



Venue: The University of Aizu, Japan (<http://www.u-aizu.ac.jp/en/>)

Address: Tsuruga, Ikki-machi, Aizu-Wakamatsu City, Fukushima, 965-8580, Japan

**2019 7th International Conference on Information
and Education Technology**
ICIET 2019

2019 5th International Conference on Knowledge Engineering
ICKE 2019

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Instructions

Registration Guide:

Arrive at the conference venue → Show your ID → Inform the conference staff of your paper ID → Sign your name on the participants list → Check your conference materials.

Checklist:

1 receipt, 1 name card, 1 printed conference abstract, 1 lunch coupon, 1 dinner coupon, 1 conference bag, 1 USB stick (paper collection).

Devices Provided by the Conference Organizer:

Laptops (with MS-Office & Adobe Reader)

Projectors & Screen

Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF files

Duration of Each Presentation:

Regular Oral Session: 15 Minutes of Presentation including 2-3 Minutes of Q&A

Notice:

*Certificate of Listener can be collected in the registration counter.

*Certificate of Presentation can be collected from the session chair after each session.

*The organizer will not provide accommodation, so we suggest you make an early reservation.

*One best presentation will be selected from each session. The best one will be announced when each session ends, and will be awarded by the session chair after each session in the meeting room.

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Welcome Message

World is witnessing major changes in information and education technology. 2019 Aizu-Wakamatsu conferences are welcoming researchers, scientists, engineers, technologists, professionals from industry, and regulators from government as well as technology providers to join our event in Aizu-Wakamatsu City on March 29-31, 2019. The conferences will provide opportunities for discussions about methods, technologies, systems and best practices in the different areas of information and education technology, and knowledge engineering from different places around the world. The conferences provide opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business cases or research relations and to find global partners for future collaboration.

We are welcoming you all at the conferences and wish you a pleasant stay in Aizu-Wakamatsu City and fruitful discussions in the different sessions. The Technical Programme Committee of the conferences have assembled an excellent programme comprising of 4 excellent Keynote Speeches, 2 Plenary Talks and 3 Invited Talks from renowned scientists from the world, 7 parallel technical sessions comprising of 6 oral sessions and 1 poster session.

On behalf of the Organizing Committees, we wish to thank our Conference Chair, Prof. Debopriyo Roy from The University of Aizu, Japan, our Conference Program Chair, Prof. Rentaro Yoshioka from The University of Aizu, Japan, our Technical Committee Chair, Prof. Mohamed Hamada from The University of Aizu, Japan, our Technical Committee Co-Chair, Prof. John Blake from The University of Aizu, Japan, our Public Relations Chair, Prof. Takako Yasuta from The University of Aizu, Japan, our Keynote Speakers, Prof. Hayo Reinders from Unitec, New Zealand; Prof. Gordon Bateson from Kochi University of Technology Japan, Japan; Prof. Ana Cristina García-Luna Romero from University of Monterrey, Mexico; Prof. Kenichi Namai from Waseda University, Japan, our Plenary Speakers, Prof. Keitaro Naruse from The University of Aizu, Japan; Assoc. Prof. Mizuho Inuma from Tokyo University of Technology, Japan, our Invited Speakers, Prof. Alice Lai from SUNY-Empire State College, USA; Prof. Nobuo Funabiki from Okayama University, Okayama, Japan; Project Lecturer Hiroyuki Chishiro from The University of Tokyo, Japan and authors of selected papers for their outstanding contributions.

Our special thanks is expressed to The University of Aizu, Japan for their hard work in making smooth running of the conferences. Many thanks to the reviewers for their excellent job to maintain the academic quality and scholarship. We would also like to thank members of the organizing committees, all reviewers and volunteers for their great efforts. Without their contribution, dedication and commitment, we would not have achieved so much.

We sincerely hope that you will find the Aizu-Wakamatsu conferences beneficial and fruitful for your professional development. We also hope that you will enjoy our hospitality and will have an enjoyable and memorable time in Aizu-Wakamatsu City, Japan.

Conference Committees



Conference Committees

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Agenda Overview

Friday, March 29, 2019

9:30-12:00 **Participants Check-in & Materials Collection**
Gallery and Innovation Space, 1st Floor, LICTiA

Venue: iLab 1, LICTiA

13:30-13:35 **Opening Remarks**
Prof. Debopriyo Roy, The University of Aizu, Japan

13:35-14:20 **Speaker I**
Prof. Ana Cristina García-Luna Romero, University of Monterrey, Mexico
Speech Title: Cities for Citizens: Looking beyond Smartcities

14:20-15:05 **Speaker II**
Prof. Kenichi Namai, Waseda University, Japan
Speech Title: English Education: What can be Learned from Japanese Baseball

15:05-15:30 **Coffee Break and Group Photo**

15:35-16:20 **Speaker III**
Prof. Hayo Reinders, Unitec, New Zealand
Speech Title: The Educational Affordances of the Internet of Things: Lessons for Designers, Developers and Engineers

16:30-18:45 **Workshop**
iLab 2, LICTiA **Speaker IV**
Prof. Gordon Bateson, Kochi University of Technology Japan, Japan
16:30-17:45 *Workshop Title: How to Build a Gamified Course in Moodle*
18:00-18:45 *Speech Title: Applying Concepts of Gamification and Game Design in the Language Classroom*



Saturday, March 30, 2019

9:30-12:00 **Participants Check-in & Materials Collection**
Gallery and Innovation Space, 1st Floor, LICTiA

Venue: Conference Space 1-3, 2nd Floor, LICTiA

9:00-9:15 **Opening Remarks**
President Ryuichi Oka, The University of Aizu, Japan

Parallel Oral Presentation Sessions

9:30-12:30 **Session 1: Multimedia Assisted Teaching and Application**
Conference **Speaker V**
Space 1-3, **Prof. Keitaro Naruse, The University of Aizu, Japan**
2nd Floor *Speech Title: Software Driven Robot Development and Robotics Engineer Education*

Oral Presentation Papers:

ET012 ET066 ET030 ET102-A ET050 ET077 ET058 ET074 ET045

9:30-12:30 **Session 2: Learning Technology and Knowledge Engineering**
Conference **Speaker VI**
Room(Large), **Assoc. Prof. Mizuho Iinuma, Tokyo University of Technology, Japan**
1st Floor *Speech Title: Current Topics and Concepts of Social Design: Integrating ICT into Social Design Education*

Oral Presentation Papers:

ET108 ET086 ET103 ET094 ET004 ET104 ET049 ET056 ET0006

9:30-12:30 **Session 3: Information Education and Technology**
Whiteboard **Speaker VII**
Room, **Prof. Alice Lai, SUNY-Empire State College, USA**
1st Floor *Speech Title: Project-Based Learning in Online Classrooms*

Oral Presentation Papers:

ET015 ET036 ET023 ET082 ET033 ET0003 ET011 ET013 ET022

12:30-14:00 **Lunch at University Cafeteria**

14:00-16:30 **Session 4: E-learning and Autonomous Learning**
Conference **Speaker VIII**
Space 1-3, **Prof. Nobuo Funabiki, Okayama University, Okayama, Japan**
2nd Floor *Speech Title: An Informative Test Code Approach in Code Writing Problem for Java Collections Framework in Java Programming Learning Assistant System*



Oral Presentation Papers:

ET040 ET079 ET1003-A ET069 ET105 ET031 ET020

14:00-16:45

Conference

Room(Large),

1st Floor

Session 5: Computer and Information Engineering

Speaker IX

Project Lecturer Hiroyuki Chishiro, The University of Tokyo, Japan

Speech Title: OS Buffet: Applying Active Learning for Education of Operating Systems

Presentation Papers:

ET067 ET083 ET071 ET106 ET039-A ET041 ET075 ET032

14:45-16:45

Whiteboard

Room,

1st Floor

Session 6: Course Learning and Software Programming Learning

Oral Presentation Papers:

ET035 ET025 ET076 ET1001 ET037 ET008 ET024 ET047

13:00-17:30

Poster Session-*Gallery and Innovation Space, 1st Floor, LICTiA*

Presentation Papers:

**ET060 ET046 ET068 ET091 ET099 ET118 ET109 ET0009 ET110
ET090 ET1002 ET0005 ET0008 ET1005**

17:00 - 17:30

Coffee Break-*Gallery and Innovation Space, 1st Floor, LICTiA*

19:00-21:00

Dinner-*Hotel New Palace Aizuwakamatsu*

Address: 2-78 Nakamachi, Aizuwakamatsu, Fukushima Prefecture

PS: A shuttle bus will be arranged to pick-up all participants from campus to Hotel New Palace Aizuwakamatsu and return to the station.

Pick-up Point and Time:

Gather at the gate of LICTiA before 18:40, the bus will leave at 18:40.

Sunday, March 31, 2019

One Day Tour in Aizu-Wakamatsu City

PS: Onsite registration cannot be accepted after the registration deadline Mar. 5.



Map of The University of Aizu



Access to The University of Aizu

By Train



Please find more details via: <http://www.u-aizu.ac.jp/en/access/>



Introduction of Speakers

Speaker I

Prof. Ana Cristina García-Luna Romero
University of Monterrey, Mexico



Speech Title: *Cities for Citizens: Looking beyond Smartcities*

Abstract: Cities are our future. Ninety percent of the world's population growth is expected to take place in cities. Not only are cities becoming bigger, they are also becoming more complex and changing even more rapidly.

The concept of sustainable cities is a function of the human dimension or scale of cities. The paradigm is based on understanding that first is the life of the people who inhabit the cities, then the space they occupy and, finally, the buildings and its current technology. From this inclusive approach planning should always start from the people.

It is essential to understand that what is required, today, are more human and inclusive cities that offer public spaces that facilitate and guarantee the fulfillment of the rights and freedoms of all people. In Latin America, 80% of citizens live in cities, so we must think about how to humanize the scale of the city.

We are investigating how new models for urban architecture can be more responsive to the unique needs and values of individuals through the application of disentangled systems and smart customization. We are developing technology to understand and respond to human activity, environmental conditions, and market dynamics. We are interested in finding optimal combinations of automated systems, just-in-time information for personal control, and interfaces to persuade people to adopt sustainable behaviors.

A double reflection on the dimension of humanized cities comes in thinking: what makes a city smart?

Biography: Ana Cristina García-Luna Romero investigates the production and perception of the public space and housing from an interdisciplinary approach to establish environmental criteria in the design and construction of the city. Professor at the University of Monterrey in the Department of Architecture where she has also been in the Chair of the Department of Interior Design. She has lived, studied and worked in the United States, Brazil, Germany, Spain, Belgium, Guatemala, Costa Rica, Ecuador and Mexico. Because of her interest among the field of realization of forms and space, aesthetics and product engineering, has postgraduate studies related to construction management as well as in architecture and sustainability. Currently she is working on her doctoral thesis.

