

THE 6TH INTERNATIONAL CONFERENCE ON
EDUCATION 2020

" THE NEW FACE OF EDUCATION: INNOVATION IN PRACTICE "

ICEDU 2020

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BOOK OF ABSTRACTS



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MESSAGE FROM THE CONFERENCE CHAIR – ICEDU 2020



As Conference Chair it is my great pleasure to welcome you to 6th International Conference on Education (ICEDU) 2020 in Bangkok, Thailand. After several years as conference chair I have seen the ICEDU grow in quality and prestige. Every year we seen growth in numbers of attendees and this year will be no different. ICEDU brings together academics, education researchers, students, and practitioners from many countries. Our keynote and plenary speakers will lend a broad perspective to our conversations. Conferences in any field are a great opportunity to meet new colleagues and develop new relationships. I hope you will take this opportunity to mingle with and perhaps initiate collaborations with other attendees, especially with others from different countries.

The theme for the conference this year, “*The New Face of Education: Innovation in Practice*,” is especially appropriate as we move into a new decade. Educators need to look to research and the literature on best practices in order to continue our efforts to improve. All children need access to high-quality education. But too many children across the globe do not have such access. We can use our combined knowledge to not only improve access but also to enhance our teaching methods. At the 2020 conference we will discuss innovations in teaching methods, the effects of school culture, student motivation, current research practices in education and many other critical topics.

My thanks to the staff of The International Institute of Knowledge Management (TIKM) for all their work in organizing this conference. TIKM is becoming a leader in the organization of high-quality academic meetings across a very wide range of critical areas including education, climate change, biotechnology, waste management, women’s studies, and several others. They devote much time and effort to advertising, venue selection, and support for the academic side of their conferences.

I always enjoy coming to Bangkok. It is a city that does not sleep! There is lots to keep us all occupied from wonderful sights to great experiences, and of course delicious Thai food. I encourage you all to get out and experience Bangkok.

Welcome to ICEDU 2020.

Prof. Eugene P. Sheehan

Dean, Professor of Psychological Sciences

College of Education and Behavioral Sciences
University of Northern Colorado, USA

MESSAGE FROM THE HOSTING PARTNER– ICEDU 2020



The University of Northern Colorado (UNC) is a proud host partner to the 6th International Conference on Education (ICEDU) 2020 in Bangkok, Thailand. We have hosted several ICEDU conferences and believe these convenings help meet our mission to be leaders in education. As we host this conference here in Bangkok, we are also hosting a conference at the university that deals specifically with the field experience process for student teachers. And as I write this we are planning to organize a convening of experts in teaching reading.

UNC is a leader in education in the US. We prepare the largest number of teachers across the widest array of areas in the Rocky Mountain Region of the USA. In addition, we prepare students for virtually all school professions: counselors, psychologists, principals, nurses, audiologists, and dietitians. Our students come from across the globe including China, Indonesia, Malaysia, Kuwait, Saudi Arabia, Taiwan, Thailand, Vietnam and from other countries in Europe and Australia/Oceania.

Please contact me if you are interested in graduate education at UNC. Or you can check out our graduate programs at <https://www.unco.edu/graduate-school/degrees-and-programs/>.

I hope you learn much at the conference and that you benefit from the collaborations with colleagues from around the globe.

Welcome to ICEDU 2020.

Sincerely,

Eugene Sheehan

Dean

College of Education & Behavioral Sciences

University of Northern Colorado

Greeley, CO, USA

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ORAL PRESENTATIONS

A1

[01]

LISTENING TO CHILDREN'S VOICES IN REGGIO INSPIRED CLASSROOM

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When I started to work at Reggio inspired kindergarten in Macao, I wanted to listen to my students' voices better to support their learning. It was very surprising for me to learn how this Reggio Emilia approach values the rights and voices of children with 'pedagogy of listening,' and this became the reason I started my research to support children's learning with their voices in documentation practice. The theoretical framework of the study interweaved the theory of documentation from Donald Schön's 'reflection in action' and John Dewey's concept of 'centrality of the voice of the learner.' The qualitative action research covered one pilot and three semesters of data collection over 15 months while I worked as a homeroom teacher and researcher in my 4-5-year-old students' kindergarten classroom in Macao. Observation, asking questions, group discussion, reflection with documentation, and transcription with analyzation were used as data collection strategies. Open coding with thematic grouping was used to analyze the collected data. Finding included (i) documentation supports teachers to assess their young students' development much strongly and efficiently, (ii) new ways of creating documentation with less time and more voices of children. This research shows my journey to explore and experiment with various methods for listening to children's voices, and the huge set of data shows real and ongoing daily school life. This research can support an in-depth understanding of documentation in the early childhood classroom and guide teachers to practice documentation and support children's learning through listening to their voices. The research was limited as only Reggio inspired classroom was involved, further research with different pedagogical classrooms was suggested.

Keywords: Assessment, Documentation, Reggio Emilia, Action Research, Voice of Children

CORRELATIONS BETWEEN EXECUTIVE FUNCTION AND ACADEMIC PERFORMANCE AMONG STUDENTS IN HIGHER EDUCATION

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ABSTRACT

Background: Executive function (EF) is a term referring to a set of cognitive functions, which help individuals to complete a goal-directed plan. Previous studies have substantially demonstrated that EFs are related to academic performance in children and adolescents. However, less is known about the associations between EFs and academic performance among students in higher education. Objective: The aim of this study is to investigate the associations between EFs (i.e., working memory and inhibition) and academic performance among students in higher education. Methods: Participants were 54 students from an educational psychology course at a private university in central Taiwan. EFs were measured by the Adult Executive Functioning Inventory (ADEXI) and academic performance was measured by three scores: midterm exam score, final exam score and total score. Pearson's correlational coefficient was computed to assess the correlations between EFs and academic performance in the present sample. Statistical significance for data analysis was set at $p < .05$. Results: No significant correlations were found between the subscale of working memory and midterm scores ($r = .045$, $p = .749$), final exam scores ($r = .129$, $p = .351$) and total scores ($r = .092$, $p = .509$). Similarly, the associations of the subscale of inhibition with midterm scores ($r = -.200$, $p = .148$), final exam scores ($r = -.225$, $p = .102$) and total scores ($r = -.222$, $p = .107$) were not statistically pronounced. Conclusion: Although significant associations between EFs and academic performance in the present sample are not observed, several explanations for these findings and implications for future research are provided.

Keywords: Academic performance, executive function, higher education

A3

[03]

KINDERGARTEN TEACHERS' PERSPECTIVES ON YOUNG CHILDREN'S PROBLEM BEHAVIOURS AND THE INTERVENTION STRATEGIES

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ABSTRACT

As inclusive education is getting popular, the problematic behaviours of young children have become a daily challenge to kindergarten teachers in Macau. This study aims at studying the kindergarten teachers' perspectives on young children's problem behaviours and their intervention strategies. With Adler's theory on the result of natural and logical behaviour, the study was conducted in qualitative approach with semi-structured in-depth interview with 13 kindergarten teachers who have different education and teaching experiences backgrounds. Data collection strategies included audio recording, researcher's field notes and reflective journal. Coding with 80 pre-codes on problem behaviours and intervention strategies, and triangulation methods were used for data analysis. Results reveal that there are three types of teacher perspectives towards young children's problem behaviours: evasion, negative and positive attitudes. Attributes of these attitudes may include: (i) Teachers' insufficient knowledge on the differences between problem behaviours and SEN behaviours; (ii) The background of seniority and education background of the teachers may contribute to bias on children's problem behaviour. Six counselling strategies are commonly identified to be useful, including: physical fitness, picture book teaching, positive and negative reinforcement, coercion and inducement, rhythm and building trustful relationship with children. This study is of significance in providing a practical reference on problem behaviours and shades some important light for future kindergarten teacher training.

Keyword: problem behaviours, deviated behaviours, early childhood education, teacher training

A4

[04]

**IMAGINATIVE OF MATHEMATICAL THINKING OF STUDENTS IN CREATING
A TEACHING AID FOR CWD BASED-ON JOYFUL LEARNING AND PROBLEM
SOLVING**

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ABSTRACT

Children with Disabilities (CwD) have the right to a quality schools. Joyful Learning and students' problem solving skills for CwD need to be improved. The problem was, how can the mathematical imaginative of students be developed in creating of teaching aids for CwD so that mathematics learning in Extraordinary School (SE) becomes Joyful Learning and students have the ability in Problem Solving? The imaginative growth of students' mathematical thinking is traced through research with a qualitative approach. Primary research subjects: 6 Mathematics Education Students, secondary research subjects were 5 ES students and 1 ES's teacher. The main stages: (1) Students of Mathematics Education who interested were given a training on learning problems in ES. (2) Students were asked to make a teaching aids for CwD based on Joyful Learning and problem solving. (3) The Teaching Aids is tried out at ES. (4) Observing, interviewing, and triangulating. (4) Making conclusions based on indicators of research success. As the results, there were: 1 student who have imaginative of mathematical thinking categorized Very Good, there were 2 students who imaginatively think mathematically categorized Good, there were 2 students categorized as Medium, and there was 1 student categorized as Less.

Keywords: Imaginative, mathematical thinking, joyful learning

A5

[05]

**NARRATIVE INQUIRY INTO ACADEMIA LIFE: WHAT DO WE HEAR FROM
TEACHER EDUCATORS' VOICES?**

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ABSTRACT

Research and teaching are two main aspects of work expected from academics in the higher education. The tension and stress these two aspects brought about, however, started to gain attention of researchers in the field. The current study intends to solicit concrete experiences and reflections on fulfillments or struggles academics encounter in Hong Kong. The aim of this study is two folded: first, on a personal level, the source of harmony and conflicts within a backdrop of the internationalization and globalization in the past few decades. Second, on a more systemic level, how the current institutional and global trends impact on the development of education at large and teacher education in specific.

In the study, we interview academics in different stages of their career path. The participants are from two local universities with a focus on teacher education. They are approached through a convenient sampling. Each interview is transcribed by research assistant and subsequently checked by the participants for accuracy. Transcriptions are then discussed in research meetings to identify themes for further deliberation.

Findings from the study will enlighten us on: How do teacher educators see the respective values of research and teaching for their own careers and for the society? How do they juggle their time and effort in their work life? How do they keep the balance between work and other aspects of their lives? Are these balance acts always successful and productive or otherwise? How do personal, institutional, societal and global contexts facilitate or harm these balancing acts?

Keywords: Research, teaching, higher education, work life balance, tension, stress

EXPLORING RISK FACTORS THAT MAKE SCHOOL BULLYING MORE SEVERE

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ABSTRACT

The purpose of this study is to explore risk factors that make school bullying more severe in the perspectives of teacher-student and child-parent relationship, students' past experiences whether they would be a perpetrator or not, and teacher's intervention. A total of 38,057 students from elementary and junior high schools were given a survey about bullying. The surveys were then accumulated and analyzed. At first, the correlation between the frequency of victimization (1. never, 2. once in the three months, 3. once a month, 4. once a week, 5. many times in a week) and depression was examined. There was a positive correlation between two variables ($r=.32$, $p<.01$). Therefore, we considered that the frequency of victimization could be an index of the severity of school bullying. Then an ordinal regression analysis was calculated to predict the frequency of victimization based on student-teacher and child-parent relationship, their past experience of perpetrator, and non-effective teacher's intervention. As a result of that, student-teacher relationship ($B=-.11$, $p<.01$), having an experience as a perpetrator ($B=-.62$, $p<.01$) and non-effective teacher's intervention ($B=-.69$, $p<.01$) were related to the frequency of victimization negatively. Thus, we can consider these factors as risk factors that make school bullying more severe.

Keywords: the severity of school bullying, risk factors, student-teacher relationship, child-parent relationship

A7

[07]

S.H.A.P.E SHIFT: TRANSITION EXPERIENCES OF SCIENCE TEACHERS FROM
LINEAR CURRICULUM TO SPIRAL CURRICULUM

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ABSTRACT

In 2013, with the provision of the Republic Act 10533, a new curriculum commonly known as the K-12 curriculum was implemented in the Philippines replacing the Basic Education Curriculum's linear curriculum with spiral curriculum. Mastery of skills was believed to be more evident in this curriculum, which, in turn, will allow the educational system to keep pace with international standards. With that, the aforementioned transition affected the readiness, effectiveness, and efficiency of Science teachers towards the delivery of their content, pedagogical, and technological knowledge. Thus, this study aims to describe the experiences of Science teachers towards this transition. To gather data, the researchers utilized a descriptive phenomenological qualitative design across the private and public high school in Bulacan, selecting informants through purposive sampling. Informants answered the validated semi-structured interview through oral or written form. Colaizzi's method was utilized for data analysis. The study resulted in the emergence of five themes composing the acronym S.H.A.P.E. namely – Struggles to Transition, Help from Others, Acclimations to Transition, Paradigm about Curriculum, and Expression towards Transition. With the results, the researchers found out that a successful transition depends on how well the Science teachers understand the curriculum and how prepared they are to execute through their pedagogy and technology. Most of the informants were unprepared during transition period which intensified their struggles. These, in turn, were perceived either positively or negatively by them. Some were able to cope through the help of others and also through self. But, some are still struggling and in their transition period even up to this day.

Keywords: Science teachers, transition experiences, phenomenology

COMPARATIVE ANALYSIS OF SCHOOL ABSENCE BEHAVIOR IN CHINA AND JAPAN

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ABSTRACT

Student absenteeism has been extensively examined since it is a critical educational problem in Japan. Despite high level of emotional disengagement towards school, the behavior of school absence or non-attendance was seldom reported in China. Therefore, exploring the above underdeveloped issue is necessary. Moreover, by comparing those related factors of behaviors between China and Japan provides a detailed insight into the mechanism of absenteeism across different social and educational contexts. This study reanalyzed the data of PISA 2015 (age = 15, China n = 9841, Japan n = 6647). Firstly, the absence behavior data was modeled by Zero-Inflated Poisson distribution based on Bayesian analysis. The results revealed that the probability of absence was 3.2% and 3.7% for the Chinese and Japanese students, respectively. Secondly, Zero-inflated Poisson multiple regression analysis was conducted to explore the causes of absence behavior, with the independent variables of parents' care and support, teachers' unfairness, peer bullying, individual cooperative attitude, competitive motivation, educational expectation, and test anxiety. The results found that (1) Higher test anxiety and lower expectation for future education led to more absence behavior among Chinese students. However, such behavior among Japanese students was resulted by lesser care and support from parents and more unfairness from their teachers. (2) For Japanese students who exhibited absence behaviors were more likely to get bullied in school, the more frequent and longer they got absent from school. The above results suggested that school absenteeism exists in China, but with lesser social attention. It can be inferred that Chinese students value education and academic performance more than Japanese students, while Japanese students are more affected by interpersonal factors such as parents, teachers, and peers.

Keywords: School absenteeism, comparison between China and Japan, Zero-Inflated Poisson Distribution, Bayesian analysis

A9

[09]

DIFFERENCES OF PREFERENCE TO PHYSICAL EDUCATION CLASS AND EXERCISE IN GENDER AND GRADE AT SCHOOL

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ABSTRACT

There are many reports that developmental stage or age affects process of disliking physical activities in children. In particular, disliking physical activities occurs the period of elementary school in many cases. However, previous studies have not clarified the gender differences when exercise dislike occurs. the purpose of this study was to verify the differences of precepted sense of like and dislike to exercises between boys and girls by age. The respondents were 219 (109 boys, 110 girls) 3rd graders, 196 (86 boys, 110 girls) 5th graders in three elementary schools, and 334 (161 boys, 173 girls) 7th graders in three junior high schools. Questionnaire about senses of like and dislike exercise and physical education classes were conducted. The differences in awareness for exercise and physical education classes were analyzed for each grade by gender using one-way ANOVA with post-hoc test. As a result, the point of “like exercise” in boys did not significantly decrease by grade ($F=1.098$, $p=.335$, $\eta p^2=.006$), although the point of “like exercise” in girls decrease significantly by grade ($F=12.497$, $p<001$, $\eta p^2=.06$). On the other hand, there were no tendency of decline the point of “like physical education classes” in both gender by grade. In conclusion, there were differences in the tendency to like and dislike exercise between boys and girls, nevertheless there were no differences of like physical education classes. Therefore, these results suggest that girls tend to have negative feelings to exercise earlier than boys. The results of this survey infer that instructing exercise requires the involvement of teachers or instructors considering gender differences.

Keywords: Preference of Exercise, Physical Education, Gender

THE EFFECT OF MEDITATION ON METACOGNITIVE ABILITY, WORKING MEMORY ABILITY, ACADEMIC ACHIEVEMENT, AND STRESS LEVEL

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ABSTRACT

This study was utilized a quasi-experimental pre-test and post-test control group research design to examine the change of metacognitive ability, working memory ability, and stress level of students in a public university of Thailand after the intervention of meditation. A total of 60 healthy, right-handed, have corrected-to-normal vision, and no neurological or psychiatric problems of undergraduate students were randomly selected and equally distributed into experimental and control groups. Only the 30 students from experimental group participated in mediation program. There were three research instruments used in this research, namely Metacognitive Awareness Inventory (MAI), Thai Working Memory Computerized Battery Test (TWMBT), and SPST-20 to measure the respective metacognitive ability, working memory ability, and stress level. Multivariate analysis of variance MANOVA was used to determine if the response variables namely metacognitive ability, working memory ability, academic achievement, and stress level are altered by the manipulation of the meditation. Initial results indicated that there was no significant difference between the groups in term of their metacognitive ability, working memory ability, academic achievement, and stress level before the intervention of meditation. However, all these four dependent variables showed significant differences after the intervention of mediation, that are the improvement in their metacognitive, working memory abilities while a decreasing of stress level. Furthermore the average academic achievement of experimental group was significantly higher than control group. In conclusion, the mediation program has been successfully promoted the metacognitive, working memory abilities, academic achievement, and at the same time reduced the stress level significantly.

