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conference on  
education and  
new developments

# end 2020

## BOOK OF ABSTRACTS

Edited by  
Mafalda Carmo



**WIARS**  
World Institute for  
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and Science

**Edited by:**

**Mafalda Carmo**

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## FOREWORD

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Dear Colleagues,

We are delighted to welcome you to the International Conference on Education and New Developments 2020 - END 2020, that this year has been transformed into a fully Virtual Conference due to the Coronavirus (COVID 19) pandemic, and occurred from 27 to 29 of June, 2020.

Education, in our contemporary world, is a right since we are born. Every experience has a formative effect on the constitution of the human being, in the way one thinks, feels and acts. One of the most important contributions resides in what and how we learn through the improvement of educational processes, both in formal and informal settings. This International Conference seeks to provide some answers and explore the processes, actions, challenges and outcomes of learning, teaching and human development. Our goal is to offer a worldwide connection between teachers, students, researchers and lecturers, from a wide range of academic fields, interested in exploring and giving their contribution in educational issues.

We take pride in having been able to connect and bring together academics, scholars, practitioners and others interested in a field that is fertile in new perspectives, ideas and knowledge. We counted on an extensive variety of contributors and presenters, which can supplement our view of the human essence and behavior, showing the impact of their different personal, academic and cultural experiences. This is, certainly, one of the reasons we have many nationalities and cultures represented, inspiring multi-disciplinary collaborative links, fomenting intellectual encounter and development.

END 2020 received 459 submissions, from more than 40 different countries, reviewed by a double-blind process. Submissions were prepared to take form of Virtual Presentations and Posters. The conference accepted for presentation 125 submissions (27% acceptance rate).

The conference also includes a keynote presentation from an internationally distinguished researcher, Prof. Dr. Joy Kutaka-Kennedy (Ed. D., Department of Special Education, Sanford College of Education, National University, San Jose Campus, USA), to whom we express our most gratitude.

This volume is composed by the abstracts of the International Conference on Education and New Developments (END 2020), organized by the World Institute for Advanced Research and Science (W.I.A.R.S.). This conference addressed different categories inside the Education area and papers are expected to fit broadly into one of the named themes and sub-themes. To develop the conference program, we have chosen four main broad-ranging categories, which also covers different interest areas:

- In **TEACHERS AND STUDENTS**: Teachers and Staff training and education; Educational quality and standards; *Curriculum* and Pedagogy; Vocational education and Counseling; Ubiquitous and lifelong learning; Training programs and professional guidance; Teaching and learning relationship; Student affairs (learning, experiences and diversity; Extra-curricular activities; Assessment and measurements in Education.
- In **PROJECTS AND TRENDS**: Pedagogic innovations; Challenges and transformations in Education; Technology in teaching and learning; Distance Education and eLearning; Global and sustainable developments for Education; New learning and teaching models; Multicultural and (inter)cultural communications; Inclusive and Special Education; Rural and indigenous Education; Educational projects.
- In **TEACHING AND LEARNING**: Critical, Thinking; Educational foundations; Research and development methodologies; Early childhood and Primary Education; Secondary Education; Higher Education; Science and technology Education; Literacy, languages and Linguistics (TESL/TEFL); Health Education; Religious Education; Sports Education.
- In **ORGANIZATIONAL ISSUES**: Educational policy and leadership; Human Resources development; Educational environment; Business, Administration, and Management in Education; Economics in Education; Institutional accreditations and rankings; International Education and Exchange programs; Equity, social justice and social change; Ethics and values; Organizational learning and change, Corporate Education.

The abstracts contain the results of the research and developments conducted by authors who focused on what they are passionate about: to promote growth in research methods intimately related to teaching, learning and applications in Education nowadays. It includes an extensive variety of contributors and presenters, who will extend our view in exploring and giving their contribution in educational issues, by sharing with us their different personal, academic and cultural experiences.

We would like to express thanks to all the authors and participants, the members of the academic scientific committee, and of course, to our organizing and administration team for making and putting this conference together.

Hoping to continue the collaboration in the future,

Respectfully,

Mafalda Carmo  
World Institute for Advanced Research and Science (WIARS), Portugal  
*Conference and Program Chair*

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## KEYNOTE LECTURE

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### NEW POSSIBILITIES IN EDUCATION AT THE NEXUS OF GENERATIONAL CHANGE AND TECHNOLOGICAL INNOVATION

**Prof. Dr. Joy Kutaka-Kennedy**

*(Ed. D.)*

*Department of Special Education, Sanford College of Education,  
National University, San Jose Campus (USA)*

#### Abstract

One thing is certain in life and that is change, something we all experience in big and little ways every day. We all emerged as newborns into families of varying sorts, progressed through a multiplicity of childhoods, and finally achieved and survived teenage years. We began renegotiating our relationship with parents who had their ideas of who we should be and how we should live, which more often than not clashed with our own emerging definition of ourselves in the changing world. Younger generations have struggled with older generations for possibly as long as human history. Each new generation challenged the norms, expectations, and perspectives of their predecessors in light of the latest social, environmental and technological changes that developed. Game-changing innovations have shaped and influenced the context of social evolution as well as cultural revolution. With these generational differences nuanced by ever evolving technological innovations, how can we in higher education best prepare our students to meet the needs of the changing workplace and communities? How do we bridge the gaps between the older-generation academics who grew up using typewriters and the younger generation student body using Facetime, social media and text messaging? Besides becoming more adept and proficient in using technology, which is a crucial step in the right direction, we need to harness more of the vast resources available in online education to offer course work to an increasingly demanding student body who wants instant access, quick responses and on-demand mobility. Online education is here to stay with demand growing each year. We in higher education need to become highly skilled and more effective in meeting students where they are with what they need and want. We must teach and engage them more efficiently and effectively, especially in light of upcoming innovations in augmented and virtual reality, artificial intelligence, and other innovations. Higher education needs to embrace the forces of innovation which will continually impact how people learn, adapt and go forward.