In her professional career has over ten years of practice where she has worked either with national and international architects and designers. Cristy combines her interest in architecture, design and urban sociology with her passion for travel around the world by offering consulting and training in different countries.



Speaker II

Prof. Kenichi Namai
Waseda University, Japan

Speech Title: *English Education: What can be Learned from Japanese Baseball*



Abstract: The Japanese have been known for their poor English for decades, despite all the efforts by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT), which has long been trying to solve this problem by frequently revising schoolteaching guidelines — all in vain. According to the latest guidelines, English is going to be added to the elementary school curriculum for third-graders in 2020. At the same time, instruction using ICT in schools will be officially permitted by the MEXT. Some teachers have already experimented with ICT in their teaching and have reported good results. However, these still remain largely anecdotal, with so many others pointing to the impracticality of ICT-based instruction. With a severe shortage of qualified teachers to begin with, the current situation surrounding English education in Japan thus seems chaotic at best.

Against this background, this presentation suggests a possible solution from the way baseball has been taught in Japanese high schools. It will introduce the way practice is conducted by successful teams, which have been producing quite a few professional players. In fact, some players become so good that they even get recruited by the Major Leagues in the United States. There is so much to learn from Japanese baseball in improving English education, and it will all be explained in the presentation. Additionally, an alternative solution, which may be called the "Singaporean Way," will also be entertained.

Biography: Kenichi Namai earned a Ph.D. from the Department of Linguistics at Georgetown University. His specialties are linguistics and English language education. He has been teaching at Waseda University since 1997. He has held visiting professorships at Indiana University-Purdue University Indianapolis (2006), the National University of Singapore (2017), and the National University of Malaysia (2017-2018). Since 2003, he has given lectures on Japanese culture to a variety of international guests at the Japan International Cooperation Center and the Japan International Cooperation Agency. He is also the leading author of the *Discovery English Communication* and *New Discovery English Communication series* (Kairyudo), which are senior high school textbooks officially certified by the Ministry of Education, Culture, Sports, Science and Technology.



Speaker III

Prof. Hayo Reinders

Unitec, New Zealand

Speech Title: *The Educational Affordances of the Internet of Things: Lessons for Designers, Developers and Engineers*



Abstract: It is estimated that by 2020 there will be over 50 billion connected devices. This will go beyond cellphones and computers, to include objects such as cars, household appliances, and - as the technology improves - clothes, utensils and all manner of everyday items. The possible uses of these devices and the enormous amount of data they will generate, are as of yet unclear. In this presentation I will show their possible impact on the field of education and in particular I will consider how we can make connections between the features of such new technologies, and their pedagogical affordances, or potential benefits for learning and teaching. In this talk I will therefore describe the Internet of Things from a pedagogical point of view, give some examples of emerging implementations and research, and propose three areas of potential impact on education, clustered around affordances relating to mobility, augmentation and ubiquity. I will conclude by identifying possible benefits and drawbacks for education professionals and show how the process of identifying affordances of technological developments is a prerequisite for successful design, development and engineering innovation.

Biography: Dr. Hayo Reinders (www.innovationinteaching.org) is Professor of Education at Unitec in New Zealand and TESOL Professor/Director of the doctoral programme at Anaheim University in the USA. He is the founder of the Global Institute for Teacher Leadership (www.teacherleadership.ac). Hayo has published in the areas of autonomy, technology, teacher education, and out-of-class learning. He edits a book series for Palgrave Macmillan and is editor of the journal *Innovation in Language Learning and Teaching*.



Speaker IV

Prof. Gordon Bateson

Kochi University of Technology Japan, Japan

Workshop Title: *How to Build a Gamified Course in Moodle*



Workshop Abstract: This workshop will highlight functionality that exists in standard Moodle 3.x to gamify online courses. This functionality can be used to emphasize to students the goals and structure of the course, and to help them to decide what to do next. This clear understanding reduces anxiety among students and leads to increased motivation to engage with the course materials and their classmates.

The workshop will examine, in turn, (1) setting up passing grades in the grade book, (2) setting up completion conditions on labels, resources and activities, (3) restricting access to resources and activities until certain conditions have been met, and (4) setting and awarding digital badges to students to recognize their learning achievements.

The presenter will demonstrate how to create a Moodle course that contains resources and activities linked together in such a way as to form a flexible and adaptive set of online learning materials that students find easy, enjoyable and educational to interact with.

Speech Title: *Applying Concepts of Gamification and Game Design in the Language Classroom*

Abstract: This presentation will consider ways in which ideas from game theory and game design can be applied in education to improve students' motivation and engagement. These ideas will be illustrated with examples from the presenter's own experience creating activities and courses for language learning.

Of central importance in these learning materials is making the goals of the course, and the steps to achieve those goals, clear to the students. To this end, the presenter has made use of the Moodle Learning Management System (LMS) to create blended learning environments that support students of varying ability and aptitude and encourage active learning through collaborative work in pairs and groups. The result is a "flipped classroom" in which students prepare outside class for performances and assignments done in the classroom. Responses from student surveys show that students have found these courses useful and enjoyable.

The Moodle-supported courses employ various tools and techniques. Some of the technologies, such as conditional activities and digital badges, are available in standard Moodle, while others, such as the Scoreboard block and extended Reading activity, have been developed by the presenter and can be added to a Moodle site as 3rd-party plugins.

Biography: Gordon Bateson is Professor at the Kochi University of Technology Japan. His research interests include using digital badges and gamification to promote motivation among learners; incorporating extensive reading and writing into foreign language classes; developing Moodle plugins that support gamification and active learning. He has a B.Sc. degree in Software Engineering from Imperial College, London and a M.Sc. in Teaching English for Specific Purposes (TESP) from Aston University, Birmingham, U.K. He has lived and worked in Japan for the last 28 years.



Speaker V

Prof. Keitaro Naruse
The University of Aizu, Japan



Speech Title: *Software Driven Robot Development and Robotics Engineer Education*

Abstract: We often think as a robot is a mechanical and electrical machine, however, it is a computational node as well. Even in a tele-operated robot system, we should design software components for each of robots, networks and computer deployment, interface design, and databases. If it is an autonomous one, it involves machine learning and artificial intelligence. Therefore, software development is so important in robot development.

At the same time, we need new type of robot engineers who understand all mechanical, electrical, and informational engineering. We have not had an education program for the above engineers, therefore we have been developing it. We call the new one as dualware engineers, who can develop both hardware of mechanical and electrical parts and software of information system.

In this talk, I will present the project of the robot information system in the university of Aizu and education program of the dualware engineers.

Biography: Prof. K. Naruse is currently a full professor at the University of Aizu. Some of his major research revolves around information system for multiple heterogeneous robots, autonomy, and tele-operation in the physinfo real world, smart house, office, building, disaster respond robots and agricultural robots; theory of robot action intelligence: representation, learning, and sharing. He received his Ph. D (Engineering) from Graduate school of Hokkaido University, Japan and worked as post-doctoral research associate at New Jersey Institute of Technology, U.S.A., and held faculty position in Hokkaido University.



Speaker VI

Assoc. Prof. Mizuho Inuma
Tokyo University of Technology, Japan



Speech Title: *Current Topics and Concepts of Social Design: Integrating ICT into Social Design Education*

Abstract: In 2015, UN has adopted a set of development goals called Sustainable Development Goals to end poverty and protect the planet. The goals cover agendas to create sustainable society in the next 15 year. In order to reach the goal, collaboration among government, private sector and individuals is crucial. In this talk, I will discuss some current topics and concept of social design, introduce the social spiral model which shows such collaboration is needed to solve complex global issues that exist today. In addition, education plays an important role in transforming our society. I will give some examples of integration of ICT as an important element in Social Design Education at a university setting in Japan.

Biography: Mizuho Inuma Ed. D was born in Tokyo, Japan; earned her doctoral degree in International Educational Development from Teachers College, Columbia University, New York, NY U.S.A in 2004. Her area of specialization is international educational development and educational technology.

Her past work experiences include Adjunct Professor at Queens College, City University of New York, Visiting Lecturer at Department of Environmental Information, Keio University. She is currently Associate Professor at Department of Media Science, Tokyo University of Technology located in Tokyo, Japan. Her recent works include "Digital Content Creation and Collaborative Learning in a Large Class Setting" (Computer and Education CIEC, 2012). Her current interest is in media and information literacy, international education, and collaborative learning. Her recent book is the following Inuma, M (2016) Learning and Teaching with Technology in the Knowledge Society- New Literacy, Collaboration and Digital Content. Springer-Verlag Singapur.

Dr. Inuma is a member of the Japan Association for International Education, Japan Society for Educational Technology, among others. She has earned the 74th Conference Award from Information Processing Society of Japan.



Speaker VII

Prof. Alice Lai
SUNY-Empire State College, USA



Speech Title: *Project-Based Learning in Online Classrooms*

Abstract: Project-Based Learning (PBL) is considered an engaging and promising pedagogy for the twenty-first-century students by STEAM (Science, Technology, Engineering, Digital Art, and Mathematics) educators in the United States. The rapid growth of online college courses has further led to emerging research on the effective implementation of PBL in online classrooms. Drawing from the prominent educational theories including Dewey's Pedagogical Creed, Piaget's Constructivism, and Vygotsky's Social Constructivism, PBL accentuates active construction, situated learning, social interactions, and cognitive tools. PBL's particular emphasis on technologies as cognitive tools is being warmly embraced by online students who are growing up with information and Internet technology, digital visual media, and a myriad of social media.

This presentation will consider the potential of PBL in the online environment. I will begin by introducing theoretical framework of PBL. While delving deeper into six key pedagogical approaches of PBL focusing on driving questions, learning goals, authentic inquiry, collaborative activities, learning with technology, and creation of artifacts, I will also mention additional instructional strategies recommended by PBL researchers such as public presentation, critique and revision of student projects. Next, I will discuss the application of PBL as illustrated by the curricular examples from STEAM classrooms. Finally, reflecting on personal experience with PBL, I will summarize the benefits and challenges of implementing PBL in online classrooms.

Biography: Alice Lai is a Professor in Division of Arts and Humanities at Empire State College, State University of New York, where she also coordinates the college's online undergraduate curriculum and courses in the Arts. Dr. Lai earned a Ph.D. from The Ohio State University. Her research spans the areas of art education, online education, and critical digital pedagogy. She has published chapters and articles in academic journals such as *Studies in Art Education*, *Visual Arts Research*, and *Pedagogy*. She also has frequently given presentations at National Art Education Association, Society for Information Technology & Teacher Education, and American Educational Research Association conferences.



