis and debates.

A human-like robot, Zenbo, was purchased for a pilot. After programming, Zenbo was used to assist teaching and learning activities like explaining case facts, playing role of plaintiff/defendant of a case, debating by applying legal rules etc. After using Zenbo, students are more engaged into class activities, such as active responses to the questions raised by Zenbo and immersion into the case studies and role-playing with Zenbo. Most importantly, students' abilities of critical thinking and analytical skills have been markedly improved, underpinned by their solid knowledge gained. In the course – Legal Aspects of Business, the number of students awarded A Grade rose from around 24% to 30%.

This study finds that adoption of social robot can further enhance the close faculty-student relationships – an important feature of liberal arts education. It is planned to widen the pilot through collaboration with other faculty members.

Keywords: Social robot; Law courses; Liberal arts education

Paper ID: 103

Chatbots in Higher Education: Teaching Assistants and Pedagogical Agents

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Abstract

Chatbots are on the cusp of being more mainstream in higher education. They started as conversational agents to respond to queries and as marketing agents to promote courses in educational institutions. Their use is shifting as chatbots have the potential to revolutionise how learners search for information and learn disciplinary content. As such, chatbots have a growing role in the scholarship of learning as pedagogical agents, other than just providing ancillary support. As pedagogical agents, they enhance the learning experience through increased motivation and engagement. They also provide a medium that resonates with the current generation of learners who favour texting to speaking, use of mobiles to PCs and on-demand, just-in-time learning rather than time-scheduled, time-to-task learning.

The study explores the use of a chatbot as an intelligent teaching assistant. The study contributes to the growing discourse on the effective pedagogical use of chatbots for learning, which is an emerging area. While there is evidence for chatbots being beneficial in learning, there are still gaps in terms of understanding how chatbots can be utilised strategically and effectively. Thus, the case study presents an intelligent, AI conversational chatbot, nicknamed Soren, for helping learners master business writing. Learners could converse with the bot, Soren for knowledge content to write effective emails, letters and social media messages. Soren was designed with both structured and exploratory learning, meaning it functioned like a packaged elearning module while maintaining its key role for open-ended questions. A quasi-experimental design was conducted to examine how learners use chatbots for learning and to complete a performance-based task. The findings indicate that there was increased motivation to use a chatbot beyond it being a novelty. There was also an increased understanding of and mastery of knowledge application as learners increased their assessment scores. It is thought that the interactive nature of the learning exchange coupled with increased propensity for practice were likely contributory factors. It was also noted that the chatbot had inherent benefits that was helpful for home-based learning. It provided round-the-clock availability to address learners' queries and to clarify their doubts. It also reduced instructors' efforts in having to deal with routine and commonplace questions, freeing them to do more meaningful learning activities.

Keywords: Chatbots for education; Intelligent learning agent; Smart pedagogical agent

Oral Presentations

Day 2
(8 December 2020)

Track 5
11:40 - 12:40

Session Theme:
Virtual Reality (VR): Location & Game

Paper ID: 88

A World within a World: Mapping the Experiential Architecture of NationStates Simulation Game for Learning International Relations and Global Politics

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Abstract

This is an interdisciplinary paper which describes the capacity of NationStates, an online political game as an educational technology applied to simulating the basics of international relations and global politics, one of the professional courses in the Political Science Program of the University of Santo Tomas, Philippines. It innovates the standard United Nations Simulations in class by creating a world where students can enter and have their own experience, individually and as peers, within a structure which reflect elements of the course. Using a qualitative method with a case study design, the authors focus a lens on NationStates as a case of two overlapping virtual worlds: a structure of education and a structure of the global political world. Data comes from the use an innovative method of virtual field walk to note observations within this virtual structure and juxtapose these to interviews from game players who are also students. Analysis is done using thematic analysis and framed through two disciplines: First is through the general concepts of levels of international relations analysis: individual, state, and system. Second is Kolb's theory of experiential learning which includes the following concepts: Active Experimentation, Concrete Experience, Reflective Observation, Abstract Conceptualization. Results reveal a mind map detailing that the game's structure allows students to experience awareness of one's state or national power, decision-making dynamics, political systems participation, and global political actor behavior. The paper concludes that NationStates has the capacity to give students of international relations and global politics experiential learning through active experimentation and through concrete experience. Data further proves the necessity of the course professor as facilitator for Reflective Observation and Abstract Conceptualization. Through these, it is recommended that a qualitative study be conducted on the level of capacity of these structures, and that educators balance the simulation with supplemental outcomes-based formative assessment to complete the experience.

Keywords: Experiential Learning; International Relations; Political Science; NationStates; Simulation Games

Paper ID: 120

Technology Adoption and eLearning in Architectural Education During Covid-19

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Abstract

In Hong Kong, there is a persistent need across different disciplines to incorporate new technological processes in teaching and learning programmes, to address the increasing complexities of professional practice. 2020 saw Covid-19 change education globally – cancelling face to face learning and turning toward online education platforms. The impact of this is heavily felt in studio-based subjects such as architecture whereby the risk of working exclusively within the digital environment can create "an illusion of rigour, which obscures the role of active critical assessment" (REISER, UMEMOTO, 2014). In the architectural discipline, digital scanning, computational design, and robotic fabrication are emerging as new teaching opportunities – particularly with the necessity to incorporate remote and eLearning.