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#### Biography

Prior to entering higher education Dr. Joy Kutaka-Kennedy spent over fifteen years teaching pre-school through high school students in regular education, gifted education, at-risk education, and special education. After earning her doctorate in Special Education, she has taught over fifteen years at the university level, emphasizing special education teacher preparation in academic course work and clinical practice supervision. Having extensive experience with online education, course development and program evaluation, she won Quality Matters recognition for innovative course design and student engagement. She has given numerous national and international presentations on creativity and collaboration in the online venue; individual accountability in online group work; emerging technological trends in higher education; implications of generational differences and technological innovation in higher education; and the future of Artificial Intelligence, machine learning and deep learning in education. Her university faculty responsibilities include course design and assessment oversight, field work supervision, and mentoring new faculty in higher education. Dr. Joy Kutaka-Kennedy serves as an officer of the California Association of Professors of Special Education, completes program reviews for state and national accreditation, and performs editorial reviews for professional publications. She currently is working on designing new curricula to align with new state credentialing standards.

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# **VIRTUAL PRESENTATIONS**





## TEACHERS AND STUDENTS

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### PROMOTING STUDENT ACTIVISM THROUGH CIVICS EDUCATION

**Alan Singer**

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#### **Abstract**

This paper is drawn from a book, *Supporting Civics Education with Student Activism*, I am co-writing with my colleague Pablo Muriel. It is scheduled to be published by Routledge. Young people today confront a world they did not create and with serious problems the adults in their lives, parents, family friends, teachers, and political leaders, have been unable to resolve. Swedish teenage climate activist Greta Thunberg warns, "Our house is on fire." The question we confront as teachers and activists is "How do we best prepare a new generation to be active participants in preserving and transforming a democratic society, generating solutions that meet the needs of people domestically, respects and heals the environment, and promotes international cooperation to address the needs of people across the globe?" We argue that supporting student activism as teachers is a fundamental component of civics education. What distinguishes social activism from service learning is advocacy to change institutional policy, whether the institution is a school or school district, a corporation, or a local, state, or national government. Collecting food and clothing after an environmental disaster, hurricane relief, is a service-learning project, but it becomes social activism when students petition school or district officials to permit or even embrace student involvement. Political responses to injustice cannot wait until after high school or college, but must be made as injustice arises. Our hope in supporting and promoting student activism is to encourage a new generation of pro-democracy, pro-environment, pro-humanity activists.

**Keywords:** *Student activism, civics education, democracy, social studies.*

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### ASSESSING TPACK INTEGRATION IN SENIOR PHASE SCIENCE TEACHING AND LEARNING AT SOUTH AFRICAN TOWNSHIP SCHOOLS

**Hlulani Shilenge, & Sam Ramaila**

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#### **Abstract**

As a complex dichotomy, the advent of the fourth industrial revolution poses enormous challenges while providing practical pedagogical benefits for science teaching and learning within the broader South African educational context. While the need to integrate technology as a catalyst for pedagogic innovation in science teaching and learning is paramount, considerable attention ought to be devoted to meaningful teacher professional development on the effective utilization of appropriate information and communication technology tools. In view of this key strategic imperative, this study primarily examined the effectiveness of the technological pedagogical content knowledge (TPACK) integration in Senior Phase science teaching and learning at selected South African township schools. The study adopted a generic qualitative design located within the interpretive research paradigm. Data was collected through semi-structured interviews and lesson observations involving three purposively selected Natural Sciences teachers at South African township schools. The study demonstrated that general lack of essential resources and appropriate technological skills hampered teachers' ability to meaningfully integrate TPACK in Senior Phase science teaching and learning at the selected South African township schools. In addition, teachers' lack of topic specific pedagogical content knowledge served as an impediment to effective integration of TPACK in Senior Phase science teaching and learning. Moreover, teachers' inability to identify and deploy appropriate information and communication technology tools reflected inadequate understanding of the TPACK framework. Implications for technology-enhanced learning are discussed.

**Keywords:** *TPACK, technology-enhanced learning, pedagogic innovation.*

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## **MUSIC CURRICULUM INTEGRATION PRACTICES - “ACCOUNTABILITY” AS POLICY TRANSLATION IN PROFESSIONAL MUSIC TRAINING: THE CASE OF THE TUT**

**Hua Hui Tseng**

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### **Abstract**

Music curriculum integration in professional music training is a process in which policy and practical issues associated with using student achievement and music teachers' professionalism is considered so that “accountability” may more readily support curriculum integration needs. One of the realities of music education is how government-led implementation of policies influences arts teaching and learning in unintended ways. The purpose of this paper is to use Bate's (2017) three musical experiences of critical social class theory as the enquiry lens. Three contextual variables are highlighted for their impact on teachers and schools: Tolerance, inter-cultural dialogue, and respect for diversity. The focus is music education policy and its aims and strategies that need to be shaped in different ways that are appropriate to the diversity of musical practices and contexts of music education. Insights into the results of policy translation are gained through using the Music Department at the Tainan University of Technology, Taiwan, as an example. The findings demonstrate that music curriculum integration with a function-based approach to accountability helps with successfully implementing policies.