Speaker VIII

Prof. Nobuo Funabiki
Okayama University, Okayama, Japan



Speech Title: *An Informative Test Code Approach in Code Writing Problem for Java Collections Framework in Java Programming Learning Assistant System*

Abstract: To enhance Java programming educations, we have developed a *Java Programming Learning Assistant System (JPLAS)*. In JPLAS, the *code writing problem* asks a student to implement a source code that passes the given *test code* on *JUnit*, where the details of the implementation are described in the test code. Previously, we confirmed the effectiveness of this *informative test code approach* in studying three *object-oriented programming* concepts for Java. In this paper, we present its application to studying *Java Collections Framework (JCF)*. JCF enables us to handle a group of objects by offering appropriate libraries, which is expected to be mastered by the students. For evaluations, we generated five informative test codes for JCF, and asked 19 students from Japan, Myanmar, China, and Indonesia to implement the source codes. Then, all of them completed the source codes passing the test codes, while certain students did not use the expected JCF library functions.

Biography: Nobuo Funabiki received the B.S. and Ph.D. degrees in mathematical engineering and information physics from the University of Tokyo, Japan, in 1984 and 1993, respectively. He received the M.S. degree in electrical engineering from Case Western Reserve University, USA, in 1991. From 1984 to 1994, he was with the System Engineering Division, Sumitomo Metal Industries, Ltd., Japan. In 1994, he joined the Department of Information and Computer Sciences at Osaka University, Japan, as an assistant professor, and became an associate professor in 1995. He stayed at University of California, Santa Barbara, in 2000-2001, as a visiting researcher. In 2001, he moved to the Department of Communication Network Engineering (currently, Electrical and Communication Engineering) at Okayama University as a professor. He was the chairman at IEEE Hiroshima Section in 2015 and 2016. His research interests include computer networks, optimization algorithms, educational technology, and Web technology.



Speaker IX

Project Lecturer Hiroyuki Chishiro
The University of Tokyo, Japan

Speech Title: *OS Buffet: Applying Active Learning for Education of Operating Systems*



Abstract: This speech presents OS Buffet, which applies active learning for education of Operating Systems (OSes). In my previous work, I performed enPiT, which is an education project with Project Based Learning (PBL) by Ministry of Education, Culture, Sports, Science, and Technology in the Japanese Government, and the faculty development camp for PBL. I learned some knowledge about active learning by PBL. My research interest is OS but OS community is not so large compared to education one. In order to promote OS community, I have applied active learning for education of OS. I introduce the overview of OS Buffet and give some feedback from participating students in The University of Tokyo, Japan.

Biography: Hiroyuki Chishiro received his B.S., M.S., and Ph.D. degrees from Keio University in 2008, 2010, and 2012, respectively. He became a research fellow of the Japan Society for the Promotion of Science (PD) in 2012, a research associate at Keio University in 2014, and an assistant professor at Advanced Institute of Industrial Technology in 2016. He is presently a project lecturer at The University of Tokyo in 2017. His research interests are real-time systems, operating systems, middleware, and trading systems.



Parallel Oral Presentation Sessions

Saturday, March 30, 2019

✧ **Tips:**

Please arrive at conference room 15 minutes earlier, in case some authors are not able to make the presentation on time.

There will be a session group photo part at the end of each session.

The best presentation will be chosen after each session and the certificate will be awarded by the chair. Good Luck!

Session 1: Multimedia Assisted Teaching and Application

Chair: Prof. Nobuo Funabiki, Okayama University, Okayama, Japan

Time: 9:30-12:30

Venue: Conference Space 1-3, 2nd Floor

9:30-10:15

Speaker V: Prof. Keitaro Naruse, The University of Aizu, Japan

Speech Title: Software Driven Robot Development and Robotics Engineer Education

ET012

10:15-10:30

The Effects of Using Realia Media on Increasing Science Learning Outcomes of Elementary School Students: A Meta-Analysis

Oktovianus Nau Lalian

State University of Jakarta, Indonesia

Abstract-The aimed of this study was to examine how much are the effects of using realia media in increasing science learning outcomes of elementary school students with meta-analysis design. Meta-analysis is a secondary analysis after other researchers have done their own analyses, allowing the meta-analyzer to go beyond what had been accomplished in the past. Steps of meta-analysis are formulating a problem for meta-analysis, searching literature, evaluating literature, statistically analyzing effect size and reporting the result(s) of the meta-analysis. To perform a meta-analysis, the researcher computes an effect size and variance for each study and then computes a weighted mean of these effect sizes. Effect size is a measure of strength in the meta-analysis. Data collection employed documentation techniques. The population/sample in this research was all written documents about the Effects of using Realia Media on increasing science learning outcomes of elementary school students. The written documents were articles. Data or information obtained from each sample was determined based on its compatibility with the theme of this research. Through the utilization of realia media around the student learning environment, students are able to create an effective and efficient learning atmosphere. From the results by using the comparative descriptive analysis with percentage showed a significant effects of using realia media to the students' classical outcomes in science learning



ET066 10:30-10:45	<p>A Study on Interactive Assistive Device Design and Development Kai-Fan Tsai, Yu-Hsiu Hung, Rain Chen and Chien-Yu Lin National Cheng Kung University, Taiwan</p> <p>Abstract-This study explored issues encountered when developing an assistive device for cerebral palsy children and applied the HAAT model for assistive device development to assess assistive device requirements from people, activities, and contexts. The assessment results were incorporated into the assistive device design. There were two main stages in this study. The first stage is the design and development of an assistive device for cerebral palsy children. The second stage is the expert evaluation, in which three designers and special education teachers specializing in assistive device development were invited to provide user feedback. The design parameters acquired from this study are useful for special education teachers for assistive devices and families of children with cerebral palsy. The study results can also be referred to for designing special education assistive devices in the future.</p>
ET030 10:45-11:00	<p>Integrated UI.T.S to solve a Problem in Game Design Class Puwis Thiparpakul, Panasuddhi Suddhiprakarn and Lu Fernando Castro Thammasat University, Thailand</p> <p>Abstract-In this paper, we will show the solution to solve the major problem in game design class that will happened in every semester in Thammasat University, Thailand. The User Interface Tracking System (UI.T.S) is the program that we developed for Game Design Class, it helps instructor correct the User Interface assignment and report the problem include; eyes location dry eyes, and eyes fatigue. Moreover, the program displays the scores designs and point the design problem to students immediately. The program will check the first point, second point, and third point respectively, then the eye tracking software will track the tester eyes to determine whether the user interface design meets the requirements. The program will focus on each Head Up Display and pin a marker on each report image. This system helps Game Design students improve their design skill, reduce the time to test the User Interface design, and fix the right design problem.</p>
ET102-A 11:00-11:15	<p>Examining the Visitor Participation Under the UGC Strategy in Museum-Case Study of AMA Museum and National Taiwan Museum Yichen LU National Cheng Kung University Institute of Creative Industries, Taiwan</p> <p>Abstract-In the digital age, more and more museum use the social media to communicate and develop the audiences. Not only to promote the museum, but also invite the audience to participate. The audience no longer just the viewer or the message-receiver, the user generated content transforms them into active participants. This research aims to discuss the UGC with the museum context. Adopting OECD's definition and museum theory, UGC is defined as content with museum practice and meaning making. This research focus on UGC strategy of the museum and its associated impacts.</p>



	<p>Case studies through participant observation and interviews were conducted as research methods. Cases were chosen as the Ama museum and Taiwan history museum to demonstrate the implementation of UGC through museum practice. By the results, suggestions are provided to museum to improve the relationship with audience through UGC strategy.</p>
ET050 11:15-11:30	<p>The Effect of Interactive Learning Media on Students' Science Learning Outcomes Siti Sahronih, M. Syarif Sumantri and I Made Astra State University of Jakarta, Indonesia</p> <p>Abstract-This study aims to determine the effect of interactive learning media on student science learning outcomes. The influence was obtained through processing data from several previous research results with similar problems through the meta-analysis method. Data analysis was carried out in a quantitative manner by percentage. The research unit uses written documents in the form of journals and research reports on interactive learning media. The results of the study showed an average value of effect size of 0.66 (SD = 1.09). This means that interactive learning media has an effect of 24.54% on science learning outcomes for students. Interactive learning media type which gives the biggest influence of 42.36% is interactive multimedia. The concentration of science lessons which has the biggest effect size was Biology of 41.77%, and the biggest effect size there was on the elementary school of 38.69%.</p>
ET077 11:30-11:45	<p>Connecting Game to Reality: Role- play in Virtual Reality Game for the Senior Yu-Cheng Yang National Cheng Kung University Institute of Creative Industries Design, Taiwan</p> <p>Abstract-The games market is growing, in the current generation, no matter what age or gender you are, everyone plays games. It can be seen that if the strong power of the game can be used well, it will improve the reality. Role-playing games (RPG) have always been the most popular and influential game in the game market. This study used Role-playing games as a game type, combined with VR, which provides excellent immersion experience, to design senior applied games. Before the design, we visited the elderly care center to understand the needs of the elderly. The completed game is tested by the elderly, interviewed after the test, and the game will be modified. The purpose of this study was to provide a good strategy for senior VRRPG applied game design.</p>
ET058 11:45-12:00	<p>3D Printing and Technical Communication in a Creative Factory Classroom: A Case Study in Japan Manoj Poudel and Debopriyo Roy The University of Aizu, Japan</p> <p>Abstract-3D printing is a well-established industrial technology for prototyping, manufacturing as well as research and used for various educational applications in different disciplines. This paper described the importance and applications of the 3D</p>



printing process and technologies in a creative factory classroom. Language learning with 3D printing in a creative factory classroom brings powerful ideas, creativity, and expressive tools for the students. This paper pointed out a technical document production scenario based on 3D printing fundamentals. This document production process is based on the use of CAD software such as BuildwithChrome, Autodesk and Tinkercad, 3D scanners such as Sense and iSense, collaborative documentation such as Google Drive, brainstorming with IHMC concept mapping software, Cubify design feeds and slicing software, and online design repositories such as Thingiverse and Shapeways used by the students during the design management process. This paper outlined the approach to a typical case of Content Language Integrated Learning (CLIL) based on CAD design, LEGO prototyping and analysis; and 3D based scanning activities. The paper also demonstrated how students could be increasingly involved in producing a physical object and how to author technical documents in English, and all happening iteratively and in a collaborative language learning environment.

ET074
12:00-12:15

The Law of Domestic Violence Elimination through Computer Assisted Instruction in a Gender Perspective

Muslikhah -, Ihat Hatimah and Nike Kamarubiani
Universitas Pendidikan Indonesia, Indonesia

Abstract-The protection for women's right to avoid domestic violence has been regulated in Law No. 23 of 2004 on Domestic Violence Elimination. The purpose of this study was to analyze gender perspective with CAI on the law on eliminating domestic violence. This research used the field research method. The results of this study indicate that the genders' perspectives on understanding, types, causes, and protection for the victims of domestic violence are in accordance with the law on eliminating domestic violence that causes pain, sickness, or serious injury It can be concluded that the respondents understood the notion of domestic violence as they agreed that domestic violence was not only committed by the husband but also the wife which resulted in physical and psychological injuries. The conclusion of this paper is that there is a correlation between the gender perspective and CAI on the law on eliminating domestic violence.