This paper discusses ongoing pedagogical research conducted at the CUHK School of Architecture that aims to demonstrate how emerging technology is integral in the cultivation of design thinking and creative works. Through the research, students were exposed to online processes of discovery learning to stimulate an iterative design and problem-solving approach, where a cycle of action, observation, reflection, and reaction could occur. Exposure to these methods prepared students for their future careers in an increasingly technology-driven profession during an era of unprecedented pressure on digital and web-based infrastructure.

Credit bearing workshops were organized for architecture students, and introduced tools to SCAN natural phenomenon, DESIGN by responding to data with creative interventions, and BUILD using available resources. Students were given two questionnaires to gain insight into their aptitude and interest in technology adoption, degrees of difficulty associated with the experience and their impressions of relevance on their future professional practice. The teaching and learning processes within the programme were evaluated as part of an ongoing pedagogical development and as research into the evolution of architectural education through technology adoption.

Covid-19 has obliged teaching to expand and rethink its delivery and traditional methods and has advanced the need for eLearning. This paper adds practical knowledge into the connection between

technology adoption, teaching, student performance and aptitude for design-thinking across many disciplines.

Keywords: Pandemic; Technology; eLearning; Studio-based

Paper ID: 133

Enabling In-Car Location-Based Learning with uReply GO

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Abstract

The COVID-19 pandemic has changed how millions around the globe are educated. The 2nd or 3rd waves of the disease have made learning in classrooms unsafe once again. Many schools are forced to send their students home to take online classes under their government's shut-down protocols. Remote learning has become the new normal for many learners, especially the younger ones who are vulnerable to this disease.

For many young learners, engaging with school is a significant part of their well-being which has been compromised by the extended period of remote learning and low social interaction levels during the pandemic. In Canada, a survey conducted over the summer of 2020 revealed that nearly half of Canadian children and youth were going outside less than once a day during the pandemic. The reality is that many students are getting too much screen time and not enough exercise, affecting their well-being and happiness.

This unprecedented pandemic has reshaped our educational landscape and calls for new, innovative solutions to address learners' needs. The uReply class response system developed by CUHK's CLEAR team in 2012 has seen its functionalities expanded over the years. The latest solution, uReply GO, is an experiential learning tool that allows educators to take the classroom outside through an excursion in the city.

Canada is a car-dependent and suburban nation, with more than two-thirds of its total population live in the suburbs. uReply GO in an innovative solution that enables students, from K-12 to higher education, to learn inside a car in a city excursion. This innovative learning mode can be a feasible 3rd option for students to learn during the pandemic, after classroom and online learning. My presentation is prepared to explore the feasibility and learn about Canadian educator's preliminary views towards the concept of "In-Car Location-Based Learning."

Keywords: COVID-19 pandemic; In-Car Location-Based Learning; Experiential learning; Canadian education

Poster Presentations

Day 2
(8 December 2020)

Track 1
14:05 - 14:50

Session Theme:
Diversity & Inclusivity for eLearning

Paper ID: 14

Flipped Online Laboratory for Making Students' First Robot

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Abstract

Hand-on skills training is an essentially significant component of many engineering courses, like robotics, electronics, mechanics and renewable energy. A major concern in online/distance engineering education is how can we overcome the problems associated with laboratory components of courses. In this work, a new eLearning pedagogical approach called flipped online laboratory is proposed in teaching robotics. The basic underlying idea is that an online (synchronous) laboratory could be conducted with the help of flipped (asynchronous) laboratory instructions for making students' first robot. An online robotic laboratory, on the one hand, has been constructed based on our real robotic laboratory with real robots and corresponding computers. The conventional robotic laboratory can be transformed to an online laboratory thanks to the cross platform remote control technique, where students could use their personal computers in distance to control the computers in the lab, further tuning and controlling the robot in real time. In this way, some distinct advantages to students could be cherished by avoiding healthy problems and safety problems compared to conventional labs. On the other hand, this proposal combines with flipped laboratory, which allows students to learn from videos of laboratory instructions before each online lab at their convenience. As a result, more efforts could be devoted into problem solving and students-instructor interaction in synchronous online laboratory. In addition, a mobile application has been developed for interactive learning and flexible manipulating robots. The key feature of this mobile application is that students are able to design their algorithm for controlling robots and testing their robots by using a mobile application on a tablet. In other words, the students do not have to restrict themselves into their desktops, but enjoy a more flexible way to learn, design and test their robot via mobile devices.

This method has demonstrated its effectiveness in the existing general education course (UGEB2303 Robots in Action) where students without technical background could build and manipulate their first robot via the flipped online robotics laboratory and the eLearning mobile application. Our future efforts will be devoted to developing an augmented-reality framework that can aid in the online lab, which allows additional information about the internal workings of physical robotic systems to be visualized and can aid in showing more abstract concepts.