Keywords: *Curriculum integration, accountability.*

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## **FACTORS INFLUENCING TEACHERS' INCLINATION TO USE IMPROVISED RESOURCES IN LIFE SCIENCES CLASSROOMS**

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### **Abstract**

A substantial number of schools in South Africa are still under-resourced and this predicament poses fundamental challenges to the provision of quality education for all. The use of improvised low-cost resources as an integral part of pedagogic innovation can be adopted as a viable and sustainable alternative to harness affordable resources to foster meaningful science teaching and learning. In view of this crucial imperative, this study primarily focused on the use of improvised low-cost resources in Life Sciences classrooms at selected South African township schools. The study adopted a case study design located within the interpretive research paradigm. Data was collected through semi-structured interviews and lesson observations involving ten purposively selected Life Sciences teachers. The study revealed that key factors influencing teachers' inclination to use improvised resources include general lack of essential laboratory resources, the need to demystify complex scientific concepts to ensure meaningful conceptual understanding by using available affordable alternative resources as well as harnessing the affordances of improvisation as an innovative means to stimulate meaningful teaching and learning. While the affordances associated with the use of improvised resources have been duly acknowledged by the participants in this study, fundamental challenges and limitations afflicting the deployment of improvised resources remain. In particular, Life Sciences teachers involved in the study postulated that the use of improvised resources may serve to perpetuate misconceptions and that lack of requisite creativity can adversely affect the crafting of improvised resources necessary for teaching difficult topics. Implications for pedagogic innovation are discussed.

Keywords: *Improvisation, low-cost resources, pedagogic innovation.*

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## IMPROVING UNIVERSITY STUDENTS' PERCEPTIONS OF PEER ASSESSMENT

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### **Abstract**

Peer assessment is crucial in modern education which emphasizes students' active participation at every aspect of their learning. However, studies have evidenced problems in the implementation of this type of assessment and resistance towards these methods caused by students' negative perceptions. This paper describes an action research study that set out to find out and improve the perceptions about peer assessment in a group of 30 university students from the third semester of a Bachelor of Arts in English Language Teaching program in Northwest Mexico. The instruments used for data collection were observations and written interviews. Activities and strategies were designed and implemented following the stages of action research. Data was analyzed and the results suggested that the students' perceptions about peer evaluation improved in relation to the credibility and value of peer assessment.

**Keywords:** *Peer assessment, perceptions, training university students, action research.*

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## THE AFFORDANCES OF IMPROVISED RESOURCES IN PHYSICAL SCIENCES CLASSROOMS

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### **Abstract**

The development of meaningful conceptual understanding in science teaching and learning is a key ingredient required for the development of scientifically literate citizenry. The use of improvised resources to demystify the complexity of scientific phenomena is of crucial significance. In recognition of this crucial imperative, the study explored the pedagogical affordances associated with the use of improvised resources in Physical Sciences classrooms at a selected South African township school. The study adopted a case study design located within the interpretive research paradigm. Data was collected through semi-structured interviews and lesson observations involving three purposively selected Physical Sciences teachers. The study demonstrated that the use of improvised resources promotes active learner participation, sustained intellectual engagement in the teaching and learning activity, enhancement of teachers' pedagogical content knowledge, development of learners' reflective and cognitive skills as well as the provision of meaningful opportunities for collaborative learning and development of meaningful conceptual understanding. Key findings of the study have profound implications for pedagogic innovation within the broader South African educational context.

**Keywords:** *Improvisation, low-cost resources, pedagogic innovation.*

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## THE RELATIONSHIP BETWEEN TEACHER-STUDENT RELATIONSHIP, SELF-CONFIDENCE, AND ACADEMIC ACHIEVEMENT IN THE CHINESE CONTEXT

**Tianxue Cui<sup>1</sup>, Qimong Liu<sup>1</sup>, Jian Liu<sup>1</sup>, & Chuang Wang<sup>2</sup>**

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### **Abstract**

This study examined the relationship between teacher-student relationship, self-confidence in learning, and academic achievement of high school students in China. In this study, 14,021 11th graders in China took part in the National Standardized Tests in three subject areas: Chinese language, mathematics, and English language. Teacher-student relationship and self-confidence in learning were measured with the questionnaires adapted from PISA2012, the psychometric properties of which have been examined in large-scale assessments. Results showed that teacher-student relationship in each subject area, self-confidence in learning, and their corresponding academic achievement were all statistically significantly related to each other. Structural equation models were used to verify the mediating effect of

self-confidence in learning between teacher-student relationship and students' academic achievement in each subject area. Results indicated that self-confidence in learning mediated the significant associations between teacher-student relationship and students' academic achievement. This mediating effect was the largest in the subject area of Chinese language, which was 8.1% greater than that in the subject area of English language, and 3.9% greater than that in the subject area of mathematics. This study suggests that good teacher-student relationship is conducive to enhancing students' self-confidence in learning, which had positive relationships to academic achievement.

**Keywords:** *Teacher-student relation, self-confidence in learning, academic achievement, Chinese high school.*

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## **MAPPING DISABILITY REPRESENTATION IN PRIMARY SCHOOL YOUTH LITERATURE**

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### **Abstract**

The growing number of inclusive classrooms resulting in significant changes in education. One important change is that there is an increasing number of opportunities for students with disabilities and their peers to be grouped for learning. However, equity in access does not guarantee equity in outcomes in terms that nondisabled students will become accepting the ones who have disabilities. Therefore, there is a need for intervention that facilitates the acceptance of students with disabilities.

In an educational setting, youth literature can provide an easily accessible resource that helps students to become familiar with the diversity of society and its social and cultural contexts. These literary works, serving as a link between curriculum content and social perception, can affect the readers' self-image, interpersonal sensitivity and opinion toward different minority groups and social problems. It is therefore important that literary works do not contain biased content, or, if they do, textbooks or teachers should provide an opportunity for discussion of them.

The research examined the representation of disability found within youth literature that is employed to support the Hungarian National Curriculum. The study employed content analysis to identify different recurring patterns of the disability conception within the content of youth literature in primary education by using a code system which was based on Biklen and Bogdan's (1977) stereotypes categories.

The analysis of the data resulted in a number of findings, which have been grouped into individual themes including exclusion, the portrayal of characters with disabilities as an 'object of evil', or as an 'object of violence', as well as the elimination of people with disabilities as the solution of the 'happily ever after' story ending. In addition, in the literary works examined there is a severe lack of appropriate images of people with disabilities presented in everyday situations, as a part of a given socio-cultural environment.