ET045
12:15-12:30

Spaced Retrieval Memory Training System for Elderly: an Investigation of Design Criteria

Yin Fang, Chien-Hsu Chen and Zheng-Yu Hoe
National Cheng Kung University, Taiwan

Abstract-Memory destruction affects daily life of the elderly, and dementia is an irreversible brain dysfunction. In non-pharmacological treatments of dementia, spaced retrieval training (SRT) is a memory intervention supporting memory recall and remaining memory capacity. Furthermore, it is easy to learn and execute by caregivers. Studies show interactive technology could reduce cognitive load and increase learning interest of dementia patients. However, related researches of combining interactive technology and SRT are still unclear. The conventional SRT uses typography and pictographs as training content, while employing interactive technology in SRT provides



an interactive environment with an intuitive learning experience. Therefore, the objective is developing design criteria of SRT system through observation, interview, and focus group. Twelve elderly people, one social worker, and two caregivers are recruited for observation and interview to collect information for focus group. The results are utilized as design criteria for SRT system and establish foundation for future work.



Session 2: Learning Technology and Knowledge Engineering

Chair: Prof. Rentaro Yoshioka, The University of Aizu, Japan

Time: 9:30-12:30

Venue: Conference Room(Large), 1st Floor

9:30-10:15	<p>Speaker VI: Assoc. Prof. Mizuho Inuma, Tokyo University of Technology, Japan <i>Speech Title: Current Topics and Concepts of Social Design: Integrating ICT into Social Design Education</i></p>
ET108 10:15-10:30	<p>Design and Application of Intervention Model based on Learning Analytics under Blended Learning Environment Yang Liu and Lilin Gong Northeast Normal University, China</p> <p>Abstract-The arrival of big data and AI era promote educational reforms, which make personalized learning become normalization. Teaching intervention is an indispensable bridge between big data and students' personalized learning. This study proposes an intervention model based on learning analytics from four iteration modules: data collection, data processing, intervention implementation and effect evaluation, and apply it to blended learning environment. Through one-group pretest-posttest experiment design, the effect of the intervention model was measured from learning engagement and learning achievement. The results show that the intervention model can effectively improve students' behavioral engagement and cognitive engagement as well as learning achievement, especially for risky students.</p>
ET086 10:30-10:45	<p>The Thematic Learning Module Based on MIT APP Inventor 2 for 4th Grade Elementary School Pipiet Alifah, Ajat Sudrajat and Sumantri Universitas Negeri Jakarta, Indonesia</p> <p>Abstract-The school curriculum in Indonesia used the 2013 curriculum standard reference. In Primary Schools learning is designed according to the theme or commonly called thematic. This study aims to add supplementary material which is summarized in the digital learning module based on MIT App Inventor 2. This research method uses a simple development method focusing on analyzing the content and content of the learning module. The results of this study are the material used in thematic learning modules can be used by students because it is accordance by standard of material development.</p>
ET103 10:45-11:00	<p>Dynamics of Emotional States and Their Relationship with Learning Outcomes During Learning Python with MOOC Lilin Gong, Yang Liu and Wei Zhao Northeast Normal University, China</p>



Abstract-Understanding the relationship between emotion and learning helps to improve the learning experience and learning performance. In order to examine the dynamics of emotional states and their relationship with learning outcomes during learning Python, this study adopts correlation analysis, linear regression analysis and lag sequence analysis. The results show that: (1) among the seven academic emotions, positive confusion and engagement/flow are positively related with learning, while boredom and neutral are negatively related with learning. (2) Compared with low-achievement group, high-achievement group experienced more negative to positive confusion sequences, more delight, less frustration and boredom. Therefore, teachers could provide supports to regulate students' confusion or boredom when teaching Python. Meanwhile, reducing negative confusion and inducing more other emotions could also improving teaching results.

ET094
11:00-11:15

Joyful or Stressful: Student perception toward Teaching Practice

Yen-Ju Hou

Shu Zen Junior College of Medicine and Management, Taiwan

Abstract-The study aims to explore student engagement in a course of teaching English to young learners. In addition, types of stress during teaching practice were identified to find out its effects on students' perception toward learning performance and satisfaction with the course. In doing so, 115 English major students at a five-year junior college participated in the course for one semester. All participants completed a set of surveys regarding stress and learning at the end of the semester. Findings showed that students expressed they learn more interpersonal skills after teaching practice, followed by practical skills. During teaching practice, what bothered them the most are teaching performance and expectation from themselves and from teachers, managing ability and experience of real teaching, and coping with the overall teaching work load. It is suggested that school regularly collect students' feedback and problems they have during courses and practice period, and add or adjust proper training and support, to promote their overall learning performance.

ET004
11:15-11:30

Estimated Parameters of 6x6 Latin Square Design Consisting of Two Missing Values

Kittiwat Sirikasemsuk and Kanokwan Thachongthumla

King Mongkut's Institute of Technology Ladkrabang, Thailand

Abstract-A design of experiment is a computational technique which is used to select the significant independent variables. The well-designed experiments should reduce the experiment error. We referred to the blocking technique to prevent the error from other variables. This paper focused on the incomplete latin square design (ILSD) based on the blocking technique. The missing values from experiments caused the unbalance design in which the instant formulae were not provided for the analysis of the variance (ANOVA). By means of the exact approach, this paper considered the incomplete latin square design of order 6 x 6 with the two missing values to develop the mathematical formulae for the estimated parameters for full effect model. Finally, it is easy to make the ANOVA. It



	<p>is noted that the mathematical formulae in this paper can be used to solve all indexes.</p>
ET104 11:30-11:45	<p>The Role of Studying Discrete Mathematics in the Formation of the Logic of Thinking for Computer Science Students Maksimenco Marianna N. and Mirzakhanyan Ruzan E. Plechanov Russian University of Economics, Russia</p> <p>Abstract-The famous Swiss psychologist and the founder of the theory of cognitive development Jean Piaget in his works [12, 13] on intelligence formation, expresses the idea that the last (highest) stage of intelligence development is the mastery of formal operations. In his opinion, this usually happens by the age of 12. However, it can be continued in the future. As teachers of Higher School, we have made a number of observations that even at student age a person improves in mastering formal operations, i.e. his logical argumentation becomes clear as a result of learning mathematics. An interest was aroused to the Falsehood Logic as a stage in the logical development of the individual after reading some of Piaget's mathematical works [11, 14.] and the Biryukovs' articles [2]. This work is an attempt to confirm Piaget's thesis that a transition from the Falsehood Logic to the Classical Logic occurs in logical thinking due to growing up. In this regard, the role of studying discrete mathematics in this transition is in the focus of our attention.</p>
ET049 11:45-12:00	<p>Exploring the Use of the Phoneme Frequency Scale Method in Determining Word Difficulty Levels and Readability Scores Vera Paola Reyes University of Tsukuba, Japan</p> <p>Abstract-Readability of texts are often dependent on the level of difficulty of words. Current methods in assessing the level of difficulty of words include word frequency assessments. This paper takes on a different approach in assessing level of difficulty of words by analyzing the frequency of the phonetic composition of words. The frequency ranking of the 44 phonemes in American English is obtained from analyzing the phoneme composition of the top 5000 most common words. The obtained phoneme frequency scale is tested in experiments using the CEFR (Common European Framework of Reference for Languages) for word difficulty and comparing with the Spache score, Flesch-Kincaid Grade Level, and New Dale-Chall score for text readability assessments. Results showed that the Phoneme Frequency Scale approach produces similar scores as the Spache score. This result will help in applications e-learning in determining user language level and ability.</p>
ET056 12:00-12:15	<p>Knowledge Transfer of VLE Frog in Secondary School Mazida Ahmad, Hamidah Abdul Razak, Mazni Omar and Emmanuel O.C. Mkpojiogu University Utara Malaysia, Malaysia</p>



Abstract-Virtual Learning Environment (VLE) Frog is a web-based learning system that duplicates real-world learning by integrating virtual equivalents of conventional concepts of education. With this system, teachers can assign, test, and mark lessons virtually, while students can submit homework and view their marks online. In this context, teachers give information and background knowledge on a specific topic. Knowledge transfer is then shared among learners through specific tools, such as forum and chat for them to create new knowledge. In conjunction to that, this paper aims to evaluate the effectiveness of using VLE Frog as a teaching method for transferring tacit knowledge by enhancing the SECI model. This is achieved by employing the socialization, externalization, combination, and internalization processes in the model among students. In this study, a total of 125 participants were actively engaged in using the VLE Frog. The participants were required to answer questionnaires, which were adapted from the SECI model and students' satisfaction in using the VLE Frog. The research revealed a significant relationship between the SECI components and satisfaction ratings of learners. However, neither the VLE nor the traditional method had influence on the SECI model, implying that the SECI model can be applied with either method separately or together. Thus, this study recommends a blended approach where the SECI model can be applied by combining it with the VLE or traditional methods. The results of this study will benefit the Ministry of Education (MOE) of Malaysia in encouraging educational institutions to utilize the SECI model in teaching and learning.

ET0006

12:15-12:30

A Graph-based Model for Experiential Knowledge

Takayuki Hoshino

Nihon Unisys, Ltd., Japan

Abstract-Knowledge gained through experiences is useful in enhancing experiences of others and in coping with new situations. However, in order to make use of experiential knowledge, it requires understanding of the situation in which the knowledge was created and adjusting it to circumstances. Empirical knowledge can be flexibly utilized by abstracting experience. A knowledge model for abstracting experiences as a graph structure is proposed. The graph represents an individual experience as a node and the transition between experiences as an edge. The nodes and edges can be assigned different parameters depending on the knowledge elements that affect the experience. An example of using the model for experiential knowledge of visiting a museum is presented and possible analysis of the experience is demonstrated. The data used in this paper is obtained from a pilot study performed at the Matsue History Museum.



Session 3: Information Education and Technology
Chair: Prof. Takako Yasuta, The University of Aizu, Japan
Prof. John Blake, The University of Aizu, Japan
Time: 9:30-12:30
Venue: Conference Room (Whiteboard Room), 1st Floor

9:30-10:15

Speaker VII: Prof. Alice Lai, SUNY-Empire State College, USA
Speech Title: Project-Based Learning in Online Classrooms

ET015

10:15-10:30

An Improved Paperless Process Model for Qualification Assurance in Higher Education
Putsadee Pornphol and **Tuan Tongkeo**
Suan Dusit University, Thailand

Abstract-It is greatly necessary for higher education in Thailand to enhance the quality and competitiveness of education, placing a clear emphasis on the specialization in both general and specific fields of study. Supported by the consistent development of quality and standards admired by service users, the quality assurance has become an integral part of quality development of higher education as it can guarantee the enhanced quality and standards of institutional management from the most fundamental to highly advanced levels. Therefore, higher education is required to evolve new dynamic systems and mechanisms of quality assurance in an efficient and consistent manner. Educational personnel have been encouraged to keep pace with the advancement of the quality assurance to be part of their routine education-related tasks, inspired by the application of modern technology to ensure greater accountability and convenience in using the required information. Significantly, the quality assurance has been expected to reduce redundant costs and excessive resources for Thailand's education industry.