Keywords: Experiential training; Online teaching; Flipped classroom; Mobile eLearning

Paper ID: 60

Lifelong Learning Among Adults in Singapore: A Descriptive Cross-sectional Correlational Study

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Abstract

Background: Lifelong learning is akin to a journey in which the learner is associated with active participation in learning activities to sharpen their skills and deepen one's knowledge throughout their life course (Aspin, Chapman, Evans & Bagnall, 2012). Presently, the unprecedented Covid-19 pandemic against a backdrop of a bleak economy accelerates the Singapore's government in her pursuit to promote lifelong learning among adults. Therefore, individuals are required to learn beyond their formative schooling years to acquire new knowledge and skills to remain relevant and future ready in response to a beleaguered global jobs market. Considering the emphasis on lifelong learning, it is noteworthy that relatively little is known about one's tendency towards lifelong learning among adults in Singapore in the midst of a worldwide crisis.

Aims: The study aims to investigate the inclinations and propensity towards lifelong learning in adults in Singapore.

Methods: This was a cross-sectional, descriptive correlational study. A convenience sampling of 480 adults were recruited to participate in an online survey over 3 months. The Lifelong Learning Questionnaire (Kirby, 2010) were used to measure the study variables.

Results: There were significant differences in the measure of lifelong learning as assessed using the Lifelong Learning Questionnaire between financial status and employment status. Specifically, adults from the high-income group presented a greater inclination towards lifelong learning compared to the low-income group. Full time employment status contributed to increased inclination towards lifelong learning as compared to individuals who were retired and unemployed.

Conclusion: The results of the study indicated the factors that support the inclination of lifelong learning in adults. More importantly, factors such as financial status and employment status need to be further studied and understood from the perspectives of the adults. An inclination of lifelong learning could be attributed to the current situation of a volatile jobs market and ongoing battle of the Covid-19 pandemic.

Recommendations: Policy makers and education partners should focus on the adults' inclination towards lifelong learning and profile educational activities to help adults in achieving in their continual pursuit to learn. Further research is proposed to center on the experiences of adults' participation in lifelong learning.

Keywords: Lifelong learning; Singapore; Adult; Benefits

Paper ID: 55

"Science Mobile" – Learning Science with a Smartphone

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Abstract

"Science Mobile" is developed as a portable learning platform to facilitate students learning science concepts across different science disciplines in daily life. All learning objects are hosted by a web-based learning management platform. "Science Mobile" has been launched in App Store in iOS system and Google Play in Android system since April 2019. Students can install the apps into their smartphones to view the learning objects for ubiquitous learning. They can also access the learning objects by scanning the corresponding barcodes, QR codes and RFID, or by searching with relevant keywords and hash tags. The learning objects are displayed with images, textual description, videos, and related websites. Hash tags and in-text-hyperlinks allow students to explore the relationship among different learning objects. The topics are categorized into different learning modules to allow students to explore more about the objects in which modules are available for relating the learning objects to build a learning pathway. Teachers can upload the learning materials and the related assessment items through the web-based content editor panel. In some courses, students will be invited to create learning objects through the content editor panel for the platform to encourage the participation of the students and promote interactive learning. Assessment can be assigned to students for assessing their understanding on certain learning objects. Students' performance can be viewed by generating reports on the assessment using the web-based panel. Positive feedback are received from both teachers and students that the learning platform is convenient to use and helpful in enhancing the learning process. Until July 2020, over 1000 learning items, with topics related to Chemistry and Life Sciences, have been created. The learning platform is already fully developed with a large variety of items and functions available. It is predicted that the apps can be further expanded to cover more themes and different science subjects, hence to promote comprehensive science learning of students in the future and arouse students' interest towards science.

Keywords: Mobile Apps; Science; E-Learning

Paper ID: 57

"Online Drama Workshop" Enhancing Intergenerational Relationship and Gero-technology

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Abstract

Since the Hong Kong government declared quarantine under COVID-19, many elderly centers and schools were closed and physical activities were cancelled. Socialization between parties were decreased. Using Interaction Communication Technology for maintaining relationships and providing workshops for learning becomes a common trend in the recent year. Studies showed that there is an increase in interaction, a reduction in social isolation and positive impacts in personal development when elderly using interaction communication technology. An "Online Drama Workshop" has been developed and adopted as one of the platforms for intergenerational-learning in order to reduce stereotype towards elderly and improve intergenerational relationships. In this presentation, we will discuss about our findings and observations from the online workshop. Issues to be discussed include: overcoming the difficulties in engagement and communication via drama activities fertilizing healthier intergenerational-relationship, the effectiveness of gero-technology found in the workshop, and provoking further studies in the coming future.