These negative representations lead us to question the continued uncritical use of these literary works with students at primary schools as part of our National Core Curriculum. We suggest that such exclusionary and stereotypical storylines could create negative preconceptions toward people with disability by students and could also promote the segregation of disabled people in society. Therefore, these literary works could not be applied uncritically by teachers during the lessons.

**Keywords:** *Disability, youth literature, content analysis, elementary schools.*

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## **THE RELATIONSHIP BETWEEN STUDENTS' APPROACHES TOWARD LEARNING AND ACADEMIC ACHIEVEMENT IN THE CHINESE CONTEXT**

**Chuang Wang<sup>1</sup>, Qimong Liu<sup>2</sup>, Jian Liu<sup>2</sup>, & Tianxue Cui<sup>2</sup>**

<sup>1</sup>*Faculty of Education, University of Macau (China)*

<sup>2</sup>*Collaborative Innovation Center of Assessment for Education Quality, Beijing Normal University (China)*

### **Abstract**

This study examined the relationship between student's approaches toward learning and academic achievements of high school students in China. Participants were 14,021 11th graders from an eastern province in China. They took the National Standardized Test in three subject areas: Chinese language,

mathematics, and English language. The total score was used as an indicator of their academic achievement. Students' approaches toward learning were measured in three aspects: self-confidence in learning, learning interest, and study habits. Questionnaires of self-confidence in learning and learning interest were adapted from PISA2012. Study habits were measured with the questionnaire adapted from Academic Adjustment Inventory (AAI). Results of Pearson correlation and hierarchical linear regression models showed that the dimensions of students' approaches toward learning were statistically significantly related to academic achievement. Results of analysis of variance after the control of student gender and socioeconomic status suggested that the top 25% students in dimensions of approaches toward learning scored statistically significantly higher than the bottom 25% students with small effect sizes in their performance on the final examinations. This study suggests that helping students build good approaches toward learning may improve their academic achievements.

**Keywords:** *Students' approaches toward learning, academic achievement, Chinese high school students.*

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## **A GROUNDED THEORETICAL STUDY ON THE INFLUENCE MECHANISM OF VERBAL ABUSE BY TEACHERS**

**Jinnan Li, & Yuheng Zhang**

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### **Abstract**

Language violence by teachers has a serious negative impact on students' mental health. In this study, 16 primary and middle school students were interviewed in depth and qualitative research was conducted on the interview data using grounded theory. It is found that the language violence of teachers has the characteristics of harmfulness, persistence and coercion. Its manifestation mainly includes three kinds: Openness and directness, Openness and indirectness and private directness. The attribution of language violence in teachers mainly includes teacher attribution, self-attribution and task attribution. From the results, the language violence of teachers will have a serious negative impact on students' psychology, but sometimes it will also play a promoting role in some students. Based on the paradigm model of grounded theory, the paper also constructs a theoretical model of the influence mechanism of teacher verbal abuse. According to the model, the interaction between the internal personal evaluation system and the attribution system determines the degree of influence of teacher's verbal violence on students.

**Keywords:** *Verbal abuse by teacher, primary and secondary school students, influence mechanism, grounded theory.*

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## **EVALUATION IN SCIENTIFIC ADVISORS' COMMENTARIES AS A MEANS TO DEVELOP STUDENTS' WRITING SKILLS**

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### **Abstract**

The paper focuses on evaluative means in scientific advisors' commentaries that have an educating power and serve to develop students' writing skills. A scientific advisor assumes various roles in the process of correcting and editing students' linguistic research related papers. The roles of editors, psychologists, reviewers, representatives of academic discourse are revealed in the commentaries that accompany a feedback that teachers provide their students with. The commentaries are of evaluative nature.

**Keywords:** *Evaluation, writing skills, scientific advisor, commentaries, roles.*

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## **CZECH CURRICULAR REFORM IN THE REAR-VIEW MIRROR: THE CASE OF FOREIGN LANGUAGE LEARNING**

**Pavel Brebera**

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### **Abstract**

The aim of the paper is to present some insights into the long-term effects of the Czech curricular reform, which was carried out at primary and lower-secondary level of educational system in the second half of the previous decade. The author combines two relevant perspectives. The first viewpoint is represented by referring to the outcomes of the author's own longitudinal empirical research, which was carried out within the years 2004-2007. The aforementioned study was focused on analysing the particular dimension of English language teachers' professional competence in relation to the proclaimed goals of the upcoming curricular reform. The second perspective intends to provide a valuable complementary picture as it is based on the analysis of "language learning stories", expressed by the current university students, i.e. the addressees of the previous curricular reform. This small-scale empirical investigation was carried out via a content analysis of the students' reflections on their prior learning experience. The arising categories of qualitative data are interpreted with regard to the main principles of the curricular reform, and discussed in terms of some potential ways of dealing with the issues of the university students' previous language learning experience.

**Keywords:** *English language learning, university students, teacher professional competence, curricular reform.*

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## **BASIS OF ARCHITECTURAL SURVEY BETWEEN GEOMETRY AND REPRESENTATION. A FIRST EDUCATIVE APPROACH**

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### **Abstract**

This paper illustrates the educative path – aimed at learning the basis of architectural survey – we propose to the students in the first year, as part of the Drawing and Survey Laboratory (bachelor's degree in Architecture). The primary focus of the Laboratory is to guide them in studying and using the graphic languages and related fundamental tools. In this case, architectural survey comes as a cognitive tool of fundamental importance for the analysis and understanding of architectural artefacts. The main objective of the exercises carried out during the Laboratory is to prepare student by a gradual theoretical and technical path for the direct and indirect operations of survey. During the first semester the course includes a first operation of surveying an architectural drawing (during the exercise of critical redraw of a published project), giving birth to an ideal scalar approach to the themes of survey, both manual (direct survey) and digital (PR, SfM), which combines and develops horizontal and vertical skills. Here, we discuss the main passages of the path of survey through an emblematic case study from Torino.