Keywords: Academic achievement, Meditation, Metacognitive ability, Stress level, Working memory ability

A11

[11]

A STUDY OF SERVICE CHANNELS FOR THE INSURED PERSONS UNDER ARTICLE 40 THROUGH THE LOCAL ADMINISTRATIVE ORGANIZATIONS

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ABSTRACT

This study was done in Thailand to study the service channels for the insured persons under Article 40 (IPA 40) through local administrative organizations (LAO) in accordance with the Thai Cabinet's resolution regarding the public services. It was a mixed study between the Documentary Research and the Field Study together with the Focus Group. It consisted of 180 participants including insured persons, labor volunteers, and social security network and community leaders. In addition, there were 58 interviewees including administrators of the LAOs who gave the data about the service channels for IPA 40, administrators of the Social Security Office (SSO) who gave the data about the service channels through the LAOs and the IPA 40. The data were collected by an opinion survey about guidelines of the services for IPA 40 through the LAOs and a form of structured interview and then they were analyzed in terms of frequency and percentage. The results showed that regarding providing the services for the insured persons through the LAOs, the SSO is required to consider the following 3 elements: firstly, in terms of law, the issuance of required announcements should be done in compliance with the Act of Plan and Procedure Design for Decentralization to the LAOs, 1999 to enable them to have the authority to give the services for insured persons in accordance with the Article 40 of the SSO; secondly, in terms of the information technology(IT) system for the integration of the services among government agencies, the SSO must design the IT system for the LAOs so that they are able to link the services for the IPA 40 and thirdly in terms of the public relations to create awareness for people to access the services, the SSO must create public relations media to create awareness and to train the LAOs' personnel to understand the services for the IPA 40. In this regard, the services for the IPA 40 should cover 4 areas as follows: (1) registering service, (2) contributions payment service, (3) depository documents for compensation benefits under the Social Security Article 40 (4) public relations campaigns of the knowledge of social security coverage, Article 40, at the local level.

Keywords: Service channel, the insured persons under the Article 40, local administrative organization

A12

[12]

IS THE NEW COGNITIVE STYLE-BASED LEARNING STRATEGY ABLE TO STRENGTHEN STUDENTS' KNOWLEDGE AND SCIENCE LITERACY?

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ABSTRACT

Science literacy is a crucial problem faced by many students in the world including Indonesian students. Science literacy is owned by students if they have knowledge and can apply their knowledge to explain phenomena and solve the problems scientifically. This study examines the effectiveness of cognitive style based learning strategies (CSBLS) to improve knowledge and scientific literacy. The research subjects were 30 students of SMPN 6 Banjarmasin consisting of 12 people with the Field Independent (FI) cognitive style and 18 people with the Field Dependent cognitive style (FD) and Banjarmasin 21 SMPN 21 students consisting of 11 people with FI cognitive style and 14 people with FD cognitive style). The study applied one group pre-test and post-test design in parallel in the two test classes for 6 meetings on the science material of environmental pollution. In general, this study found that CSBLS was effectively applied to science learning to improve learning outcomes of knowledge and science literacy. The first finding was that the learning outcomes of knowledge in the two schools are not significantly different. The second finding was that scientific literacy of SMPN 21 students was better than SMPN 6 Banjarmasin students. According to the findings, CSBLS is able to facilitate the learning of students who have different cognitive styles, but on tasks that require more complex levels of thinking such as scientific literacy students with FD cognitive styles need more help in order to learn optimally. This CSBLS learning strategy has a great potential to be applied to train students' science literacy through learning science topics at junior high school.

Keywords: Cognitive style based learning strategy, science knowledge, science literacy, environmental pollution, field independent, field dependent

A13

[13]

**PROMOTING CONCEPTUAL CHANGE AND METACOGNITIVE SKILLS USING
I-SMARTCC LEARNING MODEL**

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ABSTRACT

Conceptual change and metacognition are increasingly recognized as integral aspects for learning. For that reason, the authors aim to improve metacognition skills and conceptual understanding by developing i-SMARTCC Learning Model. This model is developed from constructivist learning theory, information processing theory, cognitive psychology theory, and conceptual change theory. This research was conducted in three stages, namely the introduction phase, development, and model testing. The trial design used pre-experiment with one group pretest-posttest design. The subjects of the trial were limited to 25 students Senior High School in Banjarmasin. Data was collected from expert's validity assessment, tests, observations, questionnaires, interviews, and documentation. Data analysis techniques used in this study were descriptive, qualitative (n-gain test), and quantitative (paired t-test). The results showed that i-SMARTCC model is proven to be valid, practical, and effective. The result also suggested that i-SMARTCC model shows that metacognitive development occurs side by side with conceptual change. It is recommended that the development of student's metacognitive skills should be the bases of conceptual change in instructional decisions.

Keywords: conceptual change, metacognitive skill, iSMART Learning Model

A14

[14]

**IMPROVING THE CRITICAL THINKING SKILLS AND SELF EFFICACY WITH
THINK-PAIR-SQUARE-PROBLEM POSING (TPS-PP) ON BUFFER SOLUTIONS
MATERIALS**

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ABSTRACT

Research has been carried out on improving critical thinking skills and *self-efficacy* students with the learning model of *think-pair-square problem posing (TPS-PP)* on material buffer solution class XI MIPA 3 with a total of 33 students in SMA Negeri 4 Banjarmasin 2018/2019. The purpose of this study is to improve 1) teacher activity, 2) student activity, 3) critical thinking skills, and 4) *self-efficacy*. The research method used a classroom action research (CAR) model of John Elliot. Each cycle consists of planning, implementing actions, observing and evaluating and reflecting. The results showed that there was an increase in 1) teacher activity increased from good enough to good categories, 2) student activity increased from active enough to active categories, 3) students' critical thinking skills increased from quite critical to critical categories, 4) *self the efficacy* of students increases from good enough to good categories. The conclusion of this study is the model *TPS-PP* can improve critical thinking skills and *self-efficacy* students.

Keywords: Critical thinking skills, self-efficacy, think-pair-square, problem posing, buffer solution

A15

[15]

UNDERSTANDING DISCURSIVE FORMATIONS, EQUIPPING STUDENTS TO CRITIQUE THEIR STRUCTURED REALITY

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ABSTRACT

This ethnographic paper addresses the question of how education can create individual and systemic change, thus answering calls by many for a pedagogy that will create social-justice thinking particularly in elite education. The researchers examine how the explicit teaching of a Foucauldian framework of discursive formations equips students to interrogate the exclusion and exclusivity created by the discourses they inhabit. The researchers conducted in-depth interviews with high-school students from Korea and Afghanistan studying in India at an international residential school, as well as conducting an analysis of their Foucault-inspired research and writing. Through these case studies, we explore how understanding discursive formations has led them to examine truth in education, prohibition in politics, and knowledge and madness in culture. We conclude that, particularly in postcolonial settings, Foucault's language of power relations and discursive formations permits students to give a name to complex meanings and experiences of alienation that, up to the point of introduction to Foucault, had been limited to vague, unutterable feelings. We further conclude that the explicit teaching of deconstructive theory might not only fulfil the purported citizenship aims of international education but also disrupt patterns of privilege, empowering those less privileged. This has implications for secondary educators across the postcolonial world as they seek to develop metacognitive skills and better equip students to recognise and critique the influences that shape their identities.

Keywords: Elite Education, Foucault, Secondary Education, International Schools, Discursive Formations, Privilege

A16

[16]

**UNDERSTANDING CHEMISTRY THROUGH MULTIPLE REPRESENTATION IN
LEARNING ENVIRONMENTAL ISSUES BY IMPLEMENTING BLENDED
LEARNING**

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ABSTRACT

Multiple representation is the best strategy for understanding abstract chemical concepts. Unfortunately, at this time learning chemistry in schools rarely uses multiple representation approach to make students understand the concept of chemistry deeply. Teaching chemistry by representing concepts and applying them to solving problem in controversial environmental issues becomes challenging. If this is supported by the use of technology such as blended learning, it will enable students to solve problems independently while still learning in a collaborative framework. This study describes how students analyze environmental issues such as "plastic waste" to understand chemical concepts using multiple representation. Learning is conducted in blended learning so students can learn actively and independently. The experimental method was applied using the control and the experimental class. The data of 38 students were collected using interview, observation, and test, then analyzed using the Rasch model and descriptive statistics. The results showed that applying chemical concepts in solving complex problems can practice critical thinking skills. The ability of students to analyze problems to overcome environmental issues is quite scientific even though in some parts their understanding of the basic concepts of chemistry that support problem solving is still weak, as in the concept of buffer solutions. The use of chemical representations helps students understand chemical concepts better. The results of the study have implications for the need to improve students' understanding of concepts using multiple representations, especially at the sub microscopic level, spatial skills need to be applied to interpret problems at the particulate level, and in order to have good problem solving abilities students must have a strong understanding of the concept.

Keywords: Chemistry, multiple representation, environmental issues, blended learning

A17

[17]

**EFFECTS OF JIG-SAW COOPERATIVE LEARNING STRATEGY ON SENIOR
SECONDARY III STUDENTS' ACHIEVEMENT IN NERVOUS SYSTEM IN JOS
NORTH, PLATEAU STATE, NIGERIA**

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ABSTRACT

The study examined the effects of Jig-saw cooperative learning strategy on senior secondary III students' achievement in nervous system. A quasi-experimental design, specifically, the non-randomized control group, pre-test-post-test design was used for the study. Simple random sampling technique was used in selecting two intact classes with 50 students each out of the population of 272 students from two senior secondary schools in Jos North. A 30-items Nervous System Achievement Test for students (NSATS) was used in collecting the data. A table of specification provided content validity for the NSATS, through a logical appraisal of experts in test and measurement and biology. The instrument was pilot tested on thirty students and thereafter analyzed using the Pearson correlation coefficient yielding a reliability index of 0.84. The treatment group was exposed to the treatment programme for five weeks while the control group received no treatment. Four research questions were answered by the use of mean and standard deviation while t-test statistics was used to test the hypotheses at 0.05 level of significance. The findings revealed a statistically significant difference between the mean achievement gain scores of students taught using cooperative learning strategy and those taught using conventional lecture method in biology. There was no significant difference in the post academic achievement mean scores according to gender. It was concluded that cooperative Jigsaw learning strategy enhanced students' academic achievement in nervous system. The researcher recommended that teachers should help create a conducive environment for the use of cooperative learning strategy in secondary schools

A18

[18]

**A STUDY OF THE RELATIONSHIPS AMONG TEAM CLIMATES, SOCIAL
AXIOMS, COMPETENCIES AND PERFORMANCE FOR STUDENT GROUP
WORK**

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Kong*

ABSTRACT

Nowadays, institutions of higher education try to develop professional competencies among students, including effective teamwork. Indeed, most previous research on student workgroup performance focuses on the measurement of performance, rather than on the effect of team climate and social axioms on the competencies of the student groups, which ultimately determine their performance. The paper attempts to investigate the relationships among, team climates, social axioms, competencies and performance of student group work. Data collection among student groups took place by making use of a survey-based methodology in the form of electronic self-administered questionnaires to collect quantitative data from the students. Data analysis included data coding, measurement, assessment and reliability analysis, and hypothesis testing. Descriptive statistics were computed to assess the overall tendencies of the collected data. Cronbach's alpha was used to perform a reliability analysis to assess internal consistency and the reliability of the constructs. Correlation analysis was used to estimate the strength of relationships being studied. The results show that that the social axioms have a strong effect on student competencies in work group. The team climate dimensions have significant correlations with most competencies of students in work group. There are significant relationships between student competencies and team performance in work group. The outcome of the study provides some insights to enhance student performance and develop competencies in group work.

Keywords: Competencies, social axioms, team climate, student group work, correlation

A19

[19]

**CONCEPTUAL FRAMEWORK ON THE IMPACT OF DIGITAL TECHNOLOGY
TO LEARNING AND THINKING AND IMPLICATIONS TO PEDAGOGY**

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ABSTRACT

The conceptual paper aims to investigate how digital technology affects the brain and its impact to the way digital natives learn and think through an extensive literature review and interpretation of data. Moreover, results of the literature review were used to develop a conceptual framework on the impact of digital technology to learning and thinking and its implications to pedagogy. Ultimately, the paper highlights the need for teachers to be well-equipped on how to use digital technology in the classroom together with direct instruction to scaffold skills needed to develop interpersonal skills, communicative proficiency and deep thinking with 21st century skills of skimming and scanning. The conceptual framework illustrates a balance in the use of brain-based research and digital technology to achieve a classroom environment where digital natives will be able fully develop their brain and at the same time address the requirements of the 21st century world in which they belong. The conceptual paper further addressed how technology can be used to mediate learning and how teachers evaluate and use technology in the classroom.

Keywords: Brain Research, Learning with the brain in mind, Impact of Digital Technology to the Human Brain, Pedagogy and the Brain, 21st century skill

**RELATIONSHIP BETWEEN COMMUNICATIVE GRAMMAR MODEL AND
GRAMMAR ACHIEVEMENT OF GRADE 10 JUNIOR HIGH SCHOOL: IMPACT
TO THE DEVELOPMENT OF LEARNING ACTION CELL**

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ABSTRACT

The study aims to find out the relationship between the use of Communicative Grammar Model in teaching English grammar and the academic achievement in English grammar of Grade 10 junior high school students in a Philippine school which have undergone the initial implementation of the K-12 Language Program in Junior High School (Grades 7-10). This study is necessary as to identify if the changes in the Language Program have been effectively implemented as a response to claims of deteriorating quality of English Language Instruction. The participants were chosen initially through probability sampling, specifically, stratified sampling design where grade 10 students were grouped according to sex, and then random sampling was utilized to draw 10 names from each group. The data collection was done through the administration of Student Assessment of Grammar Teaching (SAGT) and Test of Grammatical Competence in English (TGCE). Both instruments have been tested for content validity and reliability. Data gathered was subjected to Pearson r using SPSS version 23. Results reveal that there is sufficient sample evidence that there is a relationship between the extent of use of Communicative Grammar model in teaching English grammar and the grammatical achievement of grade 10 students. Further, a strong negative correlation reflects that the lesser extent of use of CGM is associated with lower grammatical achievement.

Keywords: Communicative Grammar, Grammatical competence, English Proficiency, Language Teaching Methodology, Language Teaching Practices. Language Teaching Pedagogy, Language Instruction

A21

[21]

USE OF PSYCHOLOGICAL THEORIES IN CLASS-ROOM INSTRUCTION

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*C.S.J.M. University Kanpur, India***ABSTRACT**

Pivotal to student's development, the product of interaction between person and atmosphere, carries utmost importance. Psychology, cannot be undermined in teaching-learning process. The present study explores an important intervening variable-classroom instructions (CI). Teaching is the continuum of different actions and elements, CI being one of them. CI is an interactional behaviour of teacher which is the basis for modification of learner's behaviour. CI needs knowledge of scientific principles, psychological theories, laws, and awareness of social values. Teacher's behavior is guided by the learner's behavioural outcome, the resultant of the learner's psychology. Data was collected from observation, self-teaching experience, and discussions with other teachers, journals and work of eminent psychologists, researchers and educationists. A few are **Piaget's** Cognitive Development, **Dewey's** Constructivism, **Jerome Bruner's** Social Constructivism, **Skinner's** Reinforcement, **Lev Vygotsky's** (1978) Proximal Development (ZPD), **Maslow's** Motivation. CI is an essential component for managing and organising the process of converting teacher's knowledge into student's synthesis of new knowledge that is metacognition, the ultimate objective of **Bloom's** Taxonomy of Knowledge. In this global scenario, creativity, reflective thinking, interdisciplinary approach are major objectives of education. It emphasizes upon preparation, atmosphere, awareness, motivation, feedback, active participation and catering to the local and global needs. This study emphasises that a teacher should develop a sound philosophy of education, insight about the process and awareness about social values. It is also suggesting teacher educators to develop the acumen of an artist and a scientist because teaching is creation of new knowledge and creation is subject-neutral. This study inferred that psychological theories provide customisation of instructional design. It also provides a path to see through the learner's unique psyche and elevate it up to the metacognition level. This study concludes in reflecting upon psychological theories in reference to CI.

Keywords: Insight, customisation of CI, Creativity

**DISCOVERING LEARNING POTENTIALS IN THE WORK PROCESS – AN
ANALYSIS OF WORK STRUCTURES AND WORK TASKS BY THE EXAMPLE OF
PRISON OFFICERS**

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ABSTRACT

Prisons are in a state of constant institutional change, marked by extensive development processes. The subject of different studies is the analysis of development processes in prisons, for which suitable strategies of organizational and personnel development are required. In this context, the area of further vocational training is of particular importance, whereby this should be based primarily on the work-related further training of the prison officers. The research question that arises is how to combine work and learning in a meaningful way. The systematization of the work tasks of prison officers has the purpose of presenting their varied and demanding professional profile.

So far, too little attention has been paid to this aspect, although this area has considerable potential for the successful implementation of development processes. In this context, work-related learning means a conceptual development geared to all hierarchical groups of prison staff, which is oriented towards current work problems and conflicts solution.

The presentation will focus on the results of own empirically determined possibilities for the use of secondment, rotation, work shadowing, induction training and order processing, which are both conducive to learning but also conflict-prone. The importance is closely linked to the management and communication policy in the departments, which will be presented. The complex methodology includes 42 expert interviews, 51 workplace observations and 8 group discussions in three Saxon prisons in Germany.

In conclusion it is essential to establish that only networked work and further training structures to develop the prisons into a learning organization in the long term and at a high level.

Keywords: Prison staff; counselling; Competence development, learning organization

A23

[23]

WHATSAPP FOR EDUCATION

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We have been using a Pixel 2XL phone to provide timely follow-up and mentoring to high school students of the Tutoring and Integral Wellness classes. Four tutors coordinate around 100 students each, through WhatsApp. This application is very supportive to be in contact with our students and parents. With WhatsApp the room becomes a virtual space without limits. It helps us to provide better follow-up to our students in order to support them to achieve their academic success and comprehensive training. Although supporting students through a mobile application may seem trivial, we have found that this action promotes a greater sense of belonging to the institution and its studies. When there's figure that provides what researchers call “supportive accountability” in English (Gottfredson and Gottfredson 2010), disminuye the likelihood that young people feel “alone” or confused about what are the next steps, preventing them from giving up school. In the satisfaction survey that was applied to the 295 students, at the end of the semester August-December 2018, on “the interaction with the tutor and the advice received during the learning and mentoring process”, on a scale likert from 1 to 10 where (1 is unsatisfactory and 10 very satisfactory), Grades of 9.76 were obtained with a standard deviation of 0.68. In the closing of the August-December 2017 semester we had a retention percentage of 88%, while for the closing August-December 2018 100% retention was achieved, which affirms that the fact of timely and timely follow-up of the concerns and student needs increase adherence to the institution.