Keywords: Intergenerational relationship; Online workshop; Drama; Zoom; Teams

Paper ID: 13

A Smart Garden Teaching and Learning Platform for Developing Renewable Energy Technologies

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Abstract

With increasing challenges of global warming and climate changes in recent years, our society is currently facing more severe issues of energy crisis and environmental destruction. In order to help students to acquire a comprehensive understanding of energy crisis, and more importantly, to provide solutions for these issues, we propose the project of Smart Garden at the Chinese University of Hong Kong (*CUHK Smart Garden*). As a teaching and learning platform, the smart garden intends to achieve the following objectives: 1) Renewable energy technologies would be imparted to undergraduate students from all backgrounds. Renewable energy devices (like solar panels, wind turbines, and hydropower equipment) and recycling facilities (like autonomous irrigation systems for plants in the garden, waste filtering and collection systems for fishpond, sweeping and waste collecting robots), would be developed by participating students themselves. 2) This project aims to develop an innovative pedagogical approach: *A student-directed flipped classroom* is proposed where students maximize the learning outcome by recording the experimental procedure, producing and editing their videos for teaching students from other groups. Combined with new teaching methodologies, like online peer-evaluation, forum discussion, and student self-made quizzes, this teaching and learning pedagogy enables multi-dimensional communications and interactions in sorts of levels including inner-group, inter-group, student-instructor, inside-outside the screen. More importantly, hands-on experience of independent groups in conducting experiment or practical lab sessions would be recorded, reviewed, and learned by other groups. To fulfill this objective, a website and a mobile application have been developed, respectively. 3) This teaching and learning platform aims to provide community services and public education. With close collaboration with local primary schools, organizations and communities, CUHK smart garden admits a great number of visitors every year, displays recent development in renewable energy technologies and innovative recycling devices, promotes fundamental ways for energy preservation and environmental conservation. So far, the project has demonstrated its effectiveness in university-wide interest groups (5 groups per year) and existing courses (UGEB1307 Energy and Green society, EEEN2020 Renewable Energy Technologies). In the results of various surveys, positive feedbacks have been collected from students, interest groups, and communities. At the same time, we have also received many constructive suggestions from our colleagues. Future efforts will be devoted to adopting Augmented Reality technology in the developed

mobile application and constructing a virtual Smart Garden for both students and the public (under COVID-19), with real data collected from sensors and meters in the garden.

Keywords: Teaching and learning platform; Flipped classroom; Active learning; Experiential training

Poster Presentations

Day 2
(8 December 2020)

Track 2
14:05 - 14:50

Session Theme:
Emerging Educational Technology (AR, VR, MR, educational robotics, etc)

Paper ID: 70

Introducing Virtual Reality (VR) into Training for Event Management Logistics

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Abstract

Event management is the process of using an existing organisation skill to plan, envision, and execute events. Such skills require an adequate amount of training to achieve successful events planning. However, today's context, the inadequate employee training within organisations is a global phenomenon. With businesses driven by profits at present date, various departments face budget cuts and the training department is one of them. Organisations must realise that employees are the assets of the company. The success or failure of an organisation is dependent on its employee's performance. This paper focuses on improving event organization's training processes. It proposes using a virtual reality (VR) courseware for training event coordinators during the pre-event logistics phase. This provides event coordinators with a more engaging learning method to better handle the event planning processes. The use of VR can simulate training environment suitable for lower training cost overtime, more effectiveness and efficient process of knowledge transfer, and better employee morale. This can be a tool to complement or replace traditional training methods by standardising it into a courseware. 10 pre-event logistical topics – personal safety, fire safety, security, crowd control, capital equipment, storage area safety, identifying hazards, accessibility and convenience, food and beverage and bin centre will be proposed for the courseware contents.

A multidimensional framework for the design and evaluation has been developed to measure the effectiveness of VR in training within the three dimensions: adaptive learning – ergonomic, hedonic, content approach. Experiential learning – through metacognitive and self-directed learning – motivation, self-monitoring, self-management.

To determine the suitability of the multidimensional framework and logistical topics in VR learning, delphi and snowballing interviews with event experts and professionals is conducted along with surveys – convenience and expert sampling. The results obtained ensured that the VR courseware can achieve the full potential of learning and training process.

This study hopes that VR courseware training can contribute to the new establishment of training standards within the events industry. VR technology have been fast moving from a novelty in the last decade to quickly becoming a credible cost-effective technological tool given the rapid developments of technology in today's context. The idea of this research may also weigh far beyond just for the organisational training of event coordinators in the pre-event phase to during-event and tearing down

of event phase.

Keywords: VR training courseware; Multidimensional framework; Pre-event logistics phase; 10 pre-event logistical topics

Paper ID: 69

Incorporating Virtual Reality (VR) technology into training for event logistics

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Abstract

As technology advances, many new educational technologies are also emerging. Virtual Reality (VR) is one technology which is in line with Andragogy – a term associated with adult learning, providing adult learners with an immersive and experiential environment to undergo training unlike the traditional training methods. Traditional training methods are considered costly and inconvenient (low productivity) by many companies' management and is not much favored by employees as it is time-consuming and boring.

The VR training courseware which focuses on providing individuals with hands-on training experience was created in the hope to encourage and inspire adult learners to undergo training willingly while at the same time reducing training costs spent by companies. VR complements with suitable adult learning styles such as self-directed learning, immersive learning as well as experiential learning as individuals get to interact and "learn by doing" in a man-made graphics-created environment. The VR courseware can provide trainings with lesser hours for the same result as traditional training methods at the convenience of each individual.