**Keywords:** *Architectural drawing and survey, architectural education, integrated architectural survey, architectural heritage, process of knowledge.*

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## **CREATING AUTHENTIC LEARNING AND ASSESSMENT ENVIRONMENTS**

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### **Abstract**

The aim of this study is to investigate how the concept of "authentic learning" and "authentic assessment" is formed in the discourse of education executives. Authentic learning is based on the theory of social constructivism, according to which the social nature of knowledge is emphasized and the learner builds knowledge by creating meaningful authentic activities. Authentic assessment is described as a dynamic

form of assessment which focuses on the skills developed by students during the learning process. The design of learning environments is based on the nine features of authentic learning, constructivism and the theory of embedded learning. In this study examples of authentic activities that support authentic learning environments are presented. In these activities a variety of authentic techniques are used and they are related to different subjects, such as Physics, Ancient Greek, Mathematics, Environmental studies, etc. The sample of the study consisted of 114 adults participating in a training program as a qualification for their professional development during the year 2018-2019. Quantitative analysis of the data was conducted. The analysis of the data revealed that an authentic learning environment consists of experientiality, interdisciplinarity, team work, problem solving, self-assessment, peer-assessment, real-world relevance, which are characteristics of authentic learning and assessment. Moreover, the implementation of authentic learning activities in different learning contexts can lead to the development of cognitive, metacognitive, social and communicative skills of the 21st century.

**Keywords:** *Authentic learning, authentic assessment, authentic activities, 21st century skills.*

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## **DESIGN BASED ON ICF THE TRAINING COURSES FOR IN-SERVICE TEACHERS**

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### **Abstract**

The bio-psychosocial model is increasingly becoming the reference for the planning/organization of inclusive interventions, in Europe and in the Italian schools. The ICF has been one of the main topics (l. 107/2015) in the last three-year Italian teacher training plan but it requires to change the traditional way of consider and train on the design skill of teachers.

The work presents the procedures, the technique and the early results of three professional training courses evaluation (years 2017-2019). The courses involved 73 in-service teachers in a southern Italian area and aimed to enhance the design skills of Individualized Education Plan (IEP) based on ICF model. According to the Kirkpatrick Model, the evaluation has been conducted on the teachers' 'learnings' and 'transfer' detected through pre-post test and a document analysis of the PEI-ICF produced.

The study highlighted few linguistic and semantic difficulties (alphanumeric codes, meanings of capacity and performance in the reading of the Functional Profiles) and a better teachers' sensitivity to the environmental component of the functioning. It also outlines some procedures in order to evaluate the training 'results', in terms of learning stability.

This offers some useful arguments for the construction of a possible trans-national platform - sharing of practices, data-base – about the training of school teachers on ICF bio-psychosocial model.

**Keywords:** *International classification of functioning disability and health, special education, school inclusion, in-service teachers' training.*

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## **BEATING THE ODDS: INDUCTION DESIGNED TO KEEP NEW PROFESSIONALS IN THE FIELD**

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### **Abstract**

Researchers (such as, Beck & Kosnik, 2002, de Paor, 2018) note that, predominantly, in early career induction programs for teachers, the new teacher is paired for mentoring and coaching by an experienced teacher in the same school or program. However, Smith (2011) discusses a year-long experience where a college or university faculty member served as a new teacher mentor. Smith (2011) goes on to share that college/university faculty mentors bring unique mentoring skills and expertise as they are entrenched in up-to-date research and practice knowledge and strategies.

Ronfeldt and McQueen (2017) identify that the greater number of supports an early career educator receives, the less likely the teacher is to leave the profession within 5 years. These supports include acknowledgment from school leadership, peer collaboration efforts, individualized professional

development, and 1:1 mentoring. While there is no evidence to demonstrate the actual value of Kentucky's Teacher Internship Program (KTIP), the reflective teaching model with a 3-pronged mentoring system was established to keep new professionals in the field of education. The goal of KTIP was, through mentoring by a seasoned teacher, administrator, and university faculty, to nurture and promote retention through meaningful mentoring to support the early career educator to develop the necessary skills they need to be effective teachers (McCormick & Brennan, 2001).

While programs and schools may match a "seasoned" teacher with a new teacher for mentoring and the administrator may provide some level of mentoring, the consideration of a college/university faculty mentor provides the new teacher with an expert in the field to not only provide additional mentoring but also to connect with outside resources and professional development to continue to support the teacher's growth of professional skills.

This paper discusses how induction programs can support early career professional educators in a three-pronged approach to become long-term providers growing in their practices and leadership to build the professional rather than becoming a statistic and leaving it.

**Keywords:** *Induction, mentoring, education.*

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## **THE USE OF COMPUTER SIMULATIONS AS AN INTERVENTION TO ADDRESS MISCONCEPTIONS OF GRADE 11 PHYSICAL SCIENCES LEARNERS IN SOUTH AFRICAN TOWNSHIP SCHOOLS**

**James Mphafudi, & Sam Ramaila**

*Department of Science and Technology Education, University of Johannesburg (South Africa)*