Keywords: Mentoring, Whatsapp, Virtual Space, Academic Success

TOWARDS AN UNDERSTANDING OF STEM ROLE: LITERARY REVIEW OF HABITS OF MIND

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ABSTRACT

There is an international needs to increase the role of students at STEM. Furthermore, there is an international concern about gender differences in critical thinking, creative thinking, and self-regulation in STEM. It recognizes the role that students are used to thinking, and learning responses to, STEM acts in their roles and goals in STEM education. However, there is a low understanding of what constitutes "participation" in STEM education. In this article, we adopt the definition of participation in educational-based habits of mind that are influenced by critical thinking, creative thinking and self-regulation. We review a sample of students' purposive responses and the literature on habits of mind to produce views related to students' STEM roles. This study focuses on findings related to gender and offers limited research abstraction about educational involvement announced by habits of mind model. This study explains that problem solving, self-efficacy, and the value of assignments are important for STEM roles, performance, field selection, and career aspirations. Target understanding is related to high effort and motivation in STEM, while authority, relationships, and habits of mind can enhance the role and end results of STEM. In addition, girls have a lower concept of problem solving in STEM, less chance of having motivation and use values, and are more dominant in associating unpreparedness with low ability. Finally, negative responses to STEM can occur early and persist throughout college. This aspect needs to be understood and explicitly addressed as part of a successful strategy to enhance the role of STEM education, and to solve the problem of gender equality that affects STEM.

Keywords: STEM, Role, Habits of Mind, gender

B2

[25]

**PROGRESSIVE-GUIDED INQUIRY IN CHEMISTRY:
EFFECTS ON STUDENTS' SELF-EFFICACY**

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ABSTRACT

This study investigated the effects of progressive-guided inquiry on students' self-efficacy in Chemistry. The study utilized a quasi-experimental pretest-posttest research design with two heterogeneous intact classes. Seventy-four (74) Grade 8 students from two sections in a laboratory school in Quezon City, Philippines participated in the study. Each class was randomly assigned to a teaching approach in Chemistry. The experimental group was exposed to the progressive-guided inquiry (PGI) while the conventional group was exposed to conventional teaching approach (CTA). The researcher taught both the PGI and CTA groups. To assess students' self-efficacy, High School Chemistry Self-Efficacy Scale (HSCSES) was used as pretest and posttest. Subjecting to independent samples t-test, the mean pretest ratings were used to establish the two group's initial comparability, whereas the mean posttest ratings were determined to determine the effectiveness of PGI. The statistical analyses showed that PGI was effective in enhancing self-efficacy for chemistry laboratory component. The results of this study suggest that to be able to improve self-efficacy, students must be exposed to the progressive guided inquiry. It is recommended that PGI, as a model of teaching, be used in teaching Chemistry to enhance self-efficacy.

Keywords: chemistry self-efficacy, science inquiry

B3

[26]

PEER LED DEBRIEFING TO ENHANCE CPR PERFORMANCE IN SIMULATION-BASED RESUSCITATION TRAINING: A SYSTEMATIC REVIEW

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Background: The effectiveness of the involvement of peers in debriefing to enhance performance in simulation-based resuscitation training has not been well established. Purpose: The aim of this systematic review was to synthesize the latest knowledge on the use of peer led debriefing in simulation-based resuscitation training. The research question is “Is peer led debriefing effective by comparing with instructor led debriefing on CPR performance enhancement in simulation-based resuscitation training?” Methodology: Nine databases were searched for articles written in English from January 2004 to June 2019 that evaluated peer led debriefing to improve the performance of cardiopulmonary resuscitation during training. Results: A total of 6815 articles were identified through initial searching. There were 6701 articles after duplicates removed. In total 6687 ineligible articles were excluded after reviewing the title and abstract. Among the remaining 14 articles assessed, five studies with a total of 873 participants were included. It showed that mixed results regarding the effectiveness of peer led debriefing on CPR performance comparing to instructor led debriefing in resuscitation training among the limited studies. The studies showed a marked heterogeneity in debriefing characteristics. Also, the methodological issues in previous studies may threaten the validity of the findings. Conclusion: It is concluded that future research with rigorous design to examine the contribution of peer led debriefing in resuscitation training is required.

Keywords: Cardiopulmonary resuscitation, CPR, basic life support, training, simulation

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[27]

**DESIGNING FOR LEARNING IN THE 21ST CENTURY: USING THE DESIGN
THINKING METHOD FOR ENGAGING STUDENTS AS PARTNERS IN
TEACHING AND LEARNING**

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ABSTRACT

The objective of this paper aims to demonstrate how the Design Thinking method which is typically positioned for commercial use can also be helpful for instructors when designing for students to learn. It presents a case study of how the method is embedded in student engagement concepts which challenges the notion of students as mere consumer of knowledge and repositioning them as active partners and agents of change in the teaching and learning process. The instructor proposed an augmented reality app for teaching and learning in a tertiary Art & Design classroom. A student pedagogical consultant was engaged to implement the Design Thinking framework in order to involve students' feedback on the augmented reality app proposal. The design thinking framework involves empathizing with the users, defining problems, ideating for solutions, quick prototyping production and finally testing the products with student users. The student consultant sat in the class over a period of 13 weeks to empathize with student users, defining challenges and insights with the instructor, solutions were ideated and brainstormed together with the instructor, a quick prototyping of the app was created and then finally a small focus group interview was conducted to solicit feedback on the final app. The process involved a 2-tier student engagement concept - one that of a student as pedagogical consultant and observer for prototype production and the other of a focus group interview on the final product. The results showed how students felt about the app proposal, how they were involved in pinpointing various information that were lacking within the app and how they would envisage it for improvements.

Keywords: Design Thinking, Student engagement, 21st century learning and teaching

THE DEVELOP OF PROBLEM-BASED LEARNING WITH FLIPPED CLASSROOM FOR INDUSTRY 4.0

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ABSTRACT

Due to the rapidly changing market and the shortened product life cycle, the traditional manufacturing model is difficult to meet the ever-changing needs of customers. Industry 4.0 has become the dominant in today's automation technology. Due to the rapidly changing market and the shortened product life cycle, the traditional manufacturing model is difficult to meet the ever-changing needs of customers. Industry 4.0 has become the dominant in today's automation technology. However, the development of technical education often through classroom operation and demonstration, so student do not have much time to practice. Furthermore, the challenges of Industry 4.0 problems usually compose variants components such as manufacturing equipment, enterprise software, and various types of sensors, leading to the ability of students to solve problems in the face of employment. The objective of this paper is to enhance students' technology learning using flipped classrooms and problem-based approach. Therefore, this project intends to conduct research on the application of automation system skills through flipped classrooms. The flipped classrooms encourage students to learning and sharing the industry 4.0 cases from internet searching and related case studies. We also invite industry mentors to guide industry problems, and develop students' problem-solving ability through problem-based learning methods. Based on the learning evaluation, the result shows flipped classrooms could also apply on technical practice training. In addition, students show the enthusiasm in practical industry problem using problem-based learning approach. It is expected that the flipped classrooms and problem-based approach can achieve the goal of integrating industry and technical practice training.

Keywords: Industry 4.0, technical practice training, flipped classroom, Problem-based learning

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[29]

DESIGN AND IMPLEMENTATION OF UBIQUITOUS FRACTION APP FOR FRACTION LEARNING IN AUTHENTIC CONTEXTS

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ABSTRACT

An amount of research had identified some difficulties that were faced by students when they learned fractions which known as one of the essential parts in mathematics. On the other hand, designing mathematics learning in authentic contexts could beneficial to students, such as increase their motivation and collaboration. Thus, we develop a Ubiquitous App, namely Ubiquitous Fraction, to facilitate fraction learning in authentic contexts by providing useful features. This study was designed to investigate the relationship among three categories of learning variables, including quantity of learning, quality of learning, and learning achievement, and to identify sequences of interactions when students use Ubiquitous Fraction in authentic contexts. There were 27 five-grade students participated in this study. The data were analyzed using parametric and nonparametric tests, including pair t-test, correlation, lag sequential, and descriptive analysis. In summary, four important findings are highlighted in this study. First, the pair t-test result showed that there was a significant difference in students' acquisition of fraction knowledge before and after the learning process. Second, the importance of correlation analysis results indicated that students' learning achievement would more depend on their quality of learning rather than their quantity of tasks that had been solved by them. Third, results from sequential analysis indicated that students intended on doing the next steps after they finished the previous step in fraction learning with authentic contexts. Fourth, a questionnaire, which is Sustainable and Scalable Authentic Learning (SSAL), results indicated that most students agree that learning with Ubiquitous Fraction in authentic contexts could give a positive impact on the ability to collaborate with others. Finally, the limitations of this study also discussed.

Keywords: Authentic contexts, fraction learning, ubiquitous app

CONTENT AND LANGUAGE INTEGRATED LEARNING IN HIGHER EDUCATION: HOW AND WHY

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ABSTRACT

Current higher education institutions mostly develop lecturers with skills to meet the international competitive environment in the closely independent economics, politics, culture, and global society. The Content and Language Integrated Learning (CLIL) is a dual-focused educational approach in which an additional language is used for teaching and learning of both content and language. In order to be competitive in the international arena, Thailand's Ministry of Education is encouraging and recognizing as an effective teaching approach to the exposure of utilizing English language to teach the content subjects. Therefore, the main aims of this research were to study how to implement CLIL in higher education classroom and why this approach was success. The sample were two groups of fourth year students who enrolled English for Teacher Course in the first semester of 2019. The purposive sampling technique was used. There were two sets of research tools. The first one was two lesson plans on topic "Abstract Reading" and "Full Paper Reading" include materials design based on CLIL technique. The second set was the assessment tools for those lessons. The findings on "how" was shown the five steps of classroom activities design. The most important part was on vocabulary learning activities. Then "why", it was found that the student motivation was the most important. Moreover, the individual learning strategies were supporting their learning. In conclusion, the instructors had to aware of these factors before designing the classroom activities in order to be succeed in both content and language learning.

Keywords: Content and Language Integrated Learning, Higher Education Classroom Learning

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[31]

**INTERNATIONAL ENTREPRENEURSHIP: “GLOCAL” BUSINESS CREATION,
DEVELOPMENT AND SUSTAINABLE EMPLOYABILITY. A DUTCH – RUSSIAN
PERSPECTIVE**

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ABSTRACT

The present article links the demand from education to train students for more internationally competent professionals to the demand from companies for employees who are culturally sensitive and have knowledge, attitude to skills that fit into an international context through a “glocal” perspective. This applied research paper looks in-depth at the connection between education and the professional field and the extent to which the developed competencies and skills in the professional field match the issues that local companies face when going international where new business schools’ graduates can contribute significantly. The theme is urgent because the labor market, and therefore the regional labor market, is expected to be subject to fundamental changes from local to global in nature. The insights generated by this comprehensive comparative study at two academic international institutions in Arnhem, the Netherlands and Moscow, Russia can help bridge the gap between the international knowledge co-creation triangle professional field, education and research while enabling an in-depth exploration of which transferable international skills and behaviors need to be developed. Using a both a qualitative and a quantitative methodology is crucial on how to have all the stakeholders (students, entrepreneurs, researchers) working multidisciplinary where co-creation and added value is not only created, but also shared, disseminated in a sustainable, circular manner. The three folded impact and added value to the mentioned stakeholders, society and science is obvious and it is meant to contribute to a future-proof workforce for a flourishing economy in an international environment where top international talents stimulate the local economy.

Keywords: International Entrepreneurship, Knowledge Co-Creation, Transferable International Skills, Glocal, Sustainable Employability.

INNOVATION IN LEARNING RELATIONS AND FUNCTIONS THROUGH THE USE OF INTERACTIVE MULTIMEDIA

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ABSTRACT

In accordance with current technological developments, teachers are expected to be able to use technology-based media in learning, including by using interactive learning media. The purpose of this study is to improve the quality of learning relations and functions through the use of interactive learning media. This study is a quasi-experimental study, with a population of eighth grade students of SMP Negeri 4, Alalak, in Barito Kuala, South Kalimantan Indonesia. The sampling technique used was purposive random sampling. Data collection techniques through test and questionnaire techniques. Video recordings are used to observe the learning process. The research instrument consisted of a questionnaire and a test of learning outcomes. Data analysis techniques using descriptive and inferential statistics. The learning impact is seen based on pre test and post test scores. The results showed there were no significant differences between student learning outcomes in classes using interactive multimedia and classes using static media. Based on the pre-test and post-test scores, there is a significant difference between the value of n-gain classes using interactive multimedia and classes using static media. The n-gain value of the interactive multimedia class is at medium qualification and the n-gain value of the static media class is at low qualification. Students show a positive perception of the use of interactive multimedia. Students are more active and more interested in learning mathematics using interactive media. Based on the results of this study, interactive multimedia can be used to improve the quality of learning relations and functions.

Keywords: Interactive multimedia, static media, mathematics learning

B10

[33]

**MOTIVATIONAL ANTECEDENTS THAT INFLUENCED A HIGHER EDUCATION
INSTITUTION IN THE PHILIPPINES TO ADOPT ENTERPRISE ARCHITECTURE**

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ABSTRACT

Technology is a recent prodigy in people's everyday life that has taken off. It infiltrated almost every aspect of one's lives, changing how people work, how people learn and how people perceive things. Academic Institutions, just like other organizations, have deeply modified its strategies to integrate technology into the institutional vision and corporate strategy that has never been greater. Information and Communications Technology (ICT) continues to be recognized as a major factor in organizations realizing its aims and objectives. Consequently, ICT has an important role in the mobilization of an academic institution's strategy to support the delivery of operational, strategic or transformational objectives. This ICT strategy should align the institution with the radical changes of the ICT world through the use of Enterprise Architecture (EA). Hence, EA's objective is to optimize the islands of legacy processes to be integrated that is receptive to change and supportive of the delivery of the strategy. In this paper, the focus is to explore the motivational antecedents during the adoption of EA in a Higher Education Institution in the Philippines for its ICT strategic plan. The 7 antecedents (Viewpoint, Stakeholders, Human Traits, Vision, Revolutionary Innovation, Techniques and Change Components) provide understanding into EA adoption and the antecedents that influences the process of EA adoption.

Keywords: Enterprise Architecture, Adoption, Antecedents, Higher Education Institution

IVAN ILLICH: CONTRIBUTIONS TO EDUCATION IN A DIGITAL SOCIETY

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ABSTRACT

The educational institution (School), considered a codified and socially accepted way of responding to social needs, in the form of massive schooling legitimized is in crisis. The School is a constructed reality, it is not inevitable and presents a specific culture translated into ways of thinking and acting that are specific and shared by many people - the school culture. Ivan Illich was a radically critical figure of traditional schooling. There are several reasons why his proposals were perhaps too quickly disregarded. In this essay, based on bibliographical research, the aim is to contribute to a current (re)reading of Illich seeking to answer the following question: what is the relevance of Illich's proposal for a successful education in an increasingly digitalized society? On the one hand, it can be concluded that its proposal to replace strict schooling with (self)training networks in an increasingly digitized and internet-connected society is likely to offer potential benefits and deserves at least to be analyzed in depth. On the other hand, provocative thinkers who allow us to leave the ideologically and socially delimited system have the merit of helping to provide tools that allow us to better understand the present and, consequently, the options for the future. Ivan Illich is one of these thinkers.

Keywords: Illich, deschooling, education, socio-educational intervention, digital society

B12

[35]

MUST THE TRADITIONAL KEY COMPETENCES BE EXTENDED?

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Soft skills or better key competences are getting more essential in the normal working life. In Germany nearly all universities have implemented key competences in their study courses. Human factors, skills, qualifications and competences are defined, and the difference are shown. The traditional portfolio of the different key competences in Europe and of the OECD are explained. A practical portfolio of key competences at the Bochum University of Applied Sciences is described. It is divided into three main categories and 21 subcategories. It was very successful. Parallel a >learning id card< was designed for a better orientation. A test was designed for the monitoring for the selection of the different courses and to monitor the progress of the competences. Later it was extended with an additional category founding a startup. The lectures of this category were not honored by many students. Today cyber physical systems will be implemented in the normal working life. The implementation of a new section in the portfolio -computing and data- is discussed with the pro and con. A new content will be defined.

Keywords: Key competences, soft skills, portfolio

MATHEMATICAL PROCESSES AS A WORK AXIS IN CHILDREN'S MATHEMATICAL EDUCATION

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ABSTRACT

Designing and implementing the necessary and relevant didactic activities so that children can build mathematical knowledge and, therefore, their mathematical thinking in the child stage, constitutes a profound challenge in the teaching practice. This lies in the fact that any significant pedagogical intervention requires intentional teaching that supports the child's prior knowledge and leads to new learning experiences that favor the acquisition of mathematical concepts in a progressive manner. This work shows the design and implementation of a didactic sequence for preschoolers that promotes mathematical competencies through an approach focused on the development of mathematical processes. The role played by these processes in the construction of mathematics learning in the childhood is discussed through games of chance that encourage the use of numerical reasoning and activate the logical thinking of children ages 4 and 5. In particular, the processes of problem solving, reasoning, communication, cross-cutting concepts and representation, are valued according to the handling of the data that children obtain in each activity. The conceptual and methodological body of this experience was based on the Principles and Standards for School Mathematics (NCTM, 2000) and the guidelines of the curriculum of early childhood education in Mexico. In summary, we consider that the mathematical curriculum should emphasize not only the basic ideas and procedures, but also the verbal expression of mathematical thought as a vehicle to express the mathematical processes mentioned above. Considering the reflection of teaching practice as guiding thread of the instituted action-research process, we confirm the importance of the game as the basis of the mathematical instruction of the children and a key activity to develop their seminal conceptual structure in mathematics.

Keywords: Mathematical thinking, preschoolers, mathematics education, research-action, innovative practice, reflection of teaching practice.

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[37]

TEACHER LEADERSHIP AND LEARNING TO LEARNING: DEEPER LEARNING OF STUDENTS AS AN PROMISING OUT-COME

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ABSTRACT

Background. Teachers leaders are the co-constructors of deeper learning. Where teachers are at the forefront of co-constructing the learning change with direction of learning to learn through deeper learning, the learning results are empowering for teachers and learners. Where teachers are the recipients of top-down change, the passive tools in learners' learning, then the learning outcomes are far less promising. What does this look like at the classroom level?

Aim is to describe and explore the conceptual relationship between the teacher leadership and learning to learn with the focus on deeper learning.

Methods: concept analysis is used in this study as a methodology.

Findings. Teachers' immersion in the subjects they teach means that they may bring more expertise and passion to teaching and learning of learners. Their nonhierarchical relationships with learners in a classroom can give learners an edge in shaping learning culture from instruction-based learning to learning to learn, and from superficial learning to deeper learning. Deeper learning offers learners opportunities to master important concepts and facts, and to think critically, tackle sophisticated problems, and effectively communicate what they know and can do. Deeper learning is rooted in preparing learners to think, solve problems, develop agency and confidence.