Apart from reducing long hours of training time and inconvenience, VR also has the advantage of providing trainings for individuals during inconvenient periods; for inconvenient or restricted venues; used as a method for virtual tour for clients; as well as the current COVID-19 situation where traditional training (face-to-face classroom lectures etc.) are not ideal.

Survey was conducted on the usefulness of the VR courseware, and majority of the survey participants found it feasible and useful to incorporate VR technology into training programs as it provides better visualization for understanding. However, there is a need to understand that the created VR courseware contained contents of staged-up scenes instead of an actual event due to the interruption of COVID-19. While it was deemed to be feasible, it is important to make improvements to the VR courseware when the COVID-19 settles down and be tested further for higher reliability and credibility.

Keywords: Andragogy; Virtual Reality (VR); Experiential Learning; Immersive Learning; Emerging Technology

Paper ID: 11

Creating a Virtual Reality-Augmented Reality (VR-AR) Field Trip Platform for Online Teaching-Learning Enhancement: Yim Tin Tsai Island in Hong Kong as a Site of Tourism Education

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Abstract

The COVID-19 pandemic has caused suspension of in-class lecturing and outdoor field trips, which largely affects the teaching-learning process of tourism geography education. To overcome the physical and resource constraints of preparing on-site field investigation, the use of e-Learning approach through online field trip platform offers a location-free option for field trip experience out of the destination environment. With a reliable Internet connection for instant use or prior downloadable version, this study presents a Virtual Reality-Augmented Reality (VR-AR) field trip platform for transforming the crisis of teaching-learning suspension into an innovative opportunity for tourism education.

This project takes Yin Tin Tsai (YTT) island in Sai Kung, Hong Kong as its site for the platform. As an increasingly popular local attraction, YTT has three different thematic features (the Catholic religion, Hakka culture and ecology) for resource revitalization and destination development. The platform allows students to conduct virtual trips to YTT through innovative features such as VR-based self-paced tours, attraction selection, e-learning of questions-and-answers, and a set of AR-driven features about the main attractions and history of YTT.

Through a sample of undergraduate students (n=30) who participated in online experiment sessions, this study evaluates the effectiveness of teaching-learning enhancement by VR and AR functions of the platform separately. The attributes of enhancement include knowledge enrichment, information transfer, learning interest stimulation, and the quality of the platform usability. These attributes have well-established connection with the overall satisfaction with both the VR and AR functions, and ultimately drive the students to information search and potential site visit in the future. The results show a positive feedback both in measurable indicators of students' learning experience and descriptive comments on the attractive features when using the platform. This project is of high relevance to teaching-learning enhancement and will be constructive when the platform is utilized across tourism, geography, resource management and general education courses. The project integrates field trips, location-based study and VR-AR applications.

Keywords: Augmented Reality (AR); e-Learning; Online field trip; Tourism education; Virtual Reality (VR)

Paper ID: 40

An Evaluation Framework for Virtual Reality Learning Environments in Sports Education

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Abstract

Interest in Virtual Reality (VR) technologies as virtual learning environments have been on the rise in recent years. With thanks to the aggressively competitive consumer electronics environment, VR technology has been made affordable and accessible to the average person with developments like Google Cardboard and Oculus Go. While the promise of virtual access to unique virtual learning environments with the benefits of experiential learning sounds extremely attractive, there are still concerns over user comfort in the psychomotor, cognitive and affective domains. Reports of motion sickness and short durations create doubt and have stunted its growth.

In this paper, a multidimensional framework is proposed, for the evaluation of VR Learning Environments within the three dimensions: Tactual quality, Didactic quality and Autodidactic quality. This paper further proposes a mixed methods experimental research plan that sets out to evaluate a virtual reality training simulator in the context of amateur sports fencing. The study will investigate if an Immersive VR Learning Environment can effectively simulate an authentic learning environment suitable for instruction, practice and assessment, while providing the user comfort in the Tactual, Didactic and Autodidactic dimensions.

The models and recommendations developed for this study are designed in the context of Fencing, but the potential impact is a guide for the future design and evaluation of all VR developments across sports and technical classroom education.

Keywords: Autodidactic Quality; Didactic Quality; Tactual Quality; Virtual Reality

Poster Presentations

Day 2
(8 December 2020)

Track 3
14:05 - 14:50

Session Theme:
Big Data in Education & Learning Analytics, and OER and MOOC

Paper ID: 66

The Teaching Design and Production Based on the Data of Massive Open Online Course (MOOC)

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Abstract

With the complexity of educational content and the rapid development of information technology, cultivating students' innovative thinking and critical mind has become the mainstream, with the help of open educational resources (OER) and MOOC supported by E-learning, which can provide learners with new learning methods and tools, and help learners learn anytime, anywhere. This article investigates the big data in the online learning platform of Chinese University MOOC, and analyzes the relevant instructional design data of online courses, such as the arrangement of pre-class preparations, class video duration and explanation of key knowledge, and assignments after class. At the same time, the offline classroom teaching mode is compared with the proportion of each part of each MOOC course link after big data statistics., thus forming a comprehensive online and offline teaching form, adding teaching links that can cultivate learners' independent learning ability to classroom teaching. Through this article, we can provide teachers with new teaching design ideas. When designing corresponding teaching links, it can take into account the number of classrooms, class time, course content and other variable factors, finally form a teaching model which can show teacher's personal teaching style and suitable for learners' cognition.