### **Abstract**

This study examined the affordances of the use of computer simulations as an intervention to address acid-base misconceptions of grade 11 Physical Sciences learners in South African township schools. Technological pedagogical content knowledge (TPACK) framework was invoked to provide valuable insights into the efficacy of computer simulations as an innovative intervention to address misconceptions associated with acids and bases. The study adopted a mixed-method approach located within a case study design and involved purposively selected grade 11 Physical Sciences learners from two South African township schools. Quantitative data was collected by administering *Acids-Bases Chemistry Achievement Test* developed by Damanhuri, Treagust, Won and Chandrasegaran (2016) as part of a control group-experimental group design. Qualitative data was collected through semi-structured interviews with the participants. Findings revealed significant differences between pre-test and post-test scores as a result of the implementation of virtual laboratory simulations as a remedial intervention. The results showed that the post-test mean score was significantly higher ( $M = 38, SD = 14$ ) than the pre-test mean score ( $M = 26, SD = 10$ ) for the experimental group. There was no significant difference between the post-test mean score ( $M = 32, SD = 13$ ) and the pre-test mean score ( $M = 30, SD = 11$ ) for the control group. Elicited responses indicated that learners perceived the use of virtual laboratory simulations as a useful alternative means to demystify abstract scientific concepts associated with acids and bases as a Physical Sciences key knowledge area. In addition, the learners demonstrated fundamental appreciation of the affordances of virtual laboratory simulations as an innovative intervention to address misconceptions. The use of virtual laboratory simulations was largely perceived to provide meaningful opportunities for self-directed learning. However, the learners indicated that virtual laboratory simulations cannot supersede the experiences provided by traditional science laboratories in view of their critical role in the development of science process skills. Theoretical implications for meaningful development of technology-enhanced learning are discussed.

**Keywords:** *Misconceptions, virtual laboratory simulations, technology-enhanced learning.*

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## **BEYOND GAMIFICATION: *CLASSCRAFT* AS AN ENGAGEMENT TOOL IN THE TEACHING OF ENGLISH AS A SECOND LANGUAGE**

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### **Abstract**

The educational use of gamification in class has been widely explored by research. Deterding (2012), Cronk (2012), or Stott and Neustaedter (2013), are only some of the experts on the field that have established in their theorizations a direct relationship between gamification and higher levels of motivation and engagement of students regardless their educational levels. When teaching English as a second language, gamification becomes a key factor to provide dynamism to lessons and to foster the consolidation of the contents taught in class. Moreover, gamification not only promotes the assimilation of vocabulary and grammar (Abrams & Walsh, 2014), but also the improvement of oral and written comprehension and production (Mazur, Rzepka & Araki, 2011; Grouling, Hedge & Schweigert, 2014). The extensive use of new technologies in class nowadays has proved to be very useful for the implementation of the methodology on gamification. One of the tools that have got the attention of educators in recent years is Classcraft, an online virtual game based on digital storytelling in which students and educators can interact with a two-fold purpose: to promote participation in class, and to propose activities for the learning and consolidation of contents. This paper aims at explaining and assessing the use of Classcraft as a successful technology-based collaborative learning tool in a course on English as a Second Language at university level. The following pages are to provide an explanation for the design and implementation of Classcraft in a group of 35 students with a B2 level according to the CEFRL, for a course on English for Specific Purposes (Academic English) at a Spanish University for one semester. Classcraft has been used here to increase motivation and attention in the classroom, to promote students' participation as well as their ability to work in groups, solve challenges, while encouraging the development of students' personal qualities such as persistence, creativity and resilience through extended play.

**Keywords:** *Gamification, Classcraft, motivation, ESL, methodology.*

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## **SOUTH AFRICAN GRADE 11 PHYSICAL SCIENCES LEARNERS' PERCEPTIONS OF SCIENTIFIC INQUIRY**

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### **Abstract**

This study explored South African Grade 11 Physical Sciences learners' perceptions of their experiences of scientific inquiry within the context of science classrooms. The study adopted a case study design and involved purposively selected Grade 11 physical sciences learners from two South African township schools. Data was collected by administering a validated *Learner Perceptions of Classroom Inquiry* (LPCI) instrument developed by Dudu and Vhurumuku (2012) with the participants. The study revealed that the learners held mixed conceptions about the nature of scientific inquiry. A substantial number of learners held naïve and incoherent views about the nature of scientific inquiry. The findings have profound implications for meaningful enactment of contemporary pedagogic approaches such as inquiry-based learning in various instructional settings. Theoretical implications for coherent development of scientific literacy within the broader South African educational context are discussed.

**Keywords:** *Scientific inquiry, scientific literacy, inquiry-based learning.*

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## PROSPECTIVE TEACHERS' COPING WITH MATHEMATICAL ALGORITHMS IN A FLIPPED CLASS SETTING

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### Abstract

The implementation of the flipped-class learning method has been increasing during the last several years in the education system. The underlying idea of the flipped-class method is that learning materials that students can study and manage by themselves are handed to their responsibility. This allows teachers to focus the classroom meetings on educational activities such as discussions on difficulties the students tackled during their independent learning, and to adjust the teaching to students' personal needs. As a result, students develop self-regulated learning skills and deepen their knowledge of the subject matter.

The aim of the current research was to explore the effects of flipped-class learning on changes in prospective teachers' perceived sense of mathematical self-efficacy as a result of their independent coping with mathematical patterns and algorithms as part of a one-semester course. Successes and failures in performing mathematical tasks affect learners' perceived mathematical self-efficacy, which refers to the individuals' perception of their ability to cope successfully with mathematical tasks.

Once in two weeks, a lesson about mathematical patterns of various types (e.g., arithmetic series) or mathematical algorithms (for example, Euclid's algorithm) was uploaded to the course site. The prospective teachers were asked to read the learning materials, pose relevant mathematical problems and answer them. The face-to-face class meetings were dedicated to discussing students' difficulties, implementation of the learned materials through engaging the problems that were posed by the students and providing personalized assistance to students that encountered difficulties during their self-learning. The prospective teachers who attended the course were in their third year (out of four) of studies towards B.Ed. degree and were specializing in teaching elementary school mathematics. As it was their first experience in learning in this format, we were interested in exploring emotional aspects of their engagement with the course contents, and their sense of self-efficacy.

The research tools included transcriptions of class discussions and prospective teachers' reflective journals in which they documented their experience and reflected upon their feelings and the insights they gained as a result of experiencing learning mathematical contents in a flipped class setting. Using content analysis methods, we looked for evidence of the impact of flipped class learning on the prospective teachers' perceived mathematical self-efficacy.