Conclusion. Teacher brings a unique combination of knowledge, skills, experiences, passions, talents to teaching / learning in a classroom. When teacher is able to exchange expertise, challenge to meet learning expectations of learners, and support them through learning to learn and deeper learning, they better serve learners while also being a tremendous resource for improving the quality of learners' learning to learn and deeper learning. Then teachers become leaders in a classroom.

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Keywords: Classroom, co-creation, concept analysis, learning to learn, teacher leadership.

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CO-CREATION OF LEARNING BETWEEN THE TEACHER AND LEARNERS IN A CLASSROOM: A CONCEPT ANALYSIS

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ABSTRACT

Background. Traditional education system is a one-way process where the teachers provide their classroom delivery without the involvement of the learners in the teaching and learning processes. This system had many drawbacks such as less involvement of learners in the learning process, low collaborative effort in the teaching learning process, difficult learning environment, very less progress in learner development etc.

Aim of the study is to explore the key characteristics, antecedents and descendants, contexts and typical cases of co-creation as an effective learning interactions between the teacher and learners in a classroom.

Methods: concept analysis is used in this study as a methodology.

Findings. Co-creation of learning is a learner centric approach where the learners are engaged in teaching and learning. Learners collaborate with teachers to enhance their learning experience. Thus the classroom delivery is a mutual process where teachers are facilitators for learners. Learners are encouraged to express their ideas and knowledge regarding subject matters and learn through collaboration with teachers.

Conclusion. Value of co-creation is the process of learners' feedback, opinions, and other resources such as their intellectual capabilities and personalities, integrated alongside school resources, which can offer mutual value to learners, teachers and the school. Co-creation essentially involves three steps: obtaining contributions by customers, selecting the best of these contributions, and incorporating these selected contributions into teaching and learning. The third step is the most complicated for teachers as it needs to influence teacher's and learner's self-awareness, autonomy, trust, reflection and decision-making.

Acknowledgement. The research is supported by Research Council of Lithuania, Project No. P-MIP-19-21, KOMOKO.

Keywords: Classroom, co-creation, concept analysis, learner, learning, school.

B16

[39]

**ENHANCING RESILIENCE AND EMOTIONAL INTELLIGENCE SKILLS
THROUGH A TUTORING SYSTEM: CASE STUDY FROM TECNOLÓGICO DE
MONTERREY'S HIGH SCHOOL AFTER 2017'S MEXICO CITY'S EARTHQUAKE**

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ABSTRACT

September 19th of 2017 was a harsh day for Mexico. An earthquake of 7.1 points shook up Mexico City. Tecnológico de Monterrey's High School was severely damaged, not only in terms of infrastructure, the community suffered deeply and the emotional impact was immediate. PrepaTec's Tutoring System was key for students to overcome the short and long-term psychological consequences of this event.

This paper seeks to answer the question: "How traumatic events can be an opportunity to design academic experiences for developing resilience and emotional intelligence in high school students?" Under the premise resilience is a cornerstone to cope with social problems and natural disasters, any adversity can be an educational opportunity.

The methodology for this case-study was, first, 400 students responded the Intercultural Effectiveness Scale (IES) -a survey that measures multicultural competencies-. One crucial result was that 66% of students ranked low in hardiness. It means students have trouble when they want to manage their thoughts and emotions in diverse situations or learn from failures and setbacks. Second, the same students' sample completed the Character Strengths Survey of the University of Pennsylvania. The outcomes yielded 30% of the students' least developed character strength was Spirituality and Faith. The research infers in order to develop hardiness or resilience in young people, academic experiences should help students to find a life purpose. These findings led to the design of experience-based projects to test student's resilience. Finally, the results were evaluated through student's meta-cognition reflections.

PrepaTec's Integral Tutoring System seeks to develop and strengthen student's socio-emotional skills and shape change agents who will build societies that are more resilient.

Keywords: Resilience, High School, Adversity, Tutoring, Emotional Intelligence, Innovative Practice.

**ENHANCING SIGNIFICANT LEARNING FOR DIFFICULT SCIENCE TOPICS
AND IMPROVING MOTIVATIONAL LEVEL USING GAMIFICATION
TECHNIQUES IN HIGH SCHOOL BIOLOGY COURSES**

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ABSTRACT

In the last decade, there has been an uprising importance in the learning and teaching of biology, specially through the increase of biology related research. However, learning biology is perceived difficult by students, particularly on topics like molecular biology, endocrines and cellular growth. The use of different learning techniques throughout the last years, has proven the effectiveness of gamification for reinforcing the students' involvement in scientific activities. The objective of this study is to enhance the significant learning of difficult topics according student's appreciation and their motivation towards the subject in a high school biology course using gamification. A gamification activity focusing in one of those topics, molecular biology, was designed and implemented into the course. A post-test only control group design was employed with 123 students. There were two experimental groups (62 students) and two control groups (61 students). After performing the activity all the groups had a knowledge test with molecular biology questions. Additionally, the experimental groups answered a numerical Likert scale questionnaire on their motivation for learning the topic and appreciation of the activity. In the knowledge test, the experimental groups obtained 84.516 as average in the molecular biology section while the control groups had 55.191. There was a significant statistical difference between the groups with a $P < 0.05$. In the questionnaire, 83.87% of the students strongly agreed that the activity was appropriate and dynamic and 70.96% that it was helpful in the learning of molecular biology. This proves that using gamification activities properly in high school biology courses is a good approach for enhancing the comprehension of difficult topics for students and improving their interest on them.

Keywords: Gamification, significant learning, motivation, biology, high school.

B18

[41]

EDUCATE CHILDREN WITH RELIGION

Sabhan

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At present there are many problems faced by families, teachers, the community, even the government, such as juvenile delinquency, narcotics, promiscuity, and attacking people. Therefore, a solution needs to be found so that children become human beings that are beneficial to the family, nation, and country. Children are a very valuable gift from God. We as the father or mother must fix it. We are also obliged to meet the physical and spiritual needs, as well as provide education for the provisions received. Our children are educated to be intelligent and noble characters. The purpose of choosing this paper is to allow all parents to say that children are the successors and understand us in the future. Writing a paper using the method of documentation, namely by examining various sources or literature relating to the stated theme. Many ways to overcome the child's problem. How to educate children above with religion. For example with Islam. Islam with a prophet named Muhammad has a way of educating children so that they are noble, intelligent, and smart. Here are some examples of the way the Prophet Muhammad educated girls and boys in daily life, namely: (1) not extracting children from playing, (2) discussing religious knowledge, (3) teaching worship, (4) trying to be devoted to fathers and mothers, (5) are fair to girls and boys, (6) educate children with noble character, (7) do not provide children with permission, and (8) give gifts. With these 8 ways of educating, children will become the pride of their family, nation, and country. Children will be ready to become the successor to the father or can be for a better future.

Keywords: Educate, children, Islam

B19

[42]

ACCEPTANCE OF COURSE MANAGEMENT SYSTEM INTEGRATION AND ITS
EFFECTS ON GRADUATE STUDENTS' LEARNING

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ABSTRACT

The main concern of this study is the assessment of the acceptance of course management system integration and its effects on graduate students' learning. This study made use of descriptive correlational method of research that utilized standard questionnaire as a primary data-gathering tool, substantiated by extensive documentary analysis. The respondents of the study were 225 graduate students and 15 professors. The results were processed using the Statistical Packages for Social Sciences (SPSS) and the data were presented using appropriate tables and texts. The results were analyzed and interpreted using statistical tests such regression analysis in determining the acceptance of course management system integration and its effect on graduate students' learning. Using the aforementioned procedures, the findings of the study revealed that the graduate school department is more or less ready to face the challenges of industrial revolution 4.0 as manifested by the utilization of cybergogy and great extent of acceptance of the course management system. The academic learning profile of students of graduate school department exemplifies quality learning because of their best efforts to perform well in their academic subjects. The null hypothesis, which states that acceptance of course management system integration does not significantly affect graduate students' learning was rejected. The problems presented if given immediate attention could lead to a lot of opportunities for innovative teaching and learning. The implications drawn from the findings of the study are important insights that can be considered in further upgrading the quality in the graduate school department.

Keywords: Course Management, Innovative Teaching, Graduate Students, Academic Subjects, Students' Learning, Acceptance of Course Management

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[43]

THE IMPLEMENTATION OF SOCIETY 5.0 IN MATHEMATICS EDUCATION

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ABSTRACT

Education and learning in schools cannot be separated from philosophy, society, history, anthropology, culture, and technology. Mathematics education is also not possible to escape from the demands of society. Society in the 21st Century faced problems far different from those of previous centuries. The 21st Century is often labeled with the terms Disruption and Era of the Industrial Revolution 4.0. Humans living in the 21st Century must have the character and skills needed to face this era. The skills required include life and career skills, learning and innovation skills, and information media and technology skills. However, if education only focuses on the development of these skills, it can result in the formation of a society that only focuses on technology-based skills, but ignores human dignity. The problem is how to implement Society 5.0 in education, especially in mathematics education. The result, Japan offers that Society 5.0 is a concept of social order that is community-oriented and technology-based. For this concept to be implemented in people's lives, it must first be implemented in education, especially in mathematics education.

Keywords: Society 5.0 in education, mathematics education, human dignity

GAMIFICATION: WHEN PEDAGOGICAL INNOVATIONS BENEFIT INTERNSHIP SEEKERS

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ABSTRACT

Results in higher education and literature have shown that gamification favors intrinsic motivation, cognitive process and the social aspects of learning by engaging students with their courses. We present the use of a Leaderboard, integrating the used award system, built with eleven nicknames, six avatars and seven types of badges. The course Growth-related Competencies aims to prepare students for the search of their internships through tools that allow them to develop professional competencies. Due to recruitment process preparation is usually exhaustive, this study points to examine whether this gamification system engaged students with course content. The impact in their course performance was point of study as a result of the improvement done to this gamification design while students review all the recruitment process, built their curriculum vitae, have a mock interview and familiarize with job boards, mainly. We found, through an exploratory qualitative research, that students chose an avatar or nickname (optional for students) according to something that is meaningful for them such as a role model they have or a character with whom they share characteristics in their own opinion. We also learned they found their motivation to participate in gamification as an opportunity to get recognition from teacher and classmates, as well as reaffirmation of their performance while developing their professional competencies and get prepare to search for their internships. Personal satisfaction, extra points and rewarding were also reasons for them to participate as members of the Leaderboard of the course.

Keywords: Gamification, Leaderboard, Professional Competencies, Internship, Educational Innovation, Higher Education

VIRTUAL REALITY BRIDGING THE GAP BETWEEN WORK EXPERIENCE REQUIRED AND UNIVERSITY QUALIFICATIONS IN SOUTH AFRICA

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ABSTRACT

Pervasive technologies such as Virtual Reality are making our working life and education to become more digital, complex and interconnected. The job landscape has already been disrupted by the Fourth Industrial Revolution (FIR). The way we work and learn is set to be transformed as the jobs people have and required skills necessary for success are some of the areas most impacted by technological advances such as the FIR and this is particularly concerning for the South African context. New ways of education are required in order to allow future employees to flexibly react to the future world of work and meet the demands of such a digitised working environment. The aim of the research was to identify the present forces, trends and drivers of change that impact the future of education and the future of work. The Six Pillars of Futures Studies approach to research by Inayatullah was applied throughout the study to address the research question: What are the possible futures for tertiary education and jobs in South Africa; and how can the tertiary education providers and the corporate world, through the use of Virtual Reality, explore the potential and extent to which Virtual Reality can be used in bridging a gap between work experience required and university qualifications in South Africa towards the future? The study developed four different future scenarios and the most favourable scenario was used to formulate the recommended vision, "Future Vision of Education and Work in South Africa towards 2030" which envisages an education system that broadens access to opportunities and provides the skills and competences that people need to thrive in a new sustainable economy.

Keywords: Virtual Reality, Future of Education, Future workforce, Skills Transformation, Fourth Industrial Revolution, Futures Studies

DEVELOPMENTAL DIDACTICS FOR PROFESSIONAL SKILLS AND UNIVERSITY EDUCATION

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ABSTRACT

The aim of this article is to determine the effect of the socio-formative developmental didactics for the acquisition of professional skills and university education in the context of their environment. From the perspective of complexity, traditional pedagogical-didactic obstacles of the teaching-educational process were overcome. The constructivist approach was applied with the following methods: problem-based, problematic and cooperative learning to a sample of 122 undergraduate students distributed in 3 sample groups. The quality of the model for the proposed process of learning-teaching allowed the achievement of significant knowledge from the evaluation of knowledge, procedures, and attitudes within the framework of the line of investigation of the disciplinary field of his professional career. The research showed that by applying the didactics of socio-educational development, general, professional and significant specialized competencies were fostered. This process took the form of a continuous evaluation of a participative and non-directive nature of the subject, with a significant achievement of a significant average of more than 17 of the students' grades involved in the research; therefore, the approach based on the socio-formative developmental didactics in the curriculum by competencies is highly significant in the three samples investigated.

Keywords: Socio-Formative, Professional Skills, Pedagogical-Didactic Method, Education

**THE IMPLEMENTATION MULTILITERATION READING CAREFULLY
METHOD TO INCREASE READING COMPREHENSION STUDENTS ABILITY IN
CLASS V ELEMENTARY SCHOOL**

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ABSTRACT

This research was motivated by the problem of reading comprehension in the Elementary School class Five at SDN Bojongbubu, West Java, Indonesia. Based on observation have been found the problem in the process learning especially in learning reading comprehension, there are still many students who have not been able to understand the contents of the reading as a whole, there are still many students who have been to retell the contents, learning is still conventional, and learning reading comprehension is not systematic, not implemented pre-reading stage, reading stage, and post-reading stage. Therefore the researchers use multiliteration reading carefully method as an alternative in learning reading comprehension. As the formulation of the problem is how the learning process of reading comprehension the students of class V at Elementary school with using multiliteration reading carefully method and how to improve the reading comprehension ability with using multiliteration reading carefully method. The aim of this study is to describe the process of learning reading comprehension for the students in the elementary school class with using multiliteration reading carefully method. The research is use Classroom Action Research (CAR) method using Kemmis and McTaggart design. The study was conducted in two cycles. The instruments used include lesson plan, assements guide, observation sheets, field notes, documentation, and work sheet. To analyze data the researcher using qualitative analysis and quantitative analysis. In the implementation of learning using multiliteration reading carefully method consist of three stage, there are pre-reading, reading, and post-reading. Multiliteration reading carefully method can improve students reading comprehension.

Keywords: Multiliteration reading carefully method, Reading Comprehension, Reading Ability

DEVELOPMENT OF PHYSICAL MODULE OF HARMONIC VIBRATION MATERIAL WITH AUTHENTIC LEARNING TO TRAIN THE PROBLEM SOLVING

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ABSTRACT

The unavailability of physics module that contains the link between the material of physics with authentic learning and the lack of student problem solving skills behind the conduct of this research. The purpose of this research is to describe the feasibility of physics material module dynamics module loaded with authentic learning to be used in learning activities, with the specific purpose of describing: (1) module validity, (2) module practicality, (3) module effectiveness, and (4) achievement solving student problems. This research was a development research using ADDIE (analyze, design, development, implement, evaluate) development model. The subjects of the experiment were students of class X one of the state high schools in the city of Banjarmasin as many as 30 peoples. Data obtained through validation sheet, sheet of implementation of the learning plan, test for learning result and problem solving observation sheet. The results showed that: (1) module validation result consisting of six aspect, that is module format aspect, module contents, presentation, benefit, language, and integration got the average score 3.36 with valid category, (2) practicality highly categorized modules with a mean score of 3.66, (3) modular moderate module effectiveness with N-gain score of 0.53, and (4) achievement of good problem solving abilities with a mean score of 3.30. The conclusion of this research that the physics module of vibration material harmonic charged authentic learning to train problem-solving abilities worthy of use in learning.

Keywords: Module, harmonic vibration, authentic learning, problem solving

DEVELOPMENT OF PHYSICAL LEARNING MATERIALS USING GUIDED INQUIRY LEARNING MODELS TO TRAIN SCIENCE PROCESS SKILLS

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ABSTRACT

The unavailability of physics learning materials based on scientific approaches has an impact on the lack of students' science process skills. The purpose of this study is to describe the feasibility of physics learning materials in harmonious vibration using guided inquiry learning models, to practice science process skills. The specific purpose of this study is to describe the validity, practicality, effectiveness of the learning material developed, and the achievement of students' science process skills. This research is a development research that uses ADDIE model (analyze, design, development, implementation, evaluation). Teaching material developed consists of lesson plans, teaching materials, worksheets, and learning outcome test. The test subjects were 36 students in class X-1 in one of the state high schools in the city of Banjarmasin. Data obtained through validation sheets, lesson plans implementation sheets, learning outcome tests, and science process skill observation sheets. Data were analyzed descriptively qualitative and quantitative. The results of the study showed that 1) the validity of lesson plans categorized as valid, the validity of teaching materials categorized as valid, the validity of student worksheet categorized as valid, and the validity of learning outcomes test categorized as very valid; 2) the practicality of learning materials based on the implementation of lesson plans categorized as very practical; 3) the effectiveness of learning materials is categorized high with an N-gain score of 0.77; 4) the achievement of categorized science process skills is very good with an average score of 3.35. It was concluded that physics learning materials using harmonious vibration materials using guided inquiry learning models to practice science process skills are appropriate for use in learning.

Keywords: Learning materials, guided inquiry model, scientific process skills

SCIENCE LEARNING AND COMMUNICATIVE CHARACTERS

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ABSTRACT

Science Learning learns in nature through observation, experimentation, and the conclusion of theory through experience. Communicative character is an attitude and action towards others through polite communication so as to create good cooperation. This character is important in helping learners to facilitate the learning process. The study aims to (1) describe the students ' communicative characters in science learning and (2) describing the science learning process with communicative characters. This research is a quasi-experimental research with time-series design. The instruments used are the observation sheets of students ' communicative characters and documentation. Data is analyzed descriptively. The results showed that (1) the students ' communicative characters were on the criteria visible become a habit, (2) character-charged IPA learning can be done by designing group activities to Facilitate learners to raise questions and opinions on issues in group discussions.