Keywords: Distance education; Online course; E-learning

Paper ID: 10

Challenges to Online Assessments and Academic Integrity During the COVID-19 Pandemic

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Abstract

Traditionally, tests and exams are key components in continuous assessment to assess and monitor students' learning and academic progress. The standard pen-and-paper format is usually adopted in order to test students' understanding and their knowledge on the subject matter in closed-book and proctored exams. To ensure academic integrity and fairness, all students are arranged in either classrooms or halls to complete the exams. In such a proctored environment, cheating can be greatly prevented among students.

In view of the outbreak of COVID-19, the University recommended teachers to facilitate and conduct online assessments and to avoid face-to-face examinations. To assess our students based on these criteria, we revised our assessment schemes for our course, SBMS1432 Human Anatomy and Physiology II, with a class size of about 70 students, accordingly, and replaced all on-campus assessments with online assessments.

In this study, we investigated the feasibility and effectiveness of our online assessments and invigilation methods. There was a total of two multiple-choice question online tests and one online exam in this course. We designed and conduced these online assessments in various formats, which include a) display all questions at a time, b) display questions one at a time, and c) randomize the order of questions or answers. Furthermore, we adopted three different combinations of invigilation methods including i) Blackboard with Zoom monitoring, ii) Lockdown Browser with Respondus Monitor plus Zoom monitoring, and iii) Lockdown Browser with Zoom monitoring, respectively, and tested the practicality and effectiveness of each of these different combinations, so as to minimize the chance of cheating while ensuring that these online assessments could serve as preventive measures against the potential spreading of COVID-19.

Next, we conducted online questionnaires and in-depth focus group interviews and analyzed students' feedback and comments both qualitatively and quantitatively. We also discussed how we maintained academic integrity. Our results showed that there were pros and cons for each of the settings and invigilation methods. Nonetheless, the most stringent and effective mode of invigilation was method

ii as specified above for best results of ensuring academic integrity and preventing cheating.

To conclude, it is important to ensure a stable internet connection on both ends (examiners/invigilators and students), provide clear and detailed instructions and guidelines to both students and invigilators with test trials in advance, and a smooth systemic invigilation process. These online assessments in our course were conducted effectively without any misconduct or bad behaviors of students.

Keywords: Academic integrity; online assessments; Lockdown Browser; Respondus Monitor; Zoom monitoring

Paper ID: 42

The Management Model and Enlightenment of American Universities to Deal with the COVID-19 —— Take MIT, Stanford University and the University of California, Berkeley as examples

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Abstract

The outbreak of the COVID-19 is a major threat to global public health, and it is also a touchstone for testing the governance system and ability of China's higher education. This paper analyzes the management models of three high-level research universities, Massachusetts Institute of Technology, Stanford University, and the University of California, Berkeley, in response to the COVID-19 in the United States found that the characteristics of the student-centered management, flexible teaching management measures, safety-centered scientific research management, teacher management that emphasizes physical and mental health, and strict and detailed service management. For China, advancing the modernization of China's education governance system and governance capabilities is one of the important strategies of education modernization. Colleges and universities in China should speed up the construction of an online teaching platform and improve the network teaching teacher training system; establish a global awareness of scientific research and encourage students to participate in scientific research in universities; promote the human-oriented student management model and pay attention to the mental health and practical needs of students.

Keywords: American universities; Education management; COVID-19; Measures; Enlightenment

Paper ID: 99

Online Delivery of Field Biology Laboratory Course during the COVID-19 Pandemic in the Philippines

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Abstract

The COVID-19 pandemic shifted the new normal in the economic, social and political sector across the globe. Education systems are changing as well, gearing towards transition from the usual classroom setting to purely online. In the Philippines, the University of Santo Tomas (UST)- Manila was one of the few universities who responded to these changes, providing necessary adjustments in content delivery and strategic assessements for effective learning through the Blackboard Learn™ online platform. Field Biology Laboratory (BIO429L), a two-month intensive course, was one of the successful courses delivered by the UST Colloge of Science online during the Special Term of Academic Year 2019-2020. This course is offered to students of the BS Environmental Biology Program, which deals with a fieldowork-based approach in sampling and museum-based approach in handling of specimens required for scientific inquiry. Further, this course focuses basic sampling techniques for aquatic and terrestrial biodiversity surveys, biodiversity assessment tools and methodologies, handling and processing of voucher specimens, importance of natural history museums as repositories for vouchers, and basic research output from conducted biological field surveys. The challenge of implementing this course was executing a combination of the aspect of conducting a field course and laboratory protocols necessary for specimen collection and preservation, in which the field trip and laboratory settings were absent in an online platform. Nevertheless, the deployment of assessement tasks, which revolve around sampling and preservation techiques focused primarily on the methodological principles preparing students for an actual field setup and proper collections management. Online assessment activities include essential field tools from Open Educational Resources such as mapping softwares (QGIS and DIVA-GIS), portable GPS applications (MAPS.ME), and analysis of canopy cover (CanopOn). Hands-on assessments were also conducted through feasible home-based setups such as setting pitfall traps in their own backyards and translating it to data for later analysis. On the aspect of collection management, assessment tasks include virtual museum tour on different notable museums across the globe. The combination of content and outcomes-based performance, for BIO429L course, as tools to address teaching pedagogy through online means are innovative ways of course delivery regardless of the limitations of online classes. Adapting to this new normal brought by the current pandemic has led to innovations in teaching strategies despite the

challenges imposed to the standard educational setting.