**Keywords:** *Flipped class, self-efficacy, prospective teachers, patterns, algorithms.*

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## EXPLORING SOUTH AFRICAN IN-SERVICE TEACHERS' BASELINE KNOWLEDGE OF MATHEMATICS: A CASE OF FURTHER EDUCATION AND TRAINING PHASE

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### Abstract

The advent of the fourth industrial revolution provides opportunities for teachers as key agents of educational change to fully embrace digital transformation in its broadest sense with a view to foster pedagogic innovation. In view of this key strategic imperative, this study explored South African in-service teachers' baseline knowledge of mathematics in the Further Education and Training (FET) Phase. In terms of the structure of the Curriculum and Assessment Policy Statement (CAPS), the FET Phase is comprised of Grades 10, 11 and 12. A mathematics professional development intervention involving 30 teachers was implemented during which a diagnostic assessment test was administered as a pre-test and post-test to evaluate teachers' baseline knowledge of FET mathematics. The results of the diagnostic assessment test revealed pervasive knowledge gaps associated with various topics in FET mathematics. In addition, there was no meaningful correlation between teacher professional experience and knowledge of FET mathematics. While the pre-test results painted a gloomy picture about teachers' baseline knowledge of FET mathematics, the post-test results revealed a marginal improvement with the overall performance of the teachers remaining below 65%. The inadequate learner performance in mathematics in South Africa

can partly be attributed to pervasive knowledge gaps exhibited by teachers in various topics. There is a critical need for sustainable teacher professional development interventions to strengthen teachers' content knowledge and pedagogical content knowledge in mathematics as a key knowledge domain. Implications for sustainable teacher professional development and meaningful curriculum reform are discussed.

**Keywords:** *Teacher professional development, curriculum reform, pedagogic innovation.*

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## **DOES SELF-ASSESSMENT OF CREATIVITY AND ITS DEVELOPMENT SUPPORT THE DEVELOPMENT OF CREATIVITY?**

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### **Abstract**

Creativity is considered one of the most vital capabilities of the 21st century. Therefore, it is assumed that one of the fundamental roles of the education system is to nurture all learners' creativity. However, in general, the education system does not give it proper attention. This reality is the result of a range of circumstances, among others, the multifaceted nature of creativity, its variety of perspectives and definitions, and insufficient familiarity of teachers with the breadth of aspects associated with the nurture of creativity and its assessment. Therefore, in order to design a learning environment aimed at nurturing high school students' creativity, we have incorporated several principles inherent in the various perspectives related to the essence of creativity, and to make it easier for teachers to assess the development of their students' creativity, we utilized a designated psychometric model. The learning environment was in the field of mathematics, where students dealt with problem-posing activities as part of inquiry tasks they were engaged with. The problems that students produced constituted the "product" to be assessed in terms of creativity. Relating to the psychometric model, scores of two types can be produced: a personal score, which over time reflects each student's individual progress, and a relative score, reflecting the student's progress relative to his or her peers. Based on accumulated graphical displays of both individual and relative scores, teachers can get an idea about the strengths and weaknesses of both each student and the entire class, thus make pedagogical decisions regarding the emphases they should put, in order to nurture students' creativity. Through a process of self-assessment students can follow their own gradual change, both in relation to themselves and their colleagues.

In this paper, we present the results of a study that followed the experience of students who took part in the described learning environment. In particular, we focused on two students' perceptions of the benefits and limitations of self-assessment of their creativity and its development, using the designated model. The results indicate that self-assessment of creativity using relative scores can be beneficial for students who possess an optimal mixture of certain personal resources (e.g. motivation to study) from the outset. Such students are able to exploit this process for further developing their creativity. However, students who lack a certain degree of a threshold for some personal resources might be harmed by the process and their creativity might be suppressed.

**Keywords:** *Creativity, self-assessment, problem-posing.*

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## **SOUTH AFRICAN AT-RISK UNDERGRADUATE ENGINEERING STUDENTS' PERCEPTIONS OF THE REMEDIAL INTERVENTION DESIGNED TO ENHANCE THEIR ACADEMIC PERFORMANCE IN MATHEMATICS AS A KEY KNOWLEDGE DOMAIN**

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<sup>2</sup>*Department of Pure and Applied Mathematics, University of Johannesburg (South Africa)*

### **Abstract**

The complexity of the articulation gap between school and higher education poses enormous challenges to institutions of higher learning in South Africa. In response to this predicament, various strategic interventions were adopted with a view to adequately address student under-preparedness for tertiary studies. As a gateway knowledge domain, mathematics forms an integral part of various curriculum

programs geared towards the cultivation of skills required by the mainstream economy. However, inadequate student academic performance in mathematics remains a pervasive pedagogic challenge afflicting meaningful enhancement of human capital development through inculcation of critical skills. In recognition of this fundamental challenge, this study explored at-risk undergraduate engineering students' perceptions of the remedial intervention which was implemented to enhance their academic performance in mathematics at a South African university. Additional critical academic support was provided to this cohort of students as mathematics repeat students in order to maximise opportunities for success with a view to subsequently ensure their survival of academic exclusion on the basis of sustained inadequate academic performance. The students expressed positive sentiments about the efficacy of the remedial intervention implemented as it provided meaningful opportunities to improve their academic performance in mathematics as a key knowledge domain. The students indicated that the implementation of remedial interventions of this nature serves to safeguard future prospects for under-prepared students while boosting the throughput rates of higher education institutions. Furthermore, the students provided contextually appropriate recommendations for strengthening remedial interventions of this nature to ensure the academic survival of at-risk students in particular. Implications for meaningful enhancement of human capital development are discussed.