Keywords: Description, communicative characters, science learning

INNOVATIVE USE OF CULTURE IN LEARNING ENGLISH AS SECOND LANGUAGE

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ABSTRACT

Language is a social institute. It is the carrier of culture and culture is the source of language. It is not possible to separate language and culture from each other as each one of them loses its importance without the other. Thus language teaching is always culture teaching. Many times while teaching second language or its literature, influence of only target culture on language and literature is studied. But the learners and facilitators of second language carry the impact of their own culture towards the process of second language learning. The context in which the language learning takes place also matters. Therefore while teaching English as second language, especially in the multicultural countries like India, the multicultural environment, the culture of the language learner and the culture of the target language are necessary to be thought of. Culture finds expression in language thus language learners need to be taught the culturally appropriate ways of expression and communication. The cultural similarities and differences among mother- tongue and the target language influence the time, style and the course of learning a new language other than mother- tongue. Thus use of culturally relevant ways and tools of teaching second language are important. This paper focuses on use of cultural diversity as an asset in second language classroom. It analyzes cultural activity based learning with the tools like culturally responsible textbooks and audio-visual aids. It ultimately comments on how culturally relevant tools will boost second language learning.

Keywords: Second language, culturally responsible tools, multicultural classroom, intangible culture, teaching-learning process

BEYOND CREATIVITY: TOWARDS NEW AND RENEWABLE ENERGY IN STEM EDUCATION

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ABSTRACT

This article explores the idea of new and renewable energy as an energy crisis solution that can offer a new opening towards innovative projects. However, this idea cannot be realized without creativity in STEM education research, approaches, and learning activities. This article first of all dismantles the problem of energy in the surrounding wetland environment, offers new and renewable energy solutions to solve the problem. Therefore, it needs to be realized from the ubiquitous collection of STEM education projects known as "creativity". Then, an overview of the main project construction of the energy crisis solution is provided, along with a more specific review of how the STEM analysis framing ideas make it possible to solve sharper problems in the context college. Mixed research models with embedded experimental methods are used as research methods. Through design and building projects, the results of this study show the level of creativity dimensions that can reframe learning activities in STEM as project construction that refers to press, process, person, and product dimensions. Research conclusions related to implications related to STEM learning activities are discussed. Future research on STEM education on different dimensions and topics needs to be studied as sustainable development.

Keywords: Creativity, STEM, New and Renewable Energy, Wetland environment

ON UNDERSTANDING AND REQUIRED ACTIONS IN TASKS OF WRITTEN EXAMINATIONS

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ABSTRACT

The study deals with the conscious use of the medium "language" in the design of vocational teaching/learning processes in order to make the examination and assessment process of learning outcomes more transparent and appropriate. For this purpose, the study focuses on the use of tasks in written examinations in vocational teaching and in particular on the operators used in these. The question will be investigated as to whether the teaching of operator meanings and the actions required with them leads to an improvement in the results of processing and the understanding of tasks among learners. The theoretical approach is based on the knowledge and action theory of AEBLI (1980; 1981), on the basis of which an instrument is developed for verifying the understanding of tasks. To answer the question, a quasi-experimental intervention study in pretest posttest design with one experimental and control group (n=42) is carried out. For this purpose, the instrument is used to verify the understanding of the tasks in the vocation "educator" at a vocational school. For the development of the treatment, selected operators are conceptually defined, which are frequently used in written final examinations of this profession.

The experimental results show that instruction on operators has a significant positive effect on the results of the tasks performed by the learners in the experimental group. This is also obvious for an improved understanding of the learner's tasks, since here too there are significant positive changes in individual segments of understanding. Finally, conclusions are derived for the development of a mutual understanding of the tasks of teachers and learners as well as for the pedagogical-practical activity of vocational teaching.

Keywords: Operator, academic-pedagogical special language, speech comprehension, didactic order

THE ASSOCIATION OF THE RECENT PISA LITERACY PERFORMANCE AND EARLY CHILDHOOD PARTICIPATION 11 YEARS PRIOR

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ABSTRACT

Literacy skill is the foundation for the most academic learning outcome. This paper aims to analyze the association between country's literacy performance measured by PISA reading score in 2018 and the early childhood education participation in 2007, roughly when these PISA participating students were in preprimary schools. It answers the following research questions: "What is the association between PISA reading performance in 2018 and early childhood education participation in 2007 and how would the relationship change if the effect for education spending, rate of undernourishment, and teacher-student ratio in early childhood education in 2007 is held constant?" The methodology uses in the paper is through the multiple regression analysis between the outcome variable of the 2018 PISA reading score; and predictor variables of 2007 early childhood participation rate, educational spending, rate of undernourishment, student to teacher ratio. The dataset includes 61 countries that participated in the PISA 2018 assessment. The result of the regression shows that there is a statistically significant positive strong association between early childhood enrolment rate 11 years before the assessment and the literacy outcome. We see that even if we adjust our model to control for education spending, rate of undernourishment, and student-teacher ratio, the significance of the association persists. Hence, among countries with a similar student-teacher ratio in preprimary schools and percent of GDP allocated into education, high early childhood enrollment rate and low rate of undernourishment significantly predict higher PISA reading scores 11 years later. From the indication found in this preliminary study, we recommend further investigation to answer the potential causal relationship that could enlighten the future direction of education policy.

Keywords: Early Childhood, Preprimary Education, Literacy, PISA Score, PISA 2018

ACADEMIC PERFORMANCE PREDICTION THROUGH NEURAL NETWORKS

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ABSTRACT

The prediction of student academic performance is essential for educational institutions because strategic programs can be planned to improve or maintain student performance during their periods of study in institutions. In this research, we propose a model based on artificial intelligence to predict the academic performance of students in order to know a priori their performance during a period of academic study. The academic performance in this study is measured by the changeable and non-changeable variables of the primary level students. This research is of the non-experimental transversal type because inferences about the relationships between variables are made without direct influence and these relationships are observed as they have occurred in their context. The research design consists of four stages: Study and Evaluation, Data Collection and Processing, Development of the Neuronal Network, and Validation of the Model. We present a predictive model based on artificial neural networks, using hyperbolic tangent as an activation function and Resilient Backpropagation as a learning algorithm. The result of this research shows that the neuronal model has 84% accuracy.

Keywords: Neural Network, Academic Performance, Education

VALIDATING THE IMPACT OF FIRST FRAMEWORK FOR TEACHERS PROFESSIONAL DEVELOPMENT

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ABSTRACT

Teachers' Professional Development has always been an area of growing interest and constant research. Several educational researchers and authors have thoroughly explored the Teachers' professional development domain with the efforts to develop and train teachers on how to understand, experience, practice and have a sustainable impact on learners. This paper attempts to explore the impact of FIRST Framework on Teacher Professional Development, teachers experience as learners and teachers motivation to transfer their learning into performance in the classrooms using case study methodology. FRIST Framework is designed on the basis of educational psychology, neuroscience, and cognitive psychology, to create a framework that promotes Active Deep Learning and inspires a positive transformation in mindset and behaviors.

Major findings: (1) Teachers reported that FIRST framework is comprehensive and compiles various educational theories, models and strategies, (2) Teachers were able to apply the principles and strategies in their classrooms directly and immediately after the professional program days were over, (3) Student's feedback and overall experience were enhanced.

Keywords: Facilitation; Student Experience; Teachers Professional Development, 21st Century Learning, Active Deep Learning, Active Deep Learner eXperience.

C5

[57]

ADAPTATION AND TESTING OF AN INSTRUMENT TO MEASURE ENERGY LITERACY IN MÉXICO

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ABSTRACT

We live in a continuous dependence to energy, and yet, there does not exist a clear sight about what we know and what we ignore about energy. Energy literacy is a broad term encompassing content knowledge as well as a citizenship understanding of energy that includes affective and behavioral aspects. In this study, of quantitative nature with exploratory scope, the purpose was to create an adaptation, and application of a pilot test, of the questionnaire “Energy Literacy Survey” (DeWaters & Powers) in a sample of university students from México. The method included a translation procedure, the regional adaptation and the development of the pilot test. The sample consisted on 114 participants. The questionnaire was made of 64 items in three different sub-scales (cognitive, affective and behavioral). Being an adaptation from an original instrument, reliability and relevance of the items was evaluated. Factorial analysis was used to evaluate the importance of the items. Affective sub-scale showed values superior to 0.5, suggesting relevance in those items, except for two items (A7 and A8). Behavior sub-scale reports as well most of its values superior to 0.5, with exception of items B4 and B10. In terms of reliability, Cronbach alpha was calculated. The affective sub-scale obtained 0.581, being able to increase to 0.652 if A5 was removed. On the other hand, behavior sub-scale obtained 0.691, being able to increase to 0.718 if one item was removed. Results of the pilot show differences between students of the faculties of science, engineering and others, as well as differences by gender. Lastly, applications for the instrument are discussed as well as some opportunities to improve it.

WHAT'S GONNA WORK FOR GROUP WORK: PERCEPTIONS OF STUDENTS ON ACADEMIC STRAND-BASED GROUPING METHOD

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ABSTRACT

Learning to collaborate is a skill that students need to acquire and develop, as this is touted as a cornerstone for 21st century learning. In Miriam College High School (MCHS), collaboration is realized through the Career Enquirers and Learners League (CELL) groups, which aims to provide a specialized application of the students' academic track in Senior High School (SHS) to the task and is the grouping used across subject areas. However, over time, CELL groups became synonymous with group work in general, with teachers using this mechanism for every group activity regardless of its nature and complexity. As such, the perspectives of both students and faculty on CELL groups were identified in order to determine if its original goals are still being met. These were derived from a survey and focus group discussion (FGD) administered to Gr.11 and Gr. 12 students. Survey results were quantitatively analyzed using descriptive statistics. Dominant themes from the FGD were derived using qualitative data analysis software NVivo (Pro version 12). Using an adapted version of Hackman and Morris' (1975) Input-Process-Output (IPO) Model of Group of Performance, it was found out that students have a positive perception towards CELL group work and recognize the importance of such activities. Their main concern is the quality of their groupmates. Social Loafing (freeloading) also emerged as a significant concern. The results suggest that careful consideration must be made towards group construction, accounting for not only for the aptitude of the students but also their interpersonal dynamics, as this influences the students' experience with working in groups.

Keywords: Assessment, collaboration, group work

C7

[59]

A SYSTEMATIC REVIEW OF USING DRAMA IN SECOND LANGUAGE TEACHING

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ABSTRACT

Various authors and educators have affirmed the effectiveness of using drama in second language (L2) teaching as a form of DIE, especially for English teaching, yet rigorous literature review is absent. This article, through a systematic review, aimed to synthesize research in the past decade on the use of drama in ESL / EFL teaching in secondary schools to reveal how the drama-in-education (DIE) pedagogy is currently being perceived and applied. The review was started with searching through two major academic journal databases, namely ProQuest and ERIC. A total of 5,693 published articles within the last ten years were found at the initial stage. Next, 440 articles were short-listed, whereas 417 from ProQuest and 23 from ERIC, by the criteria of peer review with full text. All short-listed titles were then scrutinized with their relevance on the effectiveness of using drama in English L2 teaching. Subsequently, around 10 articles were identified as the most relevant for in-depth content study. The measurement of effectiveness was analysed to reveal current strategies and challenges of using drama as a teaching approach, thus emergent agenda for possible future research.

Keyword: Drama-in-education, DIE, TESOL, ESL, EFL, drama.

**SHAPING RESPONSIBLE INDIVIDUAL CHARACTER SCALE (SRICS):
DEVELOPMENT AND INCREMENTAL PREDICTIVE VALIDITY ON
PROFESSIONAL IDENTITY BEYOND CSE AND PSYCAP IN UNIVERSITY
INSTRUCTORS**

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ABSTRACT

Educational institutions have strong potentials to socialize young citizens for cultural values on social-economical issues for sustainable development. However, most university instructors have not been adequately prepared for this important endeavor. In order to enhance this ability, research and development should be continuously accumulated. Thus, a measure called “Shaping responsible individual character scale (SRICS) was constructed. Thirty-four items were created based on principles of behavioral modification, e.g., prevention, enhancement, role modelling, and reward-punishment. In the first step, data from 100 Thai university instructors were used to determine item quality. Another 300 similar instructors were employed for exploratory factor analysis (EFA). The finding revealed four-factor model (enhancing critical consuming, role modelling in moderate living, warning for negative consequences, and stimulating positive beliefs). Each factor contained 3 items with the total of 12 items which yielded 64.89% of the total variance accounted for. In the third step, the model was confirmed by confirmatory factor analysis (CFA) using another new group of 300 instructors. The final step applying hierarchical multiple regression on the data from a new group of 128 instructors revealed that SRICS could significantly predict professional identity beyond core self-evaluation, psychological capital, and two biosocial variables for 25.90%. Reliability of this measure is 0.79. Discussion and recommendation for these findings suggest the possibility of instructor training in enhancing the responsible individual character of undergraduate students in order to groom them to become good and happy citizens for sustainable development in the future.

Keywords: Psychological assessment, Factor analyses, Validation, Thai

C9

[61]

**ONLINE ASSESSMENT MODEL AND ITS LEARNING AS IMPLEMENTATION
OF THE TECHNOLOGY PROGRESS IN INDONESIA**

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ABSTRACT

The National Examination for schools in Indonesia is based-on computer. Therefore, all students in Indonesia are expected to be familiar with the use of online evaluation model. The purpose of this reasearch is to study and analyze the effectiveness of classroom-based online assessment model, as a form of activity that can be carried out by teachers or lecturers in implementing ICT progress in Indonesia. This writing, based-on limited qualitative research that carried out through classroom observation activities, FGD, and triangulation to get conclusions. As a result, teachers and lecturers can take advantage of technological advances of ICT, student experience, and student's gadget/laptops to create an Online Assessment Model in a classroom. This assessment can be a Daily Test, Quiz, Midterm Test, or Final Test. Teachers or lecturers can take advantage of existing application programs, for example with Google Form, Exambrow, Quizeez, Kahoot, and so on. In the teaching-learning process can also use zoom.us or others. With this Online Assessment Model, the teacher or lecturer can streamline their time and energy to assess learning outcomes for their students.

Keywords: Online Assessment Model, ICT in Indonesia, Technological Progress

DEVELOPMENT OF A TASK-BASED ENGLISH LANGUAGE PROFICIENCY PROGRAM FOR SCIENCE UNDERGRADUATES

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ABSTRACT

An action research design was used to create an extra-curricular English language proficiency program at Ton Duc Thang University in Vietnam during the 2018-2019 academic year. The purpose of the program is to provide an integrated learning environment for students within three disciplines of environment engineering, environmental sciences, and labor safety to practice and enhance English language fluency. The design for each 120-minute session comprised a four-step process of lesson planning, pre-task activity, task completion, and post-task activities. Student feedback, peer observations, and interviews provided an understanding of perceptions on the quality of the instructional material, learning environment, and learning activities. Lessons learned from the development of the program included tailoring instruction to proficiency level, giving students regular feedback, and providing increased opportunities for relevant interdisciplinary practice. The sessions evolved to include scientific concepts, terminology, mind-mapping, mathematical equations as necessary, and real-world applications related to environmental practice, health, and safety. The learning outcomes of the program have progressed from English language practice to (a) increasing vocabulary and English language proficiency skills of comprehension, speaking, listening, and writing related to science, technology, environmental practice, health, and labor safety, (b) developing problem solving and critical thinking skills through applying scientific concepts to real-world situations, (c) making meaning of new knowledge, (d) identifying personal learning needs, and (e) developing skills to become a lifelong learner.

Keywords: Task-based language learning, inter-disciplinary instruction, action research

D1

[63]

**THE INTERSECTION OF MINDSET MATHEMATICS AND CONTENT AND
LANGUAGE INTEGRATED LEARNING (CLIL): A CASE STUDY OF
UNIVERSITY STUDENTS IN JAPAN**

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ABSTRACT

In Japan, there are schools known as Super Science High Schools designated by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT). As part of this program, efforts have been made to “globalize” science and mathematics education by teaching mathematics and science in English. Grounded in the work of Dr. Jo Boaler at Stanford University, I argue that using mathematical mindset activities from YouCubed is a way to enhance science and math interest and engagement in Japan. In order to do this, I performed a mixed methods case study on 16 Japanese university students who are preparing to be English teachers in Chiba Prefecture over a two-day English retreat program in Katsuura, Chiba. Qualitative methods include conversations with teachers and students as well as observations during my class sessions. I triangulated these data with quantitative findings from a voluntary follow-up survey using Likert-style and short-response questioning which include comparing means in a paired t-test. Results indicate that my session increased student engagement and interest in both mathematics and English. From nearly three years of working experience in Chiba, I discuss how using CLIL-adapted mindset mathematics can be useful for international learning contexts. I conclude that the goal of implementing mindset mathematics is to inspire visions of how innovation can occur through the process of subject integration especially in the intersection of STEM (science, technology, engineering, and mathematics) fields, language learning, and cultural knowledge.

Keywords: Mindset mathematics, CLIL, globalization

D2

[64]

THE EFFECT OF THE INSTITUTIONAL SUPPORT OF THE CULTURAL INTELLIGENCE OF SENIOR NURSING STUDENTS: A COMPARISON AMONG MALAYSIA, THE PHILIPPINES, AND THAILAND

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ABSTRACT

Cultural intelligence is important for studying and working in multicultural societies, and for helping people interact with people from different backgrounds. Many previous studies have indicated that training and learning are important for improving students' cultural intelligence. The purposes of this study were to study and compare the effect of institutional support among Malaysia, the Philippines, and Thailand. The samples were 933 senior nursing students in these three countries composed of 230 Malaysian students, 302 Filipino students, and 400 Thai students. The instruments were a questionnaire composed of demography data and a 5-point rating scale for the variables. ANOVA was used to compare the institutional support among the three countries. A structural equation model was used to examine the effect of institutional support on cultural intelligence. The results showed that the mean score for institutional support in the Philippines was the highest, and that institutional support had an effect on cultural intelligence at a significant statistical level of .05. The recommendations from the study are divided into two aspects. The first concerns the implementation of multicultural experiences in curricula and extra-curricular activities; and secondly, teachers should realize the importance of cultures and integrate cultural content in their teaching and in their students' learning.

Keywords: Cultural intelligence, nursing students, institutional support

D3

[65]

INTERACTIVE SCHOOL BOOKS TO SUPPORT STUDENT-CENTERED LEARNING

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ABSTRACT

At present school books in Indonesia are available in the form of Electronic School Books which can be obtained online. This school book is provided in PDF format. Information and communication technology available today makes it possible to increase the accessibility of Electronic School Books to Interactive School Books. This paper introduces the development of an Interactive School Book that integrates different types of media with a simple approach. The study was conducted to get to know the characteristics of school book content. The content of school books generally contains narratives in the form of text, scientific symbols and formulas, pictures, tables, sample questions, practice questions and formative tests. In line with that, a study of the available technology to digitally represent school book content. The interactivity component was added to enable students to learn independently at home. Interactive School Books support the student-centered learning model. The teacher has enough time to help students who have learning difficulties and class management.