The purpose of this research is to urge higher education to pay greater attention to the development of the 'paperless system' in line with the Thai Qualifications Framework for Higher Education (TQF: HEd) is based on the Information System Development Life Cycle and the CSIPOCF model.

ET036

10:30-10:45

A LX (Learner eXperience)-Based Evaluation Method of the Education and Training Programs for Professional Software Engineers
Atsuko Kawano, Yuji Motoyama and Mikio Aoyama
DENSO E&TS Training Center Corporation, Japan

Abstract-We propose a new design methodology to maximize the training effect in a corporate education and training for professional software engineers. Conventionally, the education and training programs have been designed in a top-down manner based on the long-term strategy on the business and engineering resources development. However, to draw out the learners' high performance from the education and training programs, we need to have an empathy with the learners, and to analyze their expectations and emotions in order to motivate them. Therefore, this paper proposes the learner-centered design methodology of the corporate education and training programs inspired by the



design thinking and lean start-up concepts. We define the learning processes in the education and training programs as LX (Learner eXperience), and propose LJM (Learning Journey Map) as the LX evaluation method as an extension of CJM (Customer Journey Map) in UX (User eXperience) design. The LJM enables to evaluate training effect and communicate with stakeholders in the training design expressing the LX quantitatively in a visual form. We applied the proposed design methodology to the education and training programs for professional software engineers in a company to evaluate LX and elicit learner requirements to the programs. We applied the proposed LJM to the education and training program of two levels of the whole program and its LUs (Learning Units), and identified problems in the LX. From the empirical study, we confirm the effectiveness of the proposed methodology.

ET023
10:45-11:00

The Adoption of Flipped Classroom Model for Malaysian TVET Education Institutions
Nur Azlina Mohamed Mokmin, **Mona Masood** and Siti Zuraidah Md Osman
Universiti Sains Malaysia, Malaysia

Abstract-The Flipped Classroom teaching and learning model have become widely discussed by the educator as the ability to speak the language of today's students and improve the learning process. However, there is a significant challenge in adopting the approach in Malaysian Technical and Vocational Education and Training (TVET) institutions that is caused by the lack of technology and training support needed for the approach to run effectively. Thus, this study attempts to answer readiness issues related to the adoption of the approach through a survey research. Findings show that the majority of the respondents find that the ability of the Flipped Classroom model to provide a better learning experience to students and the availability of technologies to support the model has a strong influence towards the adoption. The survey also show there are known benefits of the approach towards students learning. Nevertheless, the study shows that the adoption may face challenges if several issues such as no proper training and lack of content development guidance.

ET082
11:00-11:15

Comparison of Educational Video Production Methods for Students Studying Computer Programming
Yutaro Ohashi, Masashi Katsumata, Kazuhiro Nakamura, Hiroaki Hashiura, Takafumi Matsuura, Jiro Ishihara, Hidemi Yamachi, Fumihiro Kumeno and Yasuhiro Tsujimura
Nippon Institute of Technology, Japan

Abstract-In this study, the authors produced self-instructional video materials for a first-year programming course based on two methods; the first method was a monologue-based captured slideshow presentation, whereas the other method was a dialogue-based video involving two puppets. We created ten videos for each of these methods and used these videos in the course to examine the manners of students who watched them and whether the trend of watching varied according to their academic performance level. The results denoted that the audience rate of the slideshow presentation video gradually increased as the lessons continued, whereas that of the



	<p>videos involving puppets exhibited the opposite trend. The questionnaires that were collected from the students indicated that they watched the videos involving puppets, especially in the beginning. Thus, the videos involving puppets exhibited efficacy, especially for beginners. Meanwhile, the slideshow video was effective for (re)confirming the important points.</p>
ET033 11:15-11:30	<p>Research on Strategies of Improving Professional Development of Teachers in MOOC Era FengXia Li and MengShan Yu South China Normal University, China</p> <p>Abstract-Under the background of the fiery development of MOOC construction and the need for professional development of teachers, this article fully displays the current situation of MOOCs promotion of teachers' professional development. On the basis of this and the application of "Data Processing and Tool Application in Teaching Research" this article puts forward the trinity strategy which aims is to coordinate the frontline teachers, with the education department, as well as the MOOC construction team. It promotes teachers' professional development with the objective for teachers to improve specialty development levels in the period of MOOC.</p>
ET0003 11:30-11:45	<p>Key Components of the Educational Environment in Training Engineers of the XXI Century Roman Polyakov and L.A. Savin Orel State University named after I.S. Turgenev, Russia</p> <p>Abstract-The article provides a summary of the experience of training engineers in the direction of mechatronics and robotics at Oryol State University named after I.S. Turgenev, the main feature of which is the complete transition from the didactic method of teaching to project training. At the same time, the peculiarities of this process regarding the Russian education were revealed. It describes the key elements of the educational environment and the contours of their interaction. Provides statistics of successful graduate students, which prove the effectiveness of the created educational environment and teaching methods used.</p>
ET011 11:45-12:00	<p>Toward Model-Based Evaluation Process of Learning Outcomes in Academic Institutions Mohammad Alhaj Al-Ahliyya Amman University, Jordan</p> <p>Abstract-Academic institutions are enhancing their learning outcomes through quantitative and qualitative assessments and feedback. A typical approach of assessments is paper-based defined in a form of word documents and spreadsheets that describe the process of evaluating students' achievements. This may cause confusion in analyzing the learning outcomes, lack of clarity, and subject to differing interpretations by academic constituencies. This paper proposes a model-based approach to generate</p>



goal models for the learning outcomes, augmented with quantitative indicators. These models are used to improve the assessment process, evaluate the learning components in a formal way and allows the assessment at different level of academic institutions.

ET013
12:00-12:15

Realization of the Enterprise Value in University-Enterprise Cooperative Talent-Cultivating Mode

Wenyin Zhang, Zhenhai Wang and yifeng Cui
Linyi University, China

Abstract-Nowadays, University-Enterprise Cooperative Talent-Cultivating Mode has been given more and more attention, requiring the sharing of resources, complementary advantages, and outstanding talent training characteristics between universities and enterprises to improve the quality of personnel training. Although the cooperative training mode has made great progress in the level and volume of cultivating talent, enterprises should improve the depth of participation, and exert a more positive impact on the whole talent training process. The enterprises must realize their unique value by giving full credits to the advantages of enterprise talent training in order to truly improve the quality and efficiency of personnel training. This paper uses the cooperation between Ambow Education Group and Linyi University to elaborate on value orientation, value realization and achievement expectation in the cooperation program. These traits are mature and effective and provide a great reference value for cooperative talent training between universities and enterprises.

ET022
12:15-12:30

Evaluating Internet Security Awareness and Practices of BulSU-SC Students

Mary Grace Hermogenes and Elenita Capariño
Bulacan State University, Philippines

Abstract-Not everyone is aware of the risks of cyber attacks on the internet once data travels through physical connections. In academic institutions, sometimes students take for granted the risks involved in accessing the internet. They may be excited and enjoy using the social media, communicate through email, and download or upload files without being aware of the cyber security risks these actions may entail. There are a lot of risk possibilities that may occur and are unknown to the students. This paper evaluates the internet security awareness and practices of students enrolled at Bulacan State University Sarmiento Campus during the 1st semester of AY 2017-2018. A total of 289 students from different departments were requested to answer the survey using Google Forms. The survey suggests that most students are still unaware of the vulnerabilities and risks that come with accessing the internet. Students are not fully aware of the existence of security threats and how to identify them, and they are,



therefore, unable to execute appropriate defense mechanisms to defeat threats. The researchers, then recommend that internet security practices be integrated in the technology courses which form part of their program curriculum.



12:30-14:00



Session 4: E-learning and Autonomous Learning

Chair: Prof. Mohamed Hamada, The University of Aizu, Japan

Prof. Lilian Li, Zayed University, UAE

Time: 14:00-16:30

Venue: Conference Space 1-3, 2nd Floor

14:00-14:45

Speaker VIII: Prof. Nobuo Funabiki, Okayama University, Okayama, Japan

Speech Title: An Informative Test Code Approach in Code Writing Problem for Java Collections Framework in Java Programming Learning Assistant System

ET040

14:45-15:00

Toward Egocentric Network-based Learner Profiling in Adaptive E-learning Systems: A Concept Paper

Sirinya On-at, Marie-Françoise Canut, André Péninou, Kriangsak Srisombat and Florence Sèdes

Roi Et Rajabhat University, Thailand

Abstract-Adaptive E-learning systems, which provide personalized learning experiences based on learner's specific characteristics (e.g. knowledge, skills, and competencies), are essential for developing effective learning and teaching. This paper presents a conceptual proposition consisting in developing adaptive E-learning system by incorporating egocentric network-based user profiling, an existing contribution of our research team. Actually, this contribution has been proved in the online social network context with empirical results on different social networks data (Facebook, Delicious, Twitter and DBLP). We aim to apply the existing algorithms underlying this contribution in E-learning context and present in this work a conceptual model and the construction process of learner's user profile, called "learner profile". The learner profile can be exploited in adaptive E-learning systems to provide different personalized/adapted services (books recommendation, personalized courses search, ...) to the learner.

ET079

15:00-15:15

Distance, Virtual, Electronic, Mobile and Ubiquitous Learning Environments: Taxonomy Study

Mohamed sarrab

Sultan Qaboos University, Oman

Abstract-Distance, virtual, electronic, mobile and ubiquitous learning are widely used as interchangeable terms. It is uncommon that researchers face difficulties to distinguish between different learning environments. A clear understanding of the concepts of these learning models and their fundamental differences are necessary for both learning and educational communities. This article reveals the differences and reviews the concepts of learning models. A mixed-method analysis of research articles has been implemented to find out an appropriate set of comparison criteria between learning models including context, accessibility, availability, time and place restriction, dependence, capacity, communication and interaction. Based on the selected criteria's the results reveal that there are a number of differences between learning models and distinguishing between



learning models is important. This is to assure clear understanding of the learning concepts and thus build reliable communication between different members of technical teams, clients, vendors, and the research community.

ET1003-A
15:15-15:30

Quality Assurance Assessment Methods for E-Learning in Higher Education

Lilian Li

Zayed University, UAE

Abstract-E-learning, empowered by advance technologies, has become an important method of delivering and receiving post- secondary education. However, despite of its quick development and wide adoption by educational institutions and other sectors alike, e-learning is still facing challenges in gaining recognition in mainstream education. Quality assurance of e-learning is the major concern and is an area that needs much research attention to ensure the success of this innovative education delivery concept and platform.

Quality assurance is a vast topic that encompasses many aspects. This research paper focuses on the assessment methods within the higher education context. By answering some of the key questions such as what are the current assessment methods used to evaluate effectiveness/quality of e- learning programs in higher education, as well as analyzing their strengths and weaknesses, the author aims to arrive with well informed recommendations and future research directions in the area.