Keywords: biology; field biology; laboratory; Open Educational Resources

Poster Presentations

Day 2
(8 December 2020)

Track 4
14:05 - 14:50

Session Theme:
Pedagogy Involving Technology & Planning for the Future

Paper ID: 94

The Use of Technology Assisted Outside Classroom Learning Activities as Blend Learning Pedagogy to Enhance Students' Learning Experience

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Abstract

We present our outside classroom learning activities for foundation year subject (ABCT1D09 Greenhouse Gases and Life) launched in PolyU 2019/2020 semester one, where students using (i) our remote laboratory system to investigate the global warming effect of greenhouse gases (GHGs); (ii) arduino based mobile gasous pollutant sensors to investigate current air quality and (iii) student actively participated museum visit and public seminars to support the traditional face-to-face (F2F) laboratory and classroom study. The use of virtual learning environment (Blackboard collaborate ultra and u-rewind) can improve students' engagement and collaborative learning experience in general education (GE) class of 90 students. The effectiveness was evaluated by pre- and post-questionnaire survey and students' focused group interview. 91% students showed positive responses, and 75% reported their enjoyable learning experience and the integration of laboratory experiments into the traditional lectures was the best learning activity in this course. The results obtained in the present study may offer more new learning opportunities in tertiary all-round education and secondary school education.

Design and Methodology: We incorporated various TAL tools (Remote laboratory platform; mobile gasous pollutant sensors; blackboard collaborate and u-rewind) to support the teaching and learning on top of face-to-face (F2F) traditional class with students with broad academic background from university. We presented a case study for the foundation year subject Greenhouse Gases and Life (ABCT1D09) launched in PolyU in 2019/2020 semester one. We investigated the implementation of technology (remote lab and portable sensors) and other active learning pedagogies (museum visit and public seminars attendance) on top of the traditional face-to-face (F2F) lectures with the use of virtual learning environment (blackboard collaborate ultra and u-rewind) to improve students' learning experience by enhancing students' engagement in this large GE class (90 students). The effectiveness of this model was evaluated by survey and students' academic performance.

Findings: Over 90% of students' usage of Blackboard as a medium for the access of course materials and the delivery of notifications and course reminders and arrangements. Most of students (91%) show

positive responses towards this reformatted traditional lecture. 75% of our students (27 out of 36 replies) found the course were enjoyable learning experience and the integration of laboratory class into the traditional lectures was the best learning activity in this course.

Implications: Results obtained reflected that this model in the present study may offer more new learning opportunities in tertiary all-round education as well as for secondary school education.

Keywords: Technology assisted education; Outside classroom activities; Remote laboratory

Paper ID: 17

Instagram Stories for Teaching Human Anatomy: Possibilities and Issues for the COVID-19 Era

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Abstract

A rapid move to fully-online learning forced by the COVID-19 crisis gave educators very little time to create new e-learning tools from scratch. One way to maximise an interactive learning experience for students may be to leverage existing technology with which both teachers and students are already familiar. One such platform is Instagram, which has been investigated as an educational tool in many studies using static posts of photos for which it is famous. Our study focusses on a less well known subset of its functions entitled Instagram Stories, which creates short video clips and features access to a range of clickable, highly interactive elements.

There are a significant number of pedagogically useful tools within this software which could aid interactive learning, particularly in subjects with a high degree of visual information such as human anatomy. These include polling and quiz functions, sliding scales, free text entry and user analytics. Student's familiarity with the platform may make it ideal for emergency e-learning, as it requires little training from users and no set-up costs for teachers.

We outline the key features of Instagram Stories from the educator's perspective and how they articulate with the educational literature as well as current anatomy and medical education Instagram accounts run by students or teachers at institutions globally. We also demonstrate a prototype learning account we set up using Instagram Stories for teaching human anatomy for medical students, between collaborators from the University of Cambridge and The Chinese University of Hong Kong. Finally, we highlight key practice points for other educators to quickly and easily employ this system for their own teaching.

We also identify the key issues with this method which include privacy, fairness of distribution, accessibility, student wellbeing issues and lack of formal learning analytics. These lead us to conclude that Instagram Stories is particularly well suited for a 'quick fix' in an e-learning emergency and to demonstrates valuable pedagogical concepts for teachers. In the long term, it may be less well suited

as an institutional solution for medical education and educators should be aware of the potential issues we have raised. They may consider how to best use such accounts alongside formal educational software which capitalises on its pedagogical components learned from an Instagram Stories experience.