Keywords: Electronic School Books, Interactive School Books, Student Centered Learning

DISASTER LEARNING PATTERN IN REALIZING RESILIENT GENERATION IN DISASTER PRONE AREAS

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ABSTRACT

Students are one of the most vulnerable groups in the disaster. Disaster is impossible to avoid; however, a responsive attitude with all the preventions must be done, primarily through disaster education. A school must know the pattern of disaster learning in accordance with the stage of student development, so students can have a better understanding of disaster and can realize resilient generation. This research used an explanatory sequential mixed method design, with 259 respondents from nine high schools in the disaster-prone area of Klaten Regency. The answers from the respondents would be index measured and classified into three aspects: knowledge, emergency response plans, and disaster warnings. The results revealed that the understanding of disasters had not been directly integrated into the learning curriculum. The disaster learning patterns used in disaster-prone areas are through extracurricular activities. Extracurricular activities that are used to improve disaster understanding are school disaster preparedness and junior red cross extracurricular; each of them can provide disaster understanding to students. Further, school disaster preparedness extracurricular shows a high index, which is 72.76, while junior red cross extracurricular has an index of 66.37 (medium category). Even though the index score is good, the aspects of disaster knowledge have a very low category compared with other aspects. Students still do not have good disaster knowledge, and learning time through extracurricular activities is very limited in contrast to learning in the classroom. Students need to get an understanding of disasters, so the integration of curriculum and disaster education is indispensable for realizing a resilient generation.

Keywords: Disaster learning, extracurricular, resilient generation

D5

[67]

ANALYSIS OF TEACHER COMPETENCIES INTEGRATING EDUCATIONAL TECHNOLOGY FOR LEARNING ACTIVITIES IN INDONESIAN SCHOOLS

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ABSTRACT

Majority of educational scholars believes the learning process which is emphasizing by technology could provide meaningful learning and effectively engaging constructivist learning environment. The application of technology into learning activities must be followed by the teacher competencies in engaging technology effectively. The recent study has an objective to identify teacher competencies in integrating technology for learning activities. The sample of the studies is the teachers in Indonesia schools which is total 300 teachers. The questionnaire and interview method was used to collect the data from respondent. The questionnaire and interview is constructed based on the Indonesian Ministry of Education regulation about teacher technological competencies and ICT CFT aspect that released by UNESCO. The result shows is about 75 percent teachers has used ICT in their classroom. According to the age cluster, the older age teacher shows a lower understanding and skill in applying technology in the classroom. In the other hand, the young age teacher shows more frequently in using the early technology innovation to present the learning material. Moreover, the young age teachers is showing high index for each measuring indicator. In conclusion, the Indonesian teacher competency towards the technology is an average level. However, most of Indonesian teachers is already applying technology in classroom and fulfilling their administration task.

Keywords: Educational Technology, Teacher ICT Competencies, Technological Literate.

D6

[68]

**THE EFFECT OF USING CONCRETE TOOLS MODEL IN LEARNING
GEOMETRY ON INDIGENOUS STUDENT'S ACHIEVEMENT IN PAPUA
PROVINCE**

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ABSTRACT

Mathematics is a must subject in schools. It will be taught from elementary school to university level. Although, it is important in the national curriculum, it is not easy to teach to the students in schools in particular for indigenous students of Senior High School in Papua province of Indonesia. That is why, concrete tools model as an option that is important in teaching of geometry. The main issue is many of teachers do not teach Mathematics using concrete tools. The aims of this research are to find the effect of using a concrete tool model in learning geometry on the indigenous students' achievement. In addition, It is also for finding student's perceptions between use learning geometry without tool aid and use concrete tools model. The research methodology is experimental research design. The participants in this research are 30 indigenous students of Papua. The first group is 15 students as the control group and the second group is 15 students as the experimental group and definitely, it will gain the special treatment using the concrete tools model in teaching. Furthermore, the data will be analyzed using Statistic quantitative. The statistic quantitative will be used such as; student t, Kolmogorov-Smirnov Z, and Fisher test will be used to organize the data especially for looking the homogeneity and validity items. The finding shows that using concrete tool medias have significant impact on the indigenous students' in learning Geometry. Therefore, in teaching and learning mathematics especially for Geometry, the teachers must apply " The concrete tool medias" for helping of indigenous students in learning the geometry concept. Moreover, It will help teachers to make students easily understand Geometry.

Keywords: Geometry, Concrete Tools Model, Perception, Indigenous Student's Achievement.

D7

[69]

AN APPLICATION OF KUHN - MUNKRES ALGORITHM TO G.R.A.S.P.S. GROUP PERFORMANCE TASK

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ABSTRACT

Performance task is a culminating activity of the students per quarter that demonstrates their knowledge, understanding and proficiency in each subject. It yields tangible performance product that serves as an evidence of learning. On group performance tasks, a set of students collaborate to yield one authentic performance product that satisfies performance standards stated on the Curriculum Guide of the Department of Education. The Goal, Role, Audience, Situation, Product, Standards (G.R.A.S.P.S.) is anchored to emphasize context and role - playing; hence, students in a group are assigned to a specific role. This research employed a quasi - experimental control group design that aimed to optimized students' roles in a group performance task. The optimization process is carried out using the Kuhn - Munkres Algorithm, an optimization technique of optimally assigning a set of persons to a set of roles. Performance products of the groups that received an intervention using the Kuhn - Munkres Algorithm were compared to the performance products with those groups who did not receive the intervention. It was conducted to the Grade 9 students of St. Rita's College of Balingasag, Balingasag, Misamis Oriental, Philippines. The results of the analysis revealed that there is a significant difference in the scores between the control group and the experimental group. It showed that the application of the Kuhn - Munkres Algorithm on the roles of the students in a group performance task has better performance output than those students whose roles were not treated with the Kuhn - Munkres Algorithm.

Keywords: Kuhn - Munkres Algorithm, G.R.A.S.P.S. Performance Task, Assignment Problem

ENHANCED DEVELOPMENT OF LABORATORY-BASED SKILLS IN THE BIOTECHNOLOGY ENGINEERING STUDENTS BY USED OF EDUCATIONAL VIDEOS

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ABSTRACT

Current students have in the palm of their hand powerful tools for quick access to information through applications, smartphones, wikis, social networks, etc. An important characteristic of the use of technology in education is its ubiquity, which allows the individual to expand its portfolio of learning tools. This apparent advantage in the accessibility of information poses a double challenge: teach the student to discriminate the information quickly and easily and, keep the student's attention in the class session. The adaptation of traditional learning techniques to take advantage of information technologies, represents an opportunity to modernize contents and make them more attractive to the students, without lose sight of their learning objectives. In the present work, we evaluated the effect of the inclusion of touch screens and the use of ICTs (Information and communications technologies) in the lab courses of enzymology and biocatalysts to create and access didactic resources during practical sessions. The use and availability of video capsules and tutorials at the facilities has the aim to correct and reinforce the disciplinary and transversal competences that are defined for the Biotechnology Engineer curricula. Qualitative and quantitative data were collected concurrently in one phase from experimental groups vs the traditional course group. Touch screens and video capsules were implemented during January-May 2019 term. Instant access to interactive tutorials during practical sessions allowed a better use of the lab-time and increased the interest of the students for tailor-made videos for their specific laboratory needs. The use of ICTs, especially video capsules, facilitated the development of laboratory-based competences and the student's engagement to practical activities by the use of interactive technology in the lab facility.

Keywords: Biotechnology engineering, ICTs, Laboratory-based skills, STEM disciplines, TEC 21 Models

D9

[71]

**DEVELOPMENT OF A SYSTEM FOR ANALYZING PERSONALITIES OF
HIGH SCHOOL AND UNDERGRADUATE STUDENTS WHO PLAY
ONLINE GAMES FOR THEIR CHOOSING FIELDS AT A UNIVERSITY IN
THAILAND**

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²*University of Northern Colorado, USA*

ABSTRACT

The most common problem among adolescents is that they do not know what they want to learn at a university, and what career they will choose in the future. Because students do not know their aptitudes and abilities, they are likely to choose to study at a university in a field that is not suitable for them. When entering the university level, some students transfer to other programs or simply discontinue their studies at the university. Choosing the right profession will not only affect the student, but also affect the nation as well. Currently, games have an increasing role in society. Games are more diverse and can be played in a virtual environment which allows players to learn and practice many skills and to express themselves. The researcher of this study was interested in finding the relationship between the personality of the player and the gaming behavior and developing indicators to analyze student's personality, aptitude, and the ability of learners who play online games in choosing to study in higher education. In this study, the researchers have included three survey instruments: 1) HEXACO-PI, which is a tool for measuring personality, 2) Brainhex, which is a tool used to measure gaming behavior, and 3) Vocational aptitude tests, which is a tool used to measure career aptitude. All three survey tools are adjusted to fit the context of Thai culture. After the adjustment of these survey tools, a total of eight experts from the fields of psychology and educational technology were asked to assess the appropriateness of the survey questions and the use of appropriate language. After that, the researchers tested these three survey tools with two sample groups of both high school students and university students. Initially, the researchers brought three survey tools to collect data with samples that are similar to the population group. Researchers collected the actual data from 30 people in each group. The survey data from these sample groups shows the reliability of HEXACO-PI and BrianHex is greater than .7 in the high school student group. The reliability of HEXACO-PI is greater than .7 and BrianHex is .53 in university students. In addition, the three survey data were used to find relationships with Pearson (r) correlation and the results show the relationship in some components with statistical significance. After this, the researchers will bring three surveys tools to collect data with the 2 groups. The first group included 196 high school students who played online games at Kasetsart University Laboratory School Center for Educational Research and Development. The second group included 380 undergraduate students who played online games at Kasetsart University.

Keywords: Aptitude, ability, online games, behavior, personalities

PHYSICAL AND SPORTS EDUCATION TEACHERS CHALLENGES IN IMPLEMENTING COMPETENCY BASED APPROACH IN CAMEROON

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ABSTRACT

The Competency Based Approach (CBA) was introduced in the Cameroonian educational system in 2013. Noting that the majority of teachers do not implement this new paradigm, in 2017, the physical and sports education (PSE) teachers training officers have allowed this Action research. In order to produce both knowledge and professional change, our methodology included, identifying the problem, action planning, selecting a course of action, studying the consequences of the actions taken, and identifying the findings. From February 2017 to November 2019, the actions were seminars, courses, interviews, mentoring teachers and student teachers, course design building, evaluating the consequences of the actions and identifying the major results. The finding shows that most of the teachers resist to adopt what they call « an approach imposed from abroad », and their challenges are the core knowledge of the paradigm, the equipment, and the overcrowded classes. Once teachers have been reassured that the CBA corresponds to the approach of traditional African education, they feel more able to implement it. The integration of the paradigm then allows a better use of teacher's knowledge, know-how and interpersonal skills in order to better deal with problems related to equipment and overcrowding.

Keywords: Physical and sports education, competency based approach, paradigm knowledge, overcrowded classes

E1

[73]

INQUIRY – BASED APPROACH IN AN E – LEARNING PLATFORM AND ITS COGNITIVE EFFECT IN SCIENCE 10

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ABSTRACT

The study aimed to investigate the Cognitive Effect in Science of Inquiry – Based Approach in an E – Learning Platform in Science 10. This quasi – experimental research made use of the Regression Discontinuity Design (RDD), where the selection of the subject performed through a cut – off score on an assignment variable using the diagnostic test results of the subject. This design is equipped with a strong internal validity despite the lack of randomized assignments. The study used Aptitude Treatment Interaction (ATI) theory; it focused not only on single cognitive ability but rather in the diverse cognitive abilities of the subjects. The researcher applied the theory in the Inquiry – Based Approach in an E – Learning Platform in teaching science to improve teachers’ instruction and enhance cognitive performance of the learners. A total of 180 Grade 10 learners from Canumay West National High School were taken as subjects of this study for the school year 2018 – 2019. The researcher employed purposive sampling technique where the Diagnostic Test Result Scores were used to determine the cut –off of the three groups. Forty-seven learners were considered as Above Average Performing Group, eighty-seven learners were considered as Average performing Group, and Forty-six learners were considered as Low Performing Group. The results establish the idea that throughout the program majority of the learners had shown degree of improvement on their performance while a few still persist to have learning deficits. The researcher established a result that Inquiry – Based Approach in an E – Learning Platform was an effective program that increases learners’ cognitive performance.

Keywords: Inquiry-Based, E-Learning, Stanine, ATI

E2

[74]

**THE EFFECT OF VIDEO RECORDING IN MICRO-TEACHING ACTIVITIES ON
PREPARING FEMALE STUDENTS IN TEACHER EDUCATION PROGRAMS AT
THE ARAB REGION**

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ABSTRACT

One of the challenges facing instructors in the Arab region with regard to the training of female student teachers in pre-service teacher education programs using video recording in micro-teaching activates is the culture attitude. female students cannot accept the idea of video recording for their teaching. The reason behind that are based on religious beliefs, but many of the limitations are cultural and emanate from tradition as well as religion. This study aims to investigate the effectiveness of video recording in preparing female student teachers in practical teaching course at Ajman University using experimental approach. The sample was 30 female students, who were randomly assigned to two groups, one of which used the video recording tool in their micro-teaching practical course (experimental group A, n = 15) and the other with non-video recording tool (control group B, n = 15). Observation list and questionnaire were used to determine the effectiveness of using video recording tool on the performance of the female student teachers. Data analyses showed that the group (A) using video recording tool was more effective in mastering the specified teaching skills and more motivational than the non-video recording tool. The results suggest that within practical courses, video recording tool can be used as an effective and stimulating learning tool regardless of the conservative attitude of female students towards its use.

Keywords: Teacher Education Programs, Pre-services, Micro-teaching, Video recording, Arab Region.

E3

[75]

**A STUDY ON THE COMPARISON OF IMPACT OF DIFFERENT DESIGN
ELEMENTS OF MULTIMEDIA MATERIALS ON LEARNING MOTIVATION**

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ABSTRACT

It is important to study how the design of multimedia materials fosters learning motivation of learners because the positive learning motivation experienced by learners in an academic environment is related to their academic performance. The purpose of this study was to compare four emotional design elements in multimedia materials to stimulate learners' positive learning motivation. The study used true experimental design, recruited 158 students (43 male and 115 female) to participate in the experiment, and randomly divided the students into four groups using four different materials to learn individually. Isen and Reeve's (2005) self-report measure of intrinsic motivation, which had eight questions, was used to measure students' learning motivation for materials. The results showed that students who used animation and multi-dimensional concept map and traditional multi-dimensional concept map multimedia materials to learn had higher learning motivation than those who used animated linear and traditional linear multimedia materials; the motivation of students in the group who used animated linear multimedia materials was also higher than that of students using traditional linear multimedia materials.

Keywords: Animation, Learning motivation, Multi-dimensional concept map, Multimedia materials

**INCORPORATING ENTREPRENEURIAL PRACTICES INTO STEM
EDUCATION: DEVELOPMENT OF INTERDISCIPLINARY E-STEM MODEL IN
HIGH SCHOOL IN THE UNITED ARAB EMIRATES**

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ABSTRACT

Acting in an entrepreneurial way and exercising entrepreneurial competencies are essential in the current society because of its uncertainty and constant change. That is why it was contended that enhancing students' abilities to design innovative products and being able to deliver them to the market become a priority in the educational sector. A sequential exploratory mixed method was conducted to collect both qualitative and quantitative data needed to fulfil the purpose of the study. The theoretical perspective adopted relies on education through entrepreneurship to develop an interdisciplinary E-STEM model as an attempt to incorporate entrepreneurial practices into STEM education in high school in the UAE. Focus group interviews were employed to explore STEM leaders' views regarding incorporating entrepreneurial practices into STEM education. Variables identified were used to develop a questionnaire for STEM teachers to investigate their perceptions regarding this incorporation. Interpretation of data used to develop E-STEM model that allow students to act entrepreneurially. Academic leaders believed in infusing entrepreneurial pedagogies into STEM curriculum with a constant support of business teachers because they are more aware of the entrepreneurial learning activities than other teachers in school. The main contributions of this study are 1) Developing E-STEM model that incorporates entrepreneurial practices into STEM education, 2) Identifying a student-competency-profile that includes 20 entrepreneurial competencies that meant to be developed through the implementation of E-STEM model.

Keywords: STEM Education, Entrepreneurship Education, Competency Profile, Competencies

E5

[77]

**NEW TECHNICAL AND DIDACTIC ASPECTS OF FUTURE ENGINEERING
EDUCATION IN THE CONTEXT OF CONNECTED AND AUTONOMOUS
DRIVING**

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ABSTRACT

Over several decades, many technical systems have undergone revolutionary changes, mostly from simplicity to complexity. This technical change also characterizes the vehicle technology training in didactics (contents and goals) and methodology (implementation and organization) of the engineer training. The article analyses the future changes in learning and teaching processes in automotive engineering training using the "Connected and Autonomous Driving" teaching program. The starting point for this is the study course in traffic telematics at the TU Dresden, which is to be expanded to include future modern teaching content (e.g. Machine Learning systems, Next Generation Mobil Car Communication or Robust System Control) and adapted teaching methods (e.g. Digital Simulation, Raw Data Mining and Real Fieldtest Training). The so-called "Programmed Teaching" has established itself as a method of teaching and learning mediation in university engineering education. The term "Programmed Teaching" has here a strong engineering connection and means teaching or learning according to pre-planned and in the result secured functioning programs with regard to knowledge transfer. The whole process is similar to linear programming in computer science with sequential structure (exercise follows lecture), branched structure (practical course parallel to exercise) or traceable structure (repeat examination). The article also explains that modern automotive engineering education is strongly linked to technical research results in the field of "Connected and Autonomous Driving" and that technically structured knowledge transfer approaches are required for this purpose.