ET069
15:30-15:45

Exploring Active Learning for Student Behavior Classification

Cristina Dum Dumaya, Yancy Vance Paredes and **Ma. Mercedes T. Rodrigo**

Ateneo de Manila University, Philippines

Abstract-Selection of high quality ground truth data is a critical step for machine learning. Conventionally, human-centered strategy is utilized to label the data. While this technique provides accurate annotations of task-specific behaviors, it is laborious, costly and error prone. One method explored to solve these problems is active learning, a model-centered approach where human involvement is minimized. In this work, we conduct an experiment to compare the performance of active learning and passive learning strategies in selecting ground truth data for a classification task to detect the incidence of task persistent behavior from students' interaction logs. Our findings suggest that active learning tends to be more effective and efficient than passive learning in achieving a certain level of performance. However, the overall performance comparison shows that passive selection for ground truth data is as effective as active learning for applications with relatively small sample size.

ET105
15:45-16:00

Students' Voices towards the Integration of MALL to Promote Autonomous Language Learning

Adriani Yulia Purwaningrum

Universitas Pendidikan Indonesia, Indonesia



Abstract-Utilizing technology in autonomous language learning may bring some implications along the line, particularly in EFL context where the learners are mostly accustomed to the traditional way of learning. However, in this current mass development of technology, technology-integrated learning is almost inevitable, not to mention in EFL educational context. Therefore, this study attempts to investigate how the learners perceive the new technology integration in the language learning called Mobile-assisted Language Learning (MALL) in account to promote autonomous language learning. Applying qualitative case study design, the data were collected through questionnaires and interview by involving 30 graduate students of a state university in Bandung, Indonesia. This study found that the participants have a positive attitude towards the integration of MALL to foster autonomous language learning. However, it was also found that teachers need to be aware of several constraints before applying it into practice. One of them is the culture of Indonesian learners that mostly still depend on teachers as they are not familiar with the practice of autonomous learning since their early education, and their access into the technology. Therefore, there is a need for further study towards the teacher's practice in integrating MALL into autonomous language learning.

ET031
16:00-16:15

Project-Based Learning in Online Classrooms

Alice Lai

State University of New York, USA

Abstract-Project-Based Learning (PBL) is considered an engaging and promising pedagogy in today's digital age across diverse disciplines and student populations in U.S. higher education. To broaden research on PBL beyond traditional face-to-face learning environments, this paper examines the theories and application of PBL in the online environment. First, drawing from Dewey's, Piaget's, and Vygotsky's educational theories, PBL emphasizes six key pedagogical principles centering around driving questions, learning goals, authentic inquiry, collaborative activities, learning with technology, and creation of artifacts. Second, to elucidate the application of PBL in the online environment, an empirical study from an undergraduate online art course is analyzed. This study illustrates how PBL can effectively facilitate students' research projects and creation of art works that concern personal, gender, and social justice issues. The paper concludes with reflection on the benefits and challenges of implementing PBL in the online classroom.

ET020
16:15-16:30

Does CLIL Work for Russian Higher School Students? The Comprehensive Analysis of Experience in St-Petersburg Peter the Great Polytechnic University

Tatiana Baranova, **Aleksandra Kobicheva** and Elena Tokareva

Peter The Great Polytechnic University, Russia

Abstract-The article is devoted to the realization of the idea of content and language integrated learning in the system of higher professional education and analysis of students' motivation level in general educational process, difference in the level of



professional disciplines knowledge and difference in the level of English language knowledge between CLIL and non-CLIL students after the course. In the St. Petersburg Polytechnic University there was conducted an experiment to receive overall assessment of using CLIL in curriculum of “Advertising and PR” department. CLIL was introduced in one of the professional disciplines – International business. In this paper, attainments of CLIL and non-CLIL learners are examined and compared. All experiment tests were conducted through the online platform Moodle that was developed for the purposes of the St. Petersburg Polytechnic University.



Session 5: Computer and Information Engineering

Chair: Prof. Rie Mori, National Institution for Academic Degrees and Quality Enhancement of Higher Education, Japan

Time: 14:00-16:45

Venue: Conference Room(Large), 1st Floor

14:00-14:45

Speaker IX: Project Lecturer Hiroyuki Chishiro, The University of Tokyo, Japan
Speech Title: OS Buffet: Applying Active Learning for Education of Operating Systems

ET067

14:45-15:00

Indoor Spatial Voice Navigation for People with Visual Impairment and Without Visual Impairment

Kai-Yu Tsai, Yu-Hsiu Hung, Rain Chen and Eva Chang
National Cheng Kung University, Taiwan

Abstract-This study adopted Observational Method approach to investigate differences between visually impaired people (Group A) and not visually impaired people (Group B) in voice navigation. The objective here is to find similarities and differences between voice navigation set by the two groups and to develop two voice navigation versions for each group. In this study, indoor spatial voice navigation tasks were performed by four people with visual impairment (Group A) and four people without visual impairment (Group B), and the result showed a significant difference between these two groups in voice navigation. Group A often used signposts in the environment for orientation and descriptions of the indoor environment. Group B, on the other hand, treated themselves as the center for describing their navigation routes. According to the similarities between Groups A and B, this study developed two voice navigation versions, one for Group A and the other for Group B, and will continue investigating the accuracy, efficiency, and user satisfaction of these two versions of voice navigation for people with visual impairment.

ET083

15:00-15:15

Monitoring and Evaluation of Internship 1 with PDCA Quality Cycle and Coaching Process on Smartphone

Jittawisut Wimuttipanya
Bansomdejchaopraya Rajabhat University, Thailand

Abstract-The purpose of this research was to monitoring and evaluation of internship 1 with PDCA quality cycle and coaching process on smartphone. The sample were 62 students by purposive sampling, 5 grade in first semester academic year 2018 of General Science, Faculty of Education, Bansomdejchaopraya Rajabhat University. The research instrument was a questionnaire with a consistency index was between 0.86 - 1.00 discrimination was between 0.64 - 0.87 and a reliability was at .89. The statistics used for data analysis were population mean, and population standard deviation for approximate data qualitative data uses content analysis and descriptive summaries.

The results show that the concept of monitoring and evaluation of internship 1 with PDCA quality cycle and coaching process on smartphone at the highest level ($\mu=4.87$, σ



=0.12). The result of compare of knowledge were that post-test ($\mu=38.98$, $\sigma =0.37$) higher than pre-test ($\mu=18.54$, $\sigma =2.48$) and statistical significance was at .05 and it was found that the internship 1 was the curriculum of general science have a model of prepared before internship 1 with transform efficient experience by meaningful learning and linking teaching information from schools to universities via smartphone was statistical significance at .05 level. Integration of major area knowledge implementation into teaching practicum in schools; learners' developing project management, teachers' assignment as provision; learning Instructional plan management and learning process management; measurement, evaluation and implementation the outcome in learning management and learners developing; knowledge exchanging and sharing in educational seminar; research for learners' developing by collecting major area knowledge and practicum to the paper and awareness with appreciated of value teacher by hardworking, problem-solving for full student capability combination of love and mercy of full spiritual teacher and PDCA were the 1) Plan (P) with coaching consist of preparation Introduction lesson plan 2) Do (D) with coaching consist of 2.1) Projects Works & Activities were as problem based learning, understanding situations, learning science process skills 2.2) Brain storming were as proposed approach to solve the problems of their own, explain the reason of problem solving, change opinion & participation 2.3) Problem Solving were as Presentation, question & answer, conclusion, presentation of knowledge with smartphone 3) Check/Study (C) with coaching were as evaluation of instruction, guideline to students for development and 4) Act (A) with coaching were as plan for development, lesson plan, innovation for learning and facilitators.

ET071
15:15-15:30

A Study on Universal Design of Using Interface for Mobile Payment

Ting-Yi Wu, Rain Chen and Hung-Yuan Chen

Southern Taiwan University of Science and Technology, Taiwan

Abstract-Along the rapid development in mobile payment, the new payment approaches have gradually changed people's living style. Currently young age groups are still the main uses of mobile payment. Taiwan has been officially stepped into the aging society, there must have more and more groups to be engaged in mobile payment. this Study would investigate the universal design issue of the using interface for the mobile payment. This Study will divide the subjects into three groups in accordance with their ages, and they are: Adolescent Group (under 26 years old), Adult Group (26 to 45 years old) and Elder Group (above 45 years old), 25 subjects in total. They will be assigned to operate two mainstream mobile payments: LINE PAY and APPLE PAY, respectively. This Study expects to survey those indicators, including operating time, number of errors, using motivation, universal legibility and satisfaction of using for subjects to see whether there's any significant difference in them. The research results showed that adults will be more satisfied with the interface of LINE PAY and APPLE PAY, and considered that are more complied to the principle of universal design. In addition, the survey result also showed that LINE PAY will be the easy one for subjects' operation between LINE PAY and APPLE PAY interfaces, with less errors of operation.



ET106 15:30-15:45	<p>A Survey on Evaluation Method for Chatbot Wari Maroengsit, Thanarath Piyakulpinyo, Korawat Phonyiam, Suporn Pongnumkul, Pimwadee Chaovalit and Thanaruk Theeramunkong Thammasat University, Thailand</p> <p>Abstract-Nowadays chatbots have been widely adopted in many industries to automatically answer users' questions and requests via chat interfaces. While it has become much easier to develop a chatbot system, the system itself is a complex system in nature. It is a challenge to evaluate and compare various chatbot systems in terms of effectiveness, efficiency, goal achievability, and the ability to satisfy users. This paper presents a survey, starting from literature review, chatbot architecture, evaluation methods/criteria, and comparison of evaluation methods. Focused on the three subprocesses in the chatbot architecture: text processing, semantic understanding, and response generation. Moreover, the survey is conducted with classification of chatbot evaluation methods and their analysis according to chatbot types and three main evaluation schemes; content evaluation, user satisfaction, and chat function.</p>
ET039-A 15:45-16:00	<p>Human trafficking and Media: A Latent Semantic Analysis Case for Online Coverage Sara Silva Colegio de Mexico, Mexico</p> <p>Abstract-In recent years, human trafficking has become a worldwide concern and as a consequence, its media coverage has increased. But, since media and public opinion are strongly related, it is important to know how the trafficking process, its manifestations and effects are portrayed for the masses.</p> <p>In this paper, LSA is used to detect the most salient topics in the human trafficking online news, from 2016 to 2018, from an open access online news site based in Mexico, to contrast it with one based in UK.</p> <p>Our results suggest that in the selected Mexican course there is a pronounced victim profile, yet not a clear narrative about human trafficking, which is leaving an agenda setting opportunity to make visible some neglected aspects of the phenomenon; while the international narrative is slowly shifting from sexual exploitation to modern slavery.</p>
ET041 16:00-16:15	<p>Secu-One: A Proposal of Cyber Security Exercise Tool for Improving Security Management Skill Tan Omiya and Youki Kadobayashi Nara Institute of Science and Technology, Japan</p> <p>Abstract-A shortage of cyber security personnel is a major problem which is exacerbated by an increase in cyber attacks and the possible demotivation of the mentioned personnel. This shortage could be improved by providing cyber security training to more people; meanwhile, it is crucial to maintaining motivations among the cyber security team members within a given organization in order to appropriately address evolving and changing cyber attacks. To overcome the above problems, we propose a cyber</p>