Keywords: Medical Education; Instagram Stories; Pedagogy; Online Learning; Social Media

Paper ID: 117

Establish Collaborative Communication for Cross-cultural Inquiry Learning: Using Slack Among Hong Kong and the USA Student Teachers

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Abstract

To achieve a successful cross-cultural inquiry learning, it is essential to establish a good collaborative communication channel among members located in different locations. With a good communication channel, students can achieve their expected inquiry learning outcome collaboratively. This project was conducted from January 2019 to May 2019 among two universities located in Hong Kong, China and Minneapolis, USA. At the beginning of a course related to ICT in education, Slack was introduced to around 100 students teachers from these two universities. Then, students were assigned into groups of four or five, 2 from Hong Kong and the remaining from the USA, aimed to work on a self-constructed inquiry topic as their course assignments. They were encouraged to use Slack as their communication channel while using this channel was voluntary. The conversation among each group on Slack was extracted after the completion of their group project. The conversation data were analysed by using both quantitative and qualitative approaches. For the quantitative data analysis, the conversation data were categorized by using Curtis & Lawson (2001) coding scheme. For the qualitative data analysis, the content analysis was used to evaluate the conversation in each group. It is observed that the communication among students in this project focused on the facilitation of the planning and seeking input stages of their project, while seldom conversations were related to the stage of contributing, reflection/monitoring and social interaction. Further studies should be focused on how to enhance the all-round collaborative communication among students to make use of the valuable chance in cross-cultural inquiry learning.

Keywords: Cross cultural learning; Collaborative inquiry learning; ICT for communication; Slack

Paper ID: 90

Applicability of eLearning for Skill Focused Course

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Abstract

In response to the drastic Change of the COVID-19 pandemic in local situation, educators have revisited the teaching strategies so as to facilitate student learning through e-learning platforms as far as possible. Common e-learning platforms included Blackboard Collaborate Ultra, MS Teams, or Zoom as appropriate. The use of e-learning platform is regarded as effective online mode for delivery of cognitive knowledge to minimise face-to-face contact. However, e-learning is a challenge for clinical skill learning. Most e-learning designs adopt a reactive learning approach whereby student plays a passive role in learning. There are gaming platforms such as kahoot, Socrative poll everywhere, mentimeter promote interactive learning experience. This study is to explore the integration of using Blackboard as e-learning platform and Mentimeter as gaming platform to enhance learning experience of both cognitive knowledge and clinical learning experience in discipline subject. The tangible benefits of the online teaching strategies will be evaluated through student feedback questionnaire and narrative comments. The findings will enhance future development of e-learning in clinical skill course.

Keywords: Pedagogy involving technology; Skill learning; eLearning experience

Paper ID: 91

Using the Learning Access System for Teaching: The Influence of Autonomous Learning Ability on Cognitive Load and Its Learning Effect

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Abstract

In the information age, how to use modern technology in teaching, on the basis of cognitive load theory, is an important issue,and success may be achieved through the effective teaching design to support learners, including a reduction of the learners' cognitive load and the promotion of germane load on the efficiency of learning. This study mainly discusses the learning access environment, through effective teaching design, students' autonomous learning ability and the effect of cognitive load. The research hypothesis is as follows: (1) autonomous learning ability is significant for cognitive load and the effect of learning and (2) autonomous learning ability can produce interaction with material presentation mode and material difficulty.The research used are as follows: first, the learning style Index of Leaning Styles (ILS) is used to determine the learning style of learners. Second, a self-regulation ability test, prior knowledge test is used to measure prior knowledge, and a cognitive load test is used to measure recall; then, a recognition test and a transfer test are used.A 2 x2 x2 x2 multi-factor mixed experimental design is adopted. There are four independent variables: learning style (visual, verbal); self-regulation; presentation mode of materials (overview presentation, full text presentation), and material difficulty. Dependent variables are various indicators of cognitive load: subjective evaluation of load index; recall test score; recognition test score, and transfer test score.The testing process is: (1)subjects' prior knowledge is tested (descriptive analysis, multivariate ANOVA, repeated measures ANOVA of prior knowledge);(2)cognitive load measurement (descriptive analysis, multivariate repeated measurement analysis of variance);(3) analysis of learning effect (descriptive results of recall, recognition and transfer, multivariate analysis of variance).

The results are divided into the following parts: first, the influence of learning style, self-regulation ability, and material presentation mode on cognitive load,and second, the influence of learning style, self-adjustment ability, and material presentation on academic performance.In this study, using the Index of Leaning Styles scale and 2 x 2 x 2 x 2 multi-factor mixed experiment, it is concluded that presentation style and the difficulty of the materials have different effects on cognitive load and learning results.In future studies, the presentation of learning materials and tasks can be considered as

an auditory channel presentation, so as to further explore the measurement and influencing factors of auditory channel cognitive load, as well as the difference between visual channel cognitive load and other issues, which will have theoretical and practical significance.

Keywords: Cognitive load; Self-regulation ability; Learning style