Keywords: Didactics, Engineering Training, Autonomous Driving, Programmed Teaching

IMPROVEMENTS OF AN ACADEMIC WORK-INTEGRATED COMPUTER SCIENCE PROGRAM

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ABSTRACT

In recent years, the need for well-educated Computer Science graduates has increased more and more. On the one hand, many companies search in vain for future employees because the number of graduates is too low. On the other hand, the number of interested candidates for Computer Science course programs is extremely high. Many of them must be dropped because the number of study places at Universities of Applied Sciences in Austria is limited. This limitation is given by law. Traditional universities also limit the number of students because of their capacity bottleneck. To meet the challenge of missing students and future employees, companies look for close cooperation with academic institutions. At the University of Applied Sciences Technikum Wien, we introduced a work-integrated (a so-called “dual”) academic Computer Science course program where parts of education must be provided by partner companies. Our dual Computer Science degree program is unique in Austria, so we scientifically evaluated it by an external institution. Our first years’ experience and the results from the evaluation resulted in some severe changes of the dual Computer Science program. We describe the methods of the scientific evaluation which included personal interviews, surveys with students, and group discussions with representatives of our partner companies. The results of the evaluation show concrete measures for improvement which we included in structural changes of the degree program. On the one hand, these changes affect processes and communication issues, on the other hand, we use the results to adapt the current curriculum to improve better collaboration with companies.

Keywords: Academic Education, Work-integrated, Computer Science, Curriculum

E7

[79]

**CRITICAL THINKING AN ANTIDOTE TO ARTIFICIAL INTELLIGENCE
THREAT: AN INNOVATION IN TEACHER EDUCATION PRACTICES**B.F. Komolafe ^{1,2} and X. Qian ¹¹*Teacher Education College, Zhejiang Normal University, P.R China*²*Faculty of Education, Adekunle Ajasin University Akungba Akoko, Nigeria***ABSTRACT**

The role of Critical thinking skill in developing 21st-century teaching profession can't be overstated. Projecting into the future, critical thinking is expected to serve as tools for integrating Artificial Intelligence into the teaching profession as well as an antidote to the threats of artificial intelligence to the teaching profession in the machine learning age. This study investigates John Dewey's philosophy on critical thinking and reviews existing literature on teaching profession. The questions raised by this study include: what is critical thinking requirement skill in 21st century? Does critical thinking serve as a means of integrating artificial intelligence (AI) into the teaching profession? What is the basic critical thinking skill and strategies needed for effective teaching that serve as an antidote to AI threats? The results imply that teachers need to acquire critical skills in order to outsmart machine, which has become a threat to many professions including teaching. The relevant teacher is one that does not function like a programmed machine. Ability to think critically is the answer to the "Austria vision 2030"(Machine learning age), teachers need to think critically in the teaching profession innovation as a major means to overcome AI threat and in order to be relevant in 21st century machine learning age.

Keywords: Critical thinking, Artificial Intelligence, Education, Antidote, Teaching, Profession

THE FIRST LEAP: A JOURNEY INTO SILENCE

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ABSTRACT

This conceptual framework was done prior to our study which aims to respond to the need for linguistic and developmental diversity in Malaysia, in line with Malaysian Education Blueprint (MEB) 2013-2025 goals towards achieving academic excellence of the future generation, whilst safeguarding the inclusion of vulnerable individuals and marginalised communities. Traversing through the 22nd century, we aim to nurture a Community Inclusive Communication (CIC) amongst children and adolescents in order to bridge the gap between hearing individuals with individuals who are Deaf (D), Hard of Hearing (HoH), Speech or Learning disabilities and to subsequently guide our Malaysian youngsters into intellectually and socially holistic individuals. The key element of Malaysian Sign Language (MySL) as a third language is to create awareness and assess willingness of adopting a new language among typical individuals prior to embarking into inclusive education. Noticeably, communication deprivation is a key risk factor in developmental delays. It is paramount that early psychological support to the child and their carers is crucial to prevent mental health problems. This study provides researchers with a blueprint to oversee variables pertaining to education, sociology, psychology, and disability in relation to inclusive education in Malaysia, while exploring the best design and instrument to gauge willingness and readiness for educators and students to adopt MySL as a third language in mainstream schools, and also the feasibility of nurturing fundamentals for community engagement activities via CIC from an earlier start among typical and atypical children and adolescents who will effectively engage amongst diversities and work in unity for nation building.

Keywords: Inclusive education; Malaysian Sign Language (MySL); Deaf; Community Inclusive Communication (CIC)

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ETHNOMATHEMATICS IN CENTRAL JAVA PROVINCE: EXPLORATION AND ITS INTEGRATION IN LEARNING MATHEMATICS

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ABSTRACT

Mathematics has relationship with human life, which is called ethnomatematics. The research objective is to explore the forms of ethnomatematics in Central Java Province and its integration in learning mathematics. The study was conducted at cultural sites in Central Java Province, such as temples, mosques, and churches. Data were collected by observation, interview, documentation and literature review. Data were analyzed descriptively. The results showed that various forms of ethnomatematics were found in Central Java Province, such as Borobudur Temple, Menara Kudus Mosque, Blenduk Church, and Sam Poo Kong Temple which were closely related to mathematical concepts (symmetry, getting up flat and building up). Various forms of ethnomatematics can be integrated in mathematics learning with PBL (problem based learning) and PjBL (project based learning) models. The research result shows that the problem solving ability of students taught using PBL and PjBL are better than conventional models.

Keywords: Ethnomatematics, learning mathematics, mathematical concepts

**WHAT MAKES A GREAT WALL ARISE?: EXPERIENCE OF SOCIAL STUDIES
TEACHER IN CREATING INSTRUCTIONAL MEDIA BASED ON ICT**

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ABSTRACT

The challenge of teachers in the era of the industrial revolution 4.0 is inevitable, the teachers must keep abreast of continued technological developments, including in the making of instructional media. Not infrequently they face quite serious problems when making ICT-based instructional media. This paper aims to understand why these problems can arise. The method used is qualitative with a phenomenological approach. Data collected from the results of in-depth interviews and participatory observation. The informants in this study consisted of all social studies teachers at Brawijaya Smart School. One of the best junior high schools in Malang, Indonesia. The collected data were analyzed using the stages of Transcription, Horizontalization, and Cluster of Meaning. The study results show that problems in making ICT-based instructional media learning arise due to: (1) Lack of habituation. (2) The age of the teacher. (3) There is no assistance. (4). Generational Difference. (5) Many additional tasks from school. (6) Limited of time. The conclusions from this study show that a great wall of problems arises because of internal and external sides. From the internal side is the attitude that is built up in the social studies teacher, while from the external side is the attitude that is built up within the school and government agencies. Between these two things (internal and external) there has not yet been a synchronization that supports each other.

Keywords: Social Studies, Instructional Media, Phenomenology, ICT

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**“I CAN SPEAK BUT I CANNOT EXPLAIN THE RULES”: AN INVESTIGATION
INTO EFL LEARNERS’ REFLECTION IN THE EFFECT OF OBLIGATION TO
USE ENGLISH**

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ABSTRACT

For decades, language practitioners try to find out how best to facilitate language learning. It can be seen from the cyclical pattern changing in language curriculum and instruction that follow the shift of language and teaching theories. This present study aimed to explore the practice of English language learning in Boarding School in the context of EFL education. Especially that run partial immersion in the institutions as a way to resolve the limitation of English exposure in EFL context. Moreover, it also intended to examine teaching approaches used in Bilingual Boarding schools as well as describe the alignment of their language practices in its relation to language learning and teaching theories. Rather than examining the effectiveness of a specific method, this article refers to post-activity evaluative respond from students who had done the program as data to start the discussion. Thus, a qualitative study research design was employed to meet the purpose of the study. The findings revealed that the obligatory of English use is important to motivate students in using English. What is interesting is that almost all of the students think that form-focused is needed because this traditional approach is seen can make students aware of their language accuracy that will lead to increase their self-confidence in using the language. Why did they continue to believe that is the best way to improve language ability? What did English grammar and vocabulary mean to them? The answers from those questions will contribute to shed new light on the value of students’ reflection in language learning process in an EFL context. Some suggestions for practices in language instruction will conclude the article.

Keywords: Language Immersion, Motivation, Self-confidence, Form-Focused Instruction

INVESTIGATING MARKETING STUDENTS' ATTITUDE AND INTENTION TO DO A MASTER'S DEGREE IN HONG KONG

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ABSTRACT

There is an increasing demand on marketers with a master's degree in Hong Kong and worldwide. Increasing number of employers prefer to hire those who have a master's degree for their marketing jobs. An understanding of marketing students' attitude and intention to do a master's degree is useful for designing measures to encourage more students to pursue master's degrees and thereby meet the employers' needs. This paper reports a study of the attitude and intention of marketing students to do a master's degree and the underlying factors in Hong Kong. A survey using anonymous self-administered questionnaires was used. A total of 148 marketing students took part in the study. An independent-samples t-test and a multiple regression were performed for data analysis. The study found that marketing students in general had a positive attitude and intention to do a master's degree in Hong Kong. In comparison, part-time marketing students held a more positive attitude toward doing a master's degree than the full-time marketing students. It also revealed that attitude, family and friends were the main determinants of marketing students' intention. These findings have important implications for the program design and promotional strategies for the master's degree programs of universities.

Keywords: Marketing Students, Master's Degree, Attitude, Intention

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DEVELOPING A CULTURALLY RESPONSIVE CURRICULUM – A CASE-STUDY IN ACTION

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ABSTRACT

In Singapore, as stated by the Minister for Education Ong Ye Kung, “The majority don’t overrule the principle of equality, and the minorities don’t exclude themselves; I believe these values and ideas have sunk deep roots in our collective consciousness.” Singapore is a country for every community, with meritocracy as one of its key organising principles. Working in an international faith-based school in Singapore, the development of culturally responsive teachers who are afforded practical opportunities to develop a purposeful curriculum informed by the faith, cultural and historical needs of the community, are paramount.

Every classroom at SMMIS is a global microcosm, a cultural hub responsive to the needs of its diverse cohort of students. Enabling the students to feel a strong sense of belonging and investment in their school is paramount.

To ensure that the cultural mores of the students of our community have been taken into consideration, the school and its teachers have focused on:

- Developing personal and respectful relationships with the students and their families
- Celebrating all of our students cultural events
- Provision of representations/images of cultural diversity across the school
- Selecting learning resources that offer diverse characterisation/subjects
- Working toward eradicating stereotypes in our community and accepting difference as an opportunity
- Building a strong sense of community for all, recognising the contributions of culturally diverse members

It is not without its challenges!

Keywords: Diversity, Harmony, Culture, Respect, Difference, Responsive

THE INVESTIGATION OF JUNIOR HIGH SCHOOL STUDENTS' MATHEMATICS COMPETENCY IN INTUITIVE IMAGINATIVE

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ABSTRACT

The study aims to an investigation of Indonesia students' ability in intuitive imaginative as an international collaborative. Geometry and measurement include in one of the knowledge areas in mathematics core competency in curriculum 2013 in Indonesia for Junior High School. Whereas, in the global perspective, students' competency in correlated with is intuitive imaginative. The investigation focus on mathematics students' competencies in area intuitive imaginative competency in Indonesia are still minimum data. A set, intuitive imaginative test improved by Chinese team researchers tested to Indonesian students. The sample was students in Junior High school in West Java Province, Indonesia. Students' scores data processing using SPSS 19.0 software for manage and process in statistics. In general, junior high school students are not able to answer more than half of the questions correctly. In school as an argument, students' competency in terms of identifying simple graphics in complex graphics, school differences reached not a significant level. In other terms such as in graphics transformation problem; number-forming binding problem; graphics and calculations; graphical reasoning school differences reached significant levels. Overall, the other sub-tests and sub-test scores lowest in school 2, median grow in school three, and rapidly grow in school 1, except Identify simple graphics in complex graphics, school 3 is the highest. In graphical reasoning, school 3 is the lowest for each sub-test and sub-test as the sex main effect was not significant.

Keywords: Mathematics Education, Student competency, intuitive imaginative, Junior High School Indonesia.

VIRTUAL PRESENTATIONS

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**VALUES OF THE INDUSTRIAL REVOLUTION 4.0 ON ACTIVITIES RIVER
SOCIETY FOR STUDY OF SOCIAL SCIENCES**

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ABSTRACT

Industrial Revolution 4.0 are characterized by the digital revolution has swept all activities of human life. In the Industrial Revolution 4.0 there are values such as: creativity, scientific, resilient, imaginative, and inquiry. These values have been found in the community in adaptation and survival. The river flows in all places in the city of Banjarmasin, South Kalimantan, Indonesia, the people have struggled hard, so that the city of Banjarmasin has become a developed, dense, and economic center. Social Sciences Learning aims to make students independent and creative. The purpose of this study is to explore the values of river society activities such as the values of the Industrial Revolution 4.0, develop learning models of values-based Social Sciences on community activities on the River in accordance with the values of the Industrial Revolution 4.0. This research is a research and development (R & D), research conducted on community activities in the river and learning, then built learning models. Model development is done in the classroom in the form of action research, validation of the model is carried out quasi-experimental. Place of research on riverbank communities and classrooms in the Social Sciences Education Study Program involving 80 students. The results of the study show the effectiveness of contextual and cooperative learning models for increasing student understanding of the values of the Industrial Revolution 4.0 on community activities on the banks of the river, increasing creativity and being tenacious. The conclusion of the research is that the values of the Industrial Revolution 4.0 already exist in society and can be implemented in the study of Social Sciences.

Keywords: Value, Industrial Revolution 4.0, river, creativity

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SELF-DIRECTED FEEDBACK IN WRITING

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ABSTRACT

The gaps in feedback implementation bring this study to unravel students' perception on employing self-directed feedback in writing. As the results of the previous studies on this concern are non-comparable, this study aims to unravel students' perception on employing self-directed feedback in writing. Employing a descriptive qualitative design, this study involved 23 English Department students of FKIP Universitas Lambung Mangkurat. The results show that students perceive self-directed feedback positively. It is seen from the correction that they make after the implementation of the self-directed feedback. However, students' reflection on the use of self-directed feedback shows various perceptions. Therefore, teacher can wisely design which feedback given to whom. The students who are able to provide self-directed feedback by using feedback sheets can achieve maximum result of learning, and teacher can focus to assist the other students who need teacher feedback during the writing process. As a result, self-directed feedback is used as one of the alternatives to ease teacher's burdensome in teaching writing. It is suggested to further researchers to investigate students' emotional responses during the feedback in writing process or to investigate other factors that influence feedback.

Keywords: Self-directed feedback, writing, student

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**PRINCIPALS' PERSPECTIVES OF CHALLENGES AND OPPORTUNITIES
REGARDING LEADING SCHOOLS IN RURAL CONTEXT**

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ABSTRACT

Research pertaining to school leadership in rural context is dominated by deficit paradigms without acknowledging the availability of resources and the potential of school leaders in the said context. The purpose of this paper is, therefore, to explore challenges and opportunities of leading schools in rural context from the perspectives of the principals. The voices of those who live and lead schools in rural context have a potential to add to existing body of knowledge, inform policy and practice about education leadership in general and education leadership in rural context specifically.

Data was generated through interviews with five primary school principals in Lesotho. The schools were purposely selected on the basis that they are located in rural context. The five principals that were selected as participants had more than five years of experience as principals. The findings revealed that schools in rural context of Lesotho are faced with myriad challenges. These challenges include, but not limited to, poverty, shortage of resources, impact of HIV/AIDs pandemic and extreme cold weather especially during winter season when heavy snow falls in some days. Despite these challenges, the findings show the participants were able to mitigate various challenges and successful led the schools. Instead of mourning about challenges, the participants adopted flexible context-based approaches to harness available resources within and beyond the communities for betterment of the schools. I consequently, argue that successful leadership of schools in rural context require principals who recognise not only the challenges, but also the opportunities that exist in such context.

Keywords: Deficit, Leadership, Opportunities, Resources, Rurality

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WHAT DO THE DRAWINGS SHOW IN THE PREDOMINANCE OF A LANGUAGE IN INDIGENOUS STUDENTS?

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ABSTRACT

The study explores the use of language in elementary indigenous students from bilingual communities through the systematic analysis of their drawings. The article aims to observe whether bilingual students when asked to draw certain culture-key elements determine or not the use of a specific language spontaneously. Two hundred twenty-five indigenous girls and boys from five to seven years old participated in this study. Several elementary indigenous schools agreed to collaborate. The objective is to see if there is a relationship between the kind and characteristics of the elements of the drawing with the language, they use to assign key concepts. Qualitative methodology was used, and the graphic analysis followed the proposal of Castellano and Roselli (2014) obtaining twelve final categories. The results show how the choice and features of the elements used in the drawings composition are intertwined with the use of a specific language. In conclusion, it can be stated that, with this sample and the design of applied methodology, largely use of the Spanish language is shown in these indigenous elementary students when they have to illustrate their notion of environment and life within the indigenous communities. Instead, those students who prioritize the indigenous language tend to project precise elements and use larger dimensions of the analyzed categories and also they strongly related to the Saraguro culture; In spite of this, it can be argued that the determination of language does not represent the absence of values, organization, or of the cultural elements of indigenous communities.

Keywords: Indigenous language, community schools, bilingual children

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**ELEMENTARY SCHOOL BASED INTERVENTION PROGRAM: USING
MINDFULNESS FOR IMPROVING EXECUTIVE FUNCTIONS**

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*Autonomous University of Barcelona, Spain***ABSTRACT**

This study explores the use of Mindfulness school-based intervention program in an Elementary School. Mindfulness training is an accepted and effective didactic approach to improve the executive functions (EFs) of elementary school students. However, previous mindfulness studies conducted on elementary school students have been primarily led by external instructors, outside of the natural classroom and school-day routine. More teacher-led, curriculum-embedded mindfulness research is needed. The Mind Yeti program is a mindfulness intervention that fits these requirements. The purpose of this study is to evaluate the effects of the Mind Yeti program on the EFs of elementary school students. A diverse sample of 3rd, 4th, and 5th grade elementary school students (n = 177; aged 8 to 11 years old) participated in a Mind Yeti intervention in their general education classroom, with six sessions per week for 6 weeks. Students self-reported their EFs on pretest and posttest questionnaires. Paired-sample t-tests indicated that students significantly improved on scores of inhibition, emotional control, working memory, and cognitive flexibility. Additionally, students in 5th grade responded better to Mind Yeti than students in 3rd grade. Unexpectedly, changes in sustained attention and organization were not significant. Results were partially consistent with the hypothesis, suggesting that Mind Yeti is an appropriate and effective intervention for improving the EFs of students, and thus may be a positive addition to elementary schools' curriculum. Future research is required to replicate these findings.