	<p>security game exercise tool, which focuses on the areas already demonstrated by the existing tools of the same genre. To validate our tool, we conducted cyber security game exercises and evaluated the achievement of our design policy by analyzing the results of our questionnaire provided by the participants. Our analysis shows that our tool is useful.</p>
ET075 16:15-16:30	<p>Subjective Feelings of the Elderly on Current Mechanical Prevention of Deep Vein Thrombosis Yun-Hsuan Lin, Chien-Hsu Chen and Zheng-Yu Hoe National Cheng Kung University, Taiwan</p> <p>Abstract-The ageing of elderly lower limb muscle and venous valves, plus having sedentary lifestyle cause the blood stasis in their lower limbs. On the aspect of mechanical prevention for deep vein thrombosis, most of the current research focuses on the effectiveness instead of the subjective feelings which could lead the using willingness of the elderly. This study uses focus group discussion methodology to investigate the elderly subjective feelings on the current mechanical prevention. Five healthy elderly and two senior caregivers will be recruited. The graduated compression stockings, intermittent pneumatic compression and neuromuscular electrical stimulation will be introduced before the group's trial. Each individual has a five-minute trial for each device and a ten-minute break between trials while the comfort of the individual will be assessed. The conclusion of this study will provide suggestions for subsequent prevention device design of elderly lower limb deep vein thrombosis.</p>
ET032 16:30-16:45	<p>Research on Consistency between Diploma Policies and Nomenclature of Major Disciplines:Deep Learning Approach Kazuteru Miyazaki, Nozomi Takahashi and Rie Mori National Institution for Academic Degrees and Quality Enhancement of Higher Education, Japan</p> <p>Abstract-In order to showcase a possible real-world example of AI deployment, this paper compares comprehension abilities of humans and machines in a wide range of academic statements based on surveys of 330 people, and machines that have gone through deep learning. This study found that both parties demonstrate similar rates of success but different patterns of comprehension and correlation.</p>



Session 6: Course Learning and Software Programming Learning

Chair: Assoc. Prof. Ken Nakazawa, The University of Aizu, Japan

Time: 14:45-16:45

Venue: Conference Room (Whiteboard Room), 1st Floor

ET035

14:45-15:00

NEMU: Design and Improvement of Visual Programming Environment as Learning Support System on Basic Programming Subjects

Noor Octavian Anwar, Hiroshi Okumura, Triyanna Widiyaningtyas and Utomo Pujianto
Universitas Negeri Malang, Indonesia

Abstract-Basic programming is a fundamental subject that contains basic materials of programming algorithms as well as the design and developing programs using programming languages. Based on observations in Vocational High School at Indonesia, discovered some problems in the learning process of basic programming subject. Students are too focus with syntax errors, operating procedures and instructions of the programming language rather than understanding and practicing the related algorithms. Furthermore, learning resources used in the class are text modules which are not interactive and don't visualize abstract concept of programming language which could help students to understand the subject better. This research aims to design and improve Visual Programming Environment as Learning Support System on basic programming subjects. With this, students could put more focus in practicing design algorithms. It would be easy to sharpen their knowledge and understanding about basic programming without having to suffer from problems mentioned before.

ET025

15:00-15:15

Use of Quantitative Content Analysis to Redesign the University Physical Education Course Based on Students' Reflections

Ken Nakazawa and Yasuyuki Nishihara
The University of Aizu, Japan

Abstract-A formative evaluation of teaching, considering both students' perceptions and teachers' experiences, is essential for class plan improvement. This study investigated the class improvement process, involving the study of these two populations' input. Specifically, we examined a physical education (PE) teacher's class process by analysing all freshmen students' perceptions of that class via a quantitative content analysis. The course units were arranged in a particular order and those of 2015 were redesigned. We extracted eight codes after text mining students' responses: educational materials, group cohesion, play skills, game, interaction, others, self, and positive emotion. After the 2015 course ended, we re-analysed the students' class perceptions. The occurrence rates of 'interaction', 'group cohesion', and 'educational materials' were higher during the early stages in both units; game-based instruction had a positive effect on students' positive emotions. Thus, we identified the problem with the placement of course units and implemented improvement measures.



<p>ET076 15:15-15:30</p>	<p>Research on Instructional Design Model of K-12 Science Curriculum Based on STEAM MengShan Yu and FengXia Li South China Normal University, China</p> <p>Abstract-The promote trend of K-12 science education of improving comprehensive quality through science curriculum integration has been formed. STEAM education receives attention with the implementation of the concept of interdisciplinary integration. This paper analyzed the practice of science curriculum in China and the research status of STEAM-based teaching model domestic and overseas. Meanwhile it adopts action research constructing the STEAM-based K-12 science curriculum instructional design model to further verify the validity. The model is certified to improve students' scientific knowledge, scientific quality, interdisciplinary integration ability and creative thinking through the instructional design and practice research.</p>
<p>ET1001 15:30-15:45</p>	<p>An Informative Test Code Approach in Code Writing Problem for Java Collections Framework in Java Programming Learning Assistant System Ei Ei Mon, Nobuo Funabiki, Minoru Kuribayashi and Wen-Chung Kao Okayama University, Japan</p> <p>Abstract-To enhance Java programming educations, we have developed a Java Programming Learning Assistant System (JPLAS). In JPLAS, the code writing problem asks a student to implement a source code that passes the given test code on JUnit, where the details of the implementation are described in the test code. Previously, we confirmed the effectiveness of this informative test code approach in studying three object-oriented programming concepts for Java. In this paper, we present its application to studying Java Collections Framework (JCF). JCF enables us to handle a group of objects by offering appropriate libraries, which is expected to be mastered by the students. For evaluations, we generated five informative test codes for JCF, and asked 19 students from Japan, Myanmar, China, and Indonesia to implement the source codes. Then, all of them completed the source codes passing the test codes, while certain students did not use the expected JCF library functions.</p>
<p>ET037 15:45-16:00</p>	<p>Flipped Classroom: Do Malaysian Polytechnic Lecturers Ready for Adoption? Siti Zuraidah Md Osman, Mona Masood and Nur Azlina Mohamed Mokmin University Science Malaysia, Malaysia</p> <p>Abstract-A common challenge of among lecturers is to design and develop learning materials before class for implementing flipped classroom that is caused by lack of training and facilities. The purpose of this study is to determine how high and low-level acceptance groups of lecturers made a significant difference in their perceptions of factors that influence, challenges and benefits of flipped classroom adoption. The questionnaire has been distributed to two groups of Malaysian Polytechnic lecturers. The statistical two sample t-test analysis shows the mean of low acceptance group is significantly have a higher mean than high acceptance level group, on their perceptions</p>



	<p>factor that influence, benefits and challenges of adopting the flipped classroom. Therefore, the lecturers have considerations of adopting the flipped classroom although they have a low level of acceptance in flipping their classroom as their new teaching and learning environment.</p>
ET008 16:00-16:15	<p>Using Kinect v2 Combined With Unity3D to Design an Agility Training Game Ya-Shu Kang, Shao-Ting Lu, Chun-Chia Chiu, Chia-Chun Tu, Zhi-Yu Wu, and Yao-Jen Chang Chuang Yuan Christian University, Taiwan</p> <p>Abstract-In this study, we used Kinect v2 technology along with a skeleton tracking technology to create a training system for students with an agility impairment. Through this system, training can be conducted through exercise games without using a playground. We designed a track and simulated real-world obstacles by using animated games.</p>
ET024 16:15-16:30	<p>The Evaluation of Tools for Android Application Programming Nur Azlina Mohamed Mokmin Universiti Sains Malaysia, Malaysia</p> <p>Abstract-The purpose of the study is to experiment with the effectiveness of MIT App Inventor (AI) as a tool to develop a mobile application for 125 students in Malaysia Polytechnics. The experiments run for four months with five hours of class each week and the students were divided into two groups. The first group consist of 50 students and learned using AI. The second group is 75 students and were given Android Studio (AS) as the development tool. The results show that the majority of the students in the group that used AI as development tool able to complete more project that the group that developed their apps using AS. They also have shown positive feedback towards the tool and find that using AI is much easier, faster and able to assist the learning of the low skilled learner when compared to the group that learned using programming language tools such as AS. The finding of this study can be an added value for educators to consider AI as one of the visual programming tools for their computer science classes.</p>
ET047 16:30-16:45	<p>Classification of Programming Problems based on Topic Modeling Chowdhury Md Intisar, Yutaka Watanobe, Manoj Poudel and Subhash Bhalla The University of Aizu, Japan</p> <p>Abstract-Programming skill is one of the most important and demanding skill in the current generation. In order to enable learners and programmers to practice programming and gain problem-solving skills, many Online Judge (OJ) systems exist. Most of these OJ systems have to be operated solely by students and learners. These students and novice programmers sometimes compete against each other or solve the programming problems by themselves in offline mode. But, most OJ systems have their problems arranged simply into volumes and various contests events. This arrangement</p>



system does not have any clear indication of the difficulties and categories of problems. Thus, in this paper, we have studied reliable techniques on the extraction of keywords and features which can categorize these OJ system's programming problems into their respective types and skills. We have leveraged two popular topic modeling algorithms, Latent Dirichlet Allocation (LDA) and Non-negative matrix factorization (NMF) to extract relevant features. Afterward, six classifiers were trained on these topic modeling features and Naive Tf-IDF features. From our studies, we discovered that topic modeling features were relatively smaller in dimensionality, yet matched the performance when trained on high dimensional naïve Tf-IDF features. Our main goal was to understand the precise tradeoff between accuracy and dimensionality of the textual data of programming problem statements. These experiment has enabled us to obtain important tags, hint, and classification of Online Judge programming problems.



Poster Session

Time: 13:00-17:30 **Venue: Gallery and Innovation Space, 1st Floor, LICtiA**

ET060 The Behavior Analysis and Achievement Prediction Research of College Students Based on XGBoost Gradient Lifting Decision Tree Algorithm
LI Guang-yu and HAN Geng
Beihang University, China

Abstract-Student behavior data is a reflection of students' learning styles and habits in campus. Quantitative evaluation of various behavior indicators of students' college learning life can reflect students' learning status and laws, and the academic performance is the most important and basic index to evaluate a student's learning situation. Based on the data of students' behavior under the "Four PIN" education system of Beihang Shoue College, this paper adopts XGBoost gradient upgrade decision tree algorithm to fully mine and analyze the situation of college students' study life and participation in social work, and to study the potential behavior patterns with strong correlation between students' behavior data and students' performance. The performance prediction model is established through data mining technology and the prediction accuracy is 73%. The study finds that "Pinjian" program records the growth of students. Students' overall evaluation and student performance shows a positive correlation. "Pinxue" program promotes academic development. Academic guidance in college plays an important role in improving students' academic performance. "Pinzhi" program enhances comprehensive literacy. Cultural and artistic activities and serving as student cadre show a positive correlation with academic performance.