Keywords: Mindfulness, School, Elementary, Mind Yeti, Executive Functions

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CURRENT FORMS OF ASSESSMENT IN PRIMARY EDUCATION WITH A FOCUS ON FORMATIVE ASSESSMENT

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ABSTRACT

Assessment can be understood as an activity that pursues both the result as well as the process of achieving the goal, it monitors the conditions and means of achieving these goals and the activities of the pupil and teacher in the process of achieving goals. School assessment is a process that leads to determining the qualities and achievements showed by a pupil or a group of pupils; it is a systematic activity, i.e. prepared, organised and repeatedly performed, whereby the results are subject to revisions or corrections. Formative assessment is continuous feedback, where the learner obtains information in the learning process that compares the current situation with respect to the starting position and especially to the stated goal. The aim of our research was primarily to identify various forms of assessment at primary school and then to understand how teachers work with formative assessment in teaching practice. In view of the research objectives, a mixed research strategy was chosen. Within the quantitative survey, which focused on the assessment of various forms of evaluation at school, a questionnaire of our own construction was used and was administered. The second step was implementing a qualitative survey, where semi-structured interviews were carried out focusing on the issue of format evaluation in primary education. Results show that teachers often use alternative forms to the most common (summative) assessment in the form of pupils' portfolio, stamps, stickers, credits or letters. In terms of formative assessment, its contribution to pupils' development is appreciated as well as its greater informative value, but interestingly, many teachers use formative assessment without knowing that the chosen assessment method is known by this term.

Keywords: Primary Education, Assessment, School Assessment, Formative Assessment

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RETARDER TECHNOLOGY TO WIND TURBINES

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My interest have been drawn toward the efficient generation of power by means of wind energy, this quest have pushed me to research combining **retarder technology to the wind turbines**; which could stabilize and increase the power generated by turbines during windy seasons; thus, this research needs to answer questions such as, 1. How can a wind turbine operate continuously without shut down during wind above 88km/h? 2. Which technology can be added to the turbines to ensure operation during windy seasons? 3. Is there a possibility to generate more power during windy season? These questions came from knowing that present-day wind turbines are design in such a way that the turbine starts operation between wind speeds of 9.66kmh – 12.88km/h. The turbine withstands a wind speed of 80.5km/h maximum. The anemometer monitors the speed of the wind and shutdown the turbine automatically, by sensing a speed above 88km/h. Therefore, knowing such existing design specifications and limitations, I have decided to use the method of retarder technology, used on heavy vehicle (trucks) braking system to ensure the regulation of the turning of the wind blade, which will help protect the wind turbine generator from damage during heavy wind. The results of such technology will be, wind turbine continue operation since retarders are not usually capable of bringing vehicles to a standstill, the retarder technology will be used for the following purposes: 1. regulate the turn of the turbine blade during heavy wind. 2. To ensure that the wind turbine generates power at all time.

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DIGITAL ENVIRONMENT AND STUDENT'S ABILITIES

I.V. Ryabova, S.Yu. Stepanov, E.V. Gavrilova and T.A. Sobolevskaya

*Moscow City University, Russia***ABSTRACT**

The current generation of students is called “digital” for their passion to computer digital technology. Education environment at school can be also determined as ‘digital’ nowadays. A plenty of computer classes, usage of laptops, tablets, computer class-boards, and electronic school-diary in a teaching process are distinct markers of a new era in education. The authors conducted a classroom questionnaire survey among 418 school-aged students from 5 secondary schools in Russia about the use of digital devices together with test assessment of students’ abilities aimed to study cognitive, intellectual and emotional qualities and abilities. The correlation analysis of measured parameters was applied. Correlation matrix for measured parameters showed significant positive relationship between the number of extra-classes attended by students and indicators on the Raven’s intelligence score (general intelligence), emotional well-being (Huebner-Gordeeva) and emotional self-efficacy (Muris). The indicator of time spent in social networks shows a significant relationship with attention span (Munsterberg) and emotional well-being. Parameters related to time spent on the Internet and video games, on the contrary, find negative relationships with emotional self-efficacy and social intelligence (Shepeleva-Ovsiyannikova-Valueva). Parameter “number of extra-classes” shows a significant negative relationship with computer use, time spent on the Internet and video games. The presence in the digital environment seems to be a risk factor for development of children and play a negative role by provoking a downswing of general, social and emotional intelligence and conversely, classes of additional education (extra-classes) have a positive impact on the mental development of students. *The research is done with the support of Russian Foundation for Basic Research (Grant No. 18-013-00915).*

Keywords: Students, Digital Environment, Cognitive Abilities, Extra-classes

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A PEG SYSTEM IN VOCABULARY LEARNING FOR ESP STUDENTS

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The author conducted an experiment among students taking English for Science and Technology to find out whether a Peg system could or not increase students' resources of professional words, and impact on their learning achievements. In the frame of this research question the presenter raised 2 hypotheses: H_0 - It is impossible that the Peg system can increase students' resources of professional words; H_1 - It is possible that the Peg system can increase students' resources of professional words. H_0 - The system can negatively impact on students' learning achievements; H_1 - The Peg system can possibly impact on students' learning achievements. In this experiment 100 new words were learned by 10 words in 10 lessons respectively. Firstly, English level knowledge of the test and control groups had been compared before the Peg system was applied in the lessons. Students' English knowledge level was almost the same. Then short and long-term memory quizzes were taken by students to compare how many words were stored out of 100 in a long run. The results revealed that first two hypotheses were accepted showing that the Peg system was effective. The presenter checked how the Peg system influenced the students' learning achievements analyzing outcomes of a pretest and a posttest. She applied some forms of descriptive analyses of data. Findings stated that the Peg system was productive for vocabulary and influential for learners' study. In conclusion, the Peg system is suitable for teaching new words related to the fields of Science, Technology and Engineering as it leads students to memorize new words in unusual fun images that last in their memory and help to recall words.

Keywords: Short-term memory, long-term memory, learning achievement

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TEACHING READING ON ENGLISH FOR SPECIFIC PURPOSES WITH THINK PAIR SHARE TECHNIQUE

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ABSTRACT

Different departments in a university have different terms with general English terms. However, some students still do not familiar with the terms that are related to their department. English for Specific Purpose (ESP) is one of the ways to ease the students with different departments to learn specific terms on their department. Social studies study program is one of the majors that its students find it difficult to comprehend the content and terms related to their major when reading as they are always surrounded by General English. Think Pair Share (TPS) on reading is helpful for the students to develop their ability in understanding the text. This study is aimed to find out the difference between the students who are taught using ESP text with Think Pair Share (TPS) Technique and those who are not taught with TPS technique. This study employs a quasi-experimental design. The participants were the undergraduate students of social studies study program which were divided into 2 groups, experimental and control groups. The research instruments were related to social studies English passages. Posttest data were calculated and used to know the effectiveness of the treatment or if there is any significant difference on each group. The data was analyzed by testing the hypotheses by deploying an analysis of variance (ANOVA). The result shows that there is a significant different between experiment and control class; moreover, the mean of the experimental group was 76.63 greater than the control group mean that was 74.64. It shows that the students who used Think Pair Share technique had better reading comprehension on ESP text than the students who did not use the technique.

Keyword: Teaching reading, English for Specific Purpose (ESP), Think Pair Share (TPS)

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INCLUSIVE EDUCATION IN SETTING BANJAR CULTURE LOCAL WISDOMH. Mansur¹ and A.H. Utama¹*¹Faculty of Education, Lambung Mangkurat University (ULM), Indonesia***ABSTRACT**

Local Wisdom Culture Banjar In Inclusive Education Setting reflected Banjar community character education. Three Banjar community character education, namely: 1) Respect for diversity, 2) cooperation, and 3) Fraternity that is associated with three main issues, namely: 1) Understanding and treatment, 2) policy and 3) Service. The three principal issues associated with the application of local wisdom in Inclusive Schools Banjar culture. Local wisdom Banjar culture in an inclusive education setting is reflected as follows: 1) All school members ranging from students, teachers, staff administration, principals, and parents are part of the school community. This is following the public character of the first row, which highly appreciates diversity, 2) Each school community helps each other overcome learning problems of children with special needs (ABK). This is under the character of the people of Banjar, which shows the cultural fraternity. 3) Residents of schools cooperated with parents/guardians of students who reflect intensive communication on the development of children in school. This is consistent with the culture of cooperation in the Banjar community. The results showed 1) Understanding and treatment by the school community are giving high expectations for all students in terms of learning activities, all students, including students with special needs, are encouraged to be active in the learning activities. 2) The school policies are always trying to minimize the discriminatory practice through direct monitoring by each member school. 3) The service provided by the school community, especially teachers and staff administration attempted to remove all barriers to learning all students, including students with special needs (ABK). This research use approach qualitative and descriptive methods were implemented elementary school inclusive in Banjarmasin.

Keywords: Local Wisdom Banjar, Banjar Character Education, Inclusive Education

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INTERACTIVE STORY GRAPH STRUCTURE IN DIGITAL STORYTELLING

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ABSTRACT

The flow of the storyline should be structured well and organised to make it understandable and complete. The most attractive and interesting storytelling nowadays is digital storytelling as all the information and entertainment move into digital devices. To make digital storytelling more interactive and attractive, some interactive features, such as interactivity, iteration, and multi-option are incorporated in the story structure. Nevertheless, the interactive features should be explained well in the story structure to ease the process of interpreting the storyline. However, the existing story structure could not support those features. Therefore, the creation of a new story structure will help the process of interpreting an interactive storyline with those interactive features. This paper will demonstrate the new story structure that blends well with the interactive features by modifying the existing story structure approach. The flow of the storyline in a new story structure can be created by applying a few new symbols that match the storyline by following the guidelines on making a new story structure. The new story structure has been evaluated by 15 expert reviews using a heuristic approach with the aim to look at the acceptance of the new structure as part of the process to interpret the interactive storyline for digital storytelling. The results of the evaluation are tested using SPSS.

Keywords: Interactive digital storytelling, Interactive Story Graph Structure

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CREATING SPACE FOR EDUCATION FOR SUSTAINABILITY (EfS) IN NEPAL

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*Monash University, Australia***ABSTRACT**

Nepal is one of the least developed countries in the world but rich in terms of natural resources. However, condition of natural resources is slowly deteriorating due to two main kinds of environmental challenges- pollution that is generated within the country and effects of climate change. The preservation of nature has huge significance in Nepal as it has been the main source of Nepalese economy. Therefore, in order to ensure sustainability, it is necessary to educate children about environment so that the future of Nepal is secure and sustainable. On the other hand, it is undeniable truth that educating children about sustainability is beyond just incorporating environmental education in school curriculum. In order to produce active citizens of the country who would create sustainable future, Education for Sustainability (EfS) should be implemented in schools with the support of whole school approach to sustainability. It is also essential that educational leadership exercises transformational leadership practices for the implementation of whole school approach to empower children about sustainability. This paper looks into how leadership nurtures and facilitates EfS in the context of Nepal through the example of the principal in rural school in Nepal; uses a theoretical framework of systems thinking to understand the link between transformational educational leadership and EfS. In taking whole-school approach, I investigate how transformational aspect of leadership facilitates EfS and challenges inherent in implementing it. Finally, through the experience of field-visit, interview of the principal and systematic review of literature, the Educational Leadership for Sustainability (ELS) model is devised and tested, which could act as the framework for understanding the relationship between educational leadership and EfS.

Keywords: Educational Leadership, Education for Sustainability, Whole School Approach, Transformational Leadership, Nepal

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A NEW TEACHING AID IN ADMINISTRATING AN INFERIOR ALVEOLAR NERVE BLOCK: PRELIMINARY INVESTIGATION

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ABSTRACT

Background. Local anaesthesia is an essential part in dental treatment and is formally taught in worldwide dental curriculum. The inferior alveolar nerve block (IANB) is one of the most frequent regional anaesthesia technique used in dental procedures. However, this technique is reported to have the highest failure rates among dental undergraduates, interns and even, dental professionals. **Purpose.** Thus, this study is mainly aim to present the preliminary results assessing the influence of diffusion of innovation attributes on students' attitudes towards a Novel Local Anaesthesia Simulator Kit (LASK) in performing Inferior Alveolar Nerve Block (IANB). **Methodology.** A cross-sectional survey was conducted using questionnaire; and distributed to dental undergraduates. Questionnaire used in this study consisted of items that adapted from previous studies. A total of 83 questionnaires were obtained and valid for data analysis. **Results.** All 83 respondents were undergraduate dental students from Year 1; involving 69.9% female and 30.1% male. Nearly students were male (62.9%), between the age of 20–29 years The study findings reported that relative advantage ($p=0.01$), complexity ($p=0.02$), compatibility ($p=0.03$) and observability ($p=0.001$) were significantly influenced attitudes of students towards the new teaching aid of LASK in performing IANB. **Conclusion.** This preliminary study findings will help in conducting future actual study. Further, these empirical studies will contribute to specific educational significance, especially in assessment of clinical competence of dental undergraduates at a more microscopic level. Hence, providing pre-clinical training that improves patients' safety by improving dental undergraduates' clinical skills, in line with World Health Organisation's(WHO) Final Report of the Expert Group to the High-Level Commission on Health Employment and Economic.

Keywords: inferior alveolar nerve block (IANB), attitudes, innovation, teaching aid.

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[101]

**ANALISING THE EFFECT OF LEARNING STYLES ON STUDENTS'
PERFORMANCE USING NEURO-FUZZY TECHNIQUE**

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ABSTRACT

Various instruments have been developed to assess the effect of learning styles on students' performance based on several different dimensions of learning styles. The instruments are statistically developed by mostly focusing on the correlation between students learning styles and their results, within a pre-study and post-study environment setup. However, correlational studies only explain the strength of the relationship, not the cause and effect. Since the correlation can be linear or non-linear, the outcomes may be misleading. Therefore, the fundamental purpose of this paper is to access the suitability of using a computationally developed neuro-fuzzy system in explaining the relationship between students learning styles and their academic performance. The data on students learning styles and their results were collected using the VARK Learning Styles questionnaire among Actuarial Science students from UiTM. This study has found that a neuro-fuzzy system with ANFIS approach is a good alternative tool in accessing the effect. Furthermore, the membership functions generated by the system provide more meaningful knowledge of the learning styles components for each student, which could be further used in predicting their academic performance in the future.

Keywords: VARK, Neuro-fuzzy, ANFIS, correlational studies, Actuarial Science

[102]

USING EXPERIMENTAL INVESTIGATION FOR EDUCATIONAL PURPOSES: HEAD LOSSES IN PIPING SYSTEMS

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ABSTRACT

According to the Canadian Engineering Accreditation Board (BCAPG), one of the twelve qualities that an engineering student must acquire is the ability to investigate. This means that it must be able to study complex problems using methods involving experiments, analysis and interpretation of data and synthesis of information in order to formulate valid conclusions.

It is therefore proposed to design a test bench for the characterization of losses in piping systems. One of the most common problems in fluid mechanics is the estimation of pressure loss. It is the objective of this experiment to enable pressure loss measurements to be made on several small bore pipe circuit components such as pipe bends valves and sudden changes in area of flow.

Using this bench, the aim is to obtain the pressure drop for different experimental conditions of flows (flow rate, different pipe and singularities).

This paper provides details on the measures applicable for head losses in piping systems. It also gives the instructors more opportunity to make meaningful teaching points for the subjects being introduced to the students. Students will develop an experimental method from the analysis of these standards. We also developed an assessment grid to validate the investigation quality. Students will be observed on site to validate performing experiments quality.

Keywords: Test bench, pedagogical approach, experimental investigation, minor losses, major losses, assessment grid.

[103]

A NEW TEACHING AID IN ADMINISTRATING AN INFERIOR ALVEOLAR NERVE BLOCK: PRELIMINARY INVESTIGATION

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ABSTRACT

Background. Local anaesthesia is an essential part in dental treatment and is formally taught in worldwide dental curriculum. The inferior alveolar nerve block (IANB) is one of the most frequent regional anaesthesia technique used in dental procedures. However, this technique is reported to have the highest failure rates among dental undergraduates, interns and even, dental professionals. Purpose. Thus, this study is mainly aim to present the preliminary results assessing the influence of diffusion of innovation attributes on students' attitudes towards a Novel Local Anaesthesia Simulator Kit (LASK) in performing Inferior Alveolar Nerve Block (IANB). **Methodology.** A cross-sectional survey was conducted using questionnaire; and distributed to dental undergraduates. Questionnaire used in this study consisted of items that adapted from previous studies. A total of 83 questionnaires were obtained and valid for data analysis. **Results.** All 83 respondents were undergraduate dental students from Year 1; involving 69.9% female and 30.1% male. Nearly students were male (62.9%), between the age of 20–29 years The study findings reported that relative advantage ($p=0.01$), complexity ($p=0.02$), compatibility ($p=0.03$) and observability ($p=0.001$) were significantly influenced attitudes of students towards the new teaching aid of LASK in performing IANB. **Conclusion.** This preliminary study findings will help in conducting future actual study. Further, these empirical studies will contribute to specific educational significance, especially in assessment of clinical competence of dental undergraduates at a more microscopic level. Hence, providing pre-clinical training that improves patients' safety by improving dental undergraduates' clinical skills, in line with World Health Organisation's(WHO) Final Report of the Expert Group to the High-Level Commission on Health Employment and Economic.

Keywords: Inferior alveolar nerve block (IANB), attitudes, innovation, teaching aid.

[104]

IMPLEMENTATION OF NEW TECHNOLOGIES IN TRADITIONAL HANDCRAFTS: EXAMPLES FROM THE HIGHER EDUCATION

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ABSTRACT

The implementation of new technologies in traditional handcrafts is being an increasingly popular interdisciplinary practice in arts, education and other aspects of life including entertainment, interior and public design. The present research explores the possibilities of the implementation of new technologies in traditional handcrafts with the purpose of providing a rich multisensory experience. The implied methodology involves practice-based research through creation of handcrafts with implementation of new technologies by the author-instructor and students of the Early Childhood Education Department in the Higher Education. Students' handmade creations involve a wide range of media: paintings, sculptures, collage, puppets and other constructions with implemented new technologies including light effects, coding, movement sensors and renewable energy in contexts of art, education, interior and public space. The implementation of new technologies turned out to be a hands-on art-and-technology practice with multiple benefits in education. Students realised that many different aspects of the traditional handcrafts were revealed with the use of new technologies and that their implementation brings traditional handcrafts to (another) life. Furthermore, it became clear that students' practice through the implementation of new technologies in traditional handcrafts constitutes their own preparation for applying these technologies to children's handmade constructions and, thus, it is possible to enhance and enrich children's creative experience. The stimulation of many senses thanks to the implementation of new technologies can also improve visual and multisensory culture, foster creativity and contribute to cultural and technological literacy. The tension between the traditional and the contemporary through the coexistence of different media proved to be a fruitful synergy making the final whole more interesting than the sum of its parts.

Keywords: Art, technology, handcrafts, education, design