ET046 Promoting Literacy in an EFL Online Learning Class through LMS Discussion Forum: A Case Study
Melania Wiannastiti, Surya Sujarwo and Kristianus Oktriono
Bina Nusantara University, Indonesia

Abstract-The advance of invented technology has influenced the world of education including for higher education. It leases the higher education institutions offer online learning program with the specific way of teaching and learning. This paper is aimed to reveal some challenges faced by the students in an EFL online learning class, to promote literacy activities in the class and to promote how digital literacy supports EFL literacy in this online class. Responses from students of an online learning class in their Learning Management System (LMS) Discussion Forum are used to reveal their challenges in joining the class Some suggestion of activities to promote language literacy, especially English literacy are provided to give step by step learning.



ET068	<p>Optimization Design of Internet Fraud Case Based on KGCT Lei Hu and Yu Jiang Jiang'Xi Normal university, China</p> <p>Abstract-Compared with traditional fraud, Internet frauds have many characteristics, such as lots of methods, strong concealment, strong penetration and wide harm. In the recent years, more and more fraud cases occurred continuously, analysis of various fraud cases that have emerged is of great significance in preventing fraud. The fraud cases involve different crowds, platforms, software, purpose, etc. There are similarities and differences between cases. The optimization case is conducive to improving the anti-internet fraud education effect and improving anti-internet technology. Knowledge graph has advantages in reflecting the structure of knowledge relationship. This paper uses the knowledge graph to organize the correlation between internet fraud cases and the relevance of knowledge points within the case, propose a Knowledge Graph Case Teaching (KGCT) model to optimize the internet fraud case teaching, and select the most relevant cases for different crowd to strengthen crowd's awareness of anti-internet fraud.</p>
ET091	<p>Transforming Citizenship Education into 21st Century Lessons Rosmawijah Jawawi, Jainatul Halida Jaidin and Rohani Matzin Universiti Brunei Darussalam, Brunei Darussalam</p> <p>Abstract-In citizenship education lessons, teachers require students to discuss and critically understand the events in a global society. This qualitative study investigated the impact of incorporating the 21st century Learning Design (21CLD) into the teaching and learning of citizenship education through a professional development model. Data were collected qualitatively from 30 teachers teaching citizenship education subject in secondary schools in Brunei Darussalam. The instruments used consisted of 21CLD rubrics, semi-structured interviews, classroom observations, and teaching and learning artifacts. The results of the study revealed that 21CLD encouraged students to collaborate and communicate with one another in their learning. There were also positive improvements with regards to students' problem solving and self-regulation skills as well as their knowledge of citizenship education subject. Despite the challenges of implementing the 21CLD lessons, all teachers had agreed that applying this learning design had improved their students' learning of the 21st century skills.</p>
ET099	<p>Automatic Question Generation based on MOOC Video Subtitles and Knowledge Graph Lin Ma and Yuchun Ma Tsinghua University, China</p> <p>Abstract-With the popularity of MOOCs (Massive Open Online Courses), videos have gradually replaced textbooks as the most common educational resources. Quiz is an important teaching tool in online learning process [1], and manually constructing quiz</p>



questions is time-consuming and labor-intensive, so there is a pressing need for automatic question generation from video subtitles. The challenge of this problem is that video subtitles are different from textbooks considering their characteristics such as redundancy, colloquialism, and no sentence division. In this paper, we firstly use external wiki knowledge graph (WIKIDATA [2]) to extract facts of interest from video subtitles, and then propose a novel template-based method to generate quiz questions from knowledge graph. Compared to traditional template-based method [4], we make improvements on the accuracy and comprehensibility of the question. Final experiment on SimpleQuestions dataset [3] shows that the proposed method outperforms other competitive methods by +6% in terms of BLEU on the task of question generations from knowledge graph [4].

ET118

Maarefah - proposed MOOCs' platform for Saudi Arabia's Higher Education Institutions
Haleemah Mafraq and Yasser Kotb
King Khalid University, Saudi Arabia

Abstract-Massive Online Open Courses (MOOCs) enable learners from different places, nationalities, and cultures to attend courses from top universities with free cost. This research aims to propose a new learning platform that specialist for this type of courses, which will provide by Saudi Arabia universities, this platform called Maarefh. In addition, the research adopts UTAUT2 model as the theoretical framework to explore factors that influence the students to use these courses in learning. The results showed that the performance expectancy, the effort expectancy, the social influence, the facilitating condition, and the hedonic motivation have insignificant effects on the behavioral intention of MOOCs. Moreover, the habit has insignificant effects on user behavior of MOOCs. The habit and self-management have a significant positive effect on the behavioral intention of MOOCs. Finally, the facilitating condition and the behavioral intention of MOOCs have a significant positive effect on the use behavior of MOOCs.

ET109

Comparative Analysis of Chinese and American Educational Games Research Based on Bibliometrics
Shengnan Gong, Xinyi Yin and Yuchao Ji
Central China Normal University, China

Abstract-Since the advent of video games, its powerful interactivity and simulation have attracted the attention of all walks of life, and the "educational video games" formed by the combination of education and video games has also set off in-depth research and exploration by scholars at home and abroad. This paper sorts out the relevant literature from 2008 to 2017 by searching the literature on educational video games in Web of Science and using the methods of bibliometrics and visual analysis. This paper compares the distribution of published time, high-yield research institutions and high-yield researchers, in the educational video game field between China and the United States. Then it reveals the hotspots and development trends of



educational video game research in the past ten years. Finally, it summarizes the differences in between China and the United States and gives suggestions for targeted development in the field of educational video games.

ET0009

Knowledge Management in Small and Medium Industry: A Cluster Analysis in Kampoeng Batik Laweyan

Amelia Kurniawati, Iwan Inrawan Wiratmadja, Indryati Sunaryo, T.M.A. Ari Samadhi
Telkom University, Indonesia

Abstract-Managing knowledge in the small and medium industry needs a different approach from the larger organization. The unique way of small and medium industry in implementing knowledge management encourages many studies in this field. The purpose of this study is to identify the implementation of knowledge management in small and medium industry, especially in Kampoeng Batik Laweyan. The knowledge management explored in this study is in term of Knowledge identification, knowledge creation and acquisition, knowledge storage and retrieval, knowledge dissemination, knowledge application, and knowledge evaluation. Related to the implementation of knowledge management, the 53 batik small and medium industries in Kampoeng Batik Laweyan are distributed in 3 clusters. The first, second, and third cluster consists of 34, 14, and 5 small and medium industries consecutively. Cluster I is the most active cluster in implementing all of the six knowledge management processes. The best practice of knowledge creation and acquisition process and knowledge storage and retrieval process can be identified from Cluster I. The best practice of knowledge application process can be identified from Cluster III.

ET110

The Influence of Field Independent-Dependent Cognitive Styles on Students' Learning Performance under Different Teaching Modes

Juan Zhang and Yuan Tian
Central China Normal University, China

Abstract-In order to explore the relationships among learning performance, field independent-dependent cognitive styles and teaching modes, and to test what kind of cognitive styles are suitable for what kind of teaching modes, an experimental study was conducted on 90 college students. Participants were assigned to one of three teaching modes: traditional classroom, online learning, and flipped classroom. Outcomes were assessed in terms of learning achievement, reaction time during test-taking, and learning satisfaction. The results showed that (1) There were significant differences in the influence of the three teaching modes on learning achievement, reaction time and learning satisfaction. (2) Students with a field-independent cognitive style showed a faster reaction time during test-taking than those with a field-dependent style. (3) The interaction between cognitive style and teaching modes was significantly related to reaction time. So, in future education, we should attach importance to the matching of teaching modes and individual differences.



ET090	<p>The Significance of Fighting Games and Gender Stereotyping in Creative Writing Alex Jhon Bina Nusantara University, Indonesia</p>
ET1002	<p>An Empirical Study of the Feasibility of Teaching EFL Reading in Chinese Universities Based on WeChat Platform Zhang Min and Wang Qiyang Northwest University, China</p>
ET0005	<p>Research on the Technology of Automatic Sorting and Distribution of Parts Needed for Assembly of Aircraft Parts Guangku Xue, Guolong Gan, Zhijun Peng, Song Li AVIC Chengdu Aircraft Industrial(Group) CO.LTD, China</p>



Abstract-The assembly of aircraft parts is a complicated process. It is often composed of thousands of parts and components. The flow of parts and materials needed in the manufacturing process of products is large, and the traditional logistics efficiency and informatization of individual parts are low. It is impossible to meet the demand of logistics technology in the production process of modern aircraft assembly. In this paper, based on the technical characteristics of the assembly process of aircraft parts and the current development direction of automated logistics technology, an automatic sorting and distribution scheme for aircraft parts assembly process based on automatic stereo warehouse, automatic lifting library, AGV and other logistics technologies is established. It can effectively improve the logistics efficiency in the manufacturing process.

ET0008

A Multi-Attribute Mining Based Personalized Restaurant Recommendation Method
Kuang Haili, Chang Liang, Sun Yanpeng, Bin Chenzhong
Guilin University of Electronic Technology, China

Abstract-Personalized restaurant recommendation is a hotspot in the field of smart tourism. Most existing methods focus on user preference mining based on user portraits but ignore the importance of mining feature based on integrating multi-source information. Hence, a personalized restaurant recommendation method based on multi-attribute mining (MAM_ResR) is proposed. Having constructed restaurant knowledge graph, combining geospatial semantics obtained from dining sequence trajectory and inherent attribute semantics mined by network embedding of restaurant-attribute graph extracted from restaurant knowledge graph, features of restaurants fusing multi-source information are obtained. Then, using explicit feedback and dining trajectory, the user preference fusing multi-attribute feature is obtained. Finally, the recommendation list is calculated by similarity between restaurant characteristics and user preferences. Experiments based on real data show that it is very effective to integrate multiple types of information into the recommendation method to improve recommendation performance.

ET1005

Construction and Research Design of Vocational English Blended Teaching Based on SPOC
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Abstract-Under the environment of Internet+, enterprises in various industries are increasingly demanding professional English application ability, interpersonal communication ability and professional and technical ability of employees. In view of



the present situation of English teaching in Higher Vocational colleges, this paper constructs a blended teaching mode of Vocational English based on SPOC and carries out an innovative research design, which provides preconditions for the application of SPOC in English classroom in Higher Vocational colleges.



19:00-21:00



Note