**Keywords:** *Articulation gap, remedial interventions, human capital development.*

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## **SKILLING FOR TOMORROW AT SCHOOL: A TRAINING PROJECT FOR IVET AND TECHNICAL STUDENTS' SOFT SKILLS**

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### **Abstract**

Nowadays, policymakers and stakeholders have been supporting the relevance of aligning schools and workplaces in the field of Initial Vocational Education and Training (IVET). Accordingly, the connectivity offers more opportunities to students to develop and foster work-based skills and competencies that are predictive of a higher level of employability and entrepreneurship with several impacts on the market industries and countries' economic stability. On the one hand, there is still a debate between educational models based on workplace learning and certifications of competences for occupation in the field. On the other hand, the literature is lacking a conceptual comprehension about how, and to what extent, IVET program can include competence-based approaches to promote interpersonal and transversal skills in students. With the aim to empirically address these current issues, we devised promoted a pilot training project for students of the Italian IVET and technical schools. Thanks to the collaboration of six Italian schools, both technical and IVET schools, and the Veneto Region' authority for the manufacturing and construction industry, the project has been sponsored to help students to develop technical and soft skills (e.g., cooperation within different professional roles) during the secondary level of Italian higher secondary education. Students ( $n=168$ ) of different professions (e.g., electricians, technicians) were involved in our study and assigned to the experimental group, in which they have been redistributed into six classes. Each student of the classes had to cooperate with their peers to realize a product in 6 months consisting of (i) planning, (ii) organizing and, (iii) building. Therefore, students had the occasion to cooperate with students of different job curricula and to learn by doing in a simulated workplace. In order to assess the effectiveness of the intervention, we have combined quantitative and qualitative methods. Hence, we developed a self-report measure, namely, Scale for Market Industry Competence (SMIC), which has been used in combination with interviews and observations to evaluate the occupational profile reached by students in the experimental groups and the project features. The results seem to confirm that our pilot intervention was effective in sustaining technical and soft skills development. Moreover, the qualitative analysis allowed to map benefits of the project as well as the challenging aspects by which proposing forward projects.

**Keywords:** *Training project, IVET school, technical school, soft skills, mixed-methods.*

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## **PEDAGOGICAL PRACTICES ADOPTED BY TEACHERS WHEN USING IMPROVISED RESOURCES IN LIFE SCIENCES CLASSROOMS**

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### **Abstract**

Pedagogic innovation is central to meaningful enhancement of human capital development. Concerted efforts geared towards meaningful science teaching and learning hinge to a large degree on a myriad of crucial factors which serve as key ingredients for creating a conducive environment within which envisaged learning outcomes can fruitfully be realized. In recognition of this key strategic imperative, the study explored pedagogical practices adopted by teachers when using improvised resources in Life Sciences classrooms at South African township schools. The study adopted a case study design located within the interpretive research paradigm. Data was collected through semi-structured interviews and lesson observations involving three purposively selected Life Sciences teachers. The cohort of teachers observed employed various pedagogic strategies such as inquiry-based learning, collaborative learning, cooperative learning as well as heuristic learning when using improvised resources to stimulate effective teaching and learning in Life Sciences classrooms. However, the selection and deployment of appropriate improvised resources proved to be an arduous task for the teachers although they fully acknowledged the significance of integrating improvised resources in science lessons. In addition, meaningful opportunities for harnessing learners' prior knowledge as a scaffold for navigating new content were created. Implications for pedagogic innovation are discussed.

**Keywords:** *Pedagogical practices, improvisation, pedagogic innovation.*

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## **WORK ETHICS OF SPECIAL EDUCATION TEACHERS IN SOUTH KOREA**

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### **Abstract**

The purpose of this study was to examine the work ethic attributes of special education teachers in South Korea, specifically for gender and experience. A total of 182 special education teachers participated in the Korean version of the Occupational Work Ethic Inventory-Short Form (KOWEI-SF) and provided usable data. An independent t-test was performed to compare means of male and female teachers. Next, a series of one-way analysis of variance (ANOVA) was performed with post hoc tests to compare teachers' work ethic for the experience. The results revealed that male teachers scored higher than female teachers in work ethic with  $t(180) = 3.634, p < .001$  (two-tailed),  $r = .26$  and that special education teachers with 0~5 years of experience scored the highest ( $M = 6.02, SD = 0.55$ ), those with 11~15 years the second ( $M = 5.77, SD = 0.63$ ), and those with 6~10 years of experience were the lowest ( $M = 5.67, SE = 0.59$ ). The difference (.354) between the two groups: 0~5 years and 6~10 years was statistically significant with  $F(2, 166) = 5.655, p < .01$ , partial  $\eta^2 = .064$ . The results of the study can be used as materials for developing professional development programs for special education teachers in Korea.

**Keywords:** *Teachers' work ethic, special education teachers, teaching experience and work ethic.*

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## **COASTRO: @N ASTRONOMY CONDO – TEACHERS’ ATTITUDES AND EPISTEMOLOGICAL BELIEFS TOWARDS SCIENCE IN A CITIZEN SCIENCE PROJECT**

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### **Abstract**

It is common to consider an attitude as a hypothetical construct related to a tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour. In the case of attitudes toward science, these cannot be isolated from the understanding of science processes: the path to produce, refute and change knowledge. Thus, it is critical to promote public engagement with science-astronomy and technology (PESaT) with the goal of understanding contents, but also of understanding what science is and how it is built.

In this context CoAstro: @n Astronomy Condo emerged – a citizen science project that starts with the involvement of elementary school teachers with the Research Group on the “Origin and Evolution of Stars and Planets” at the Instituto de Astrofísica e Ciências do Espaço (IA). CoAstro has directly reached about a thousand participants (including students, parents, astronomers and science disseminators).

To study teachers’ attitudes and epistemological beliefs towards science, as well as to analyse any changes promoted by CoAstro, a semi-structured interview (EAC) based on the Scientific Attitude Instrument and on the Nature of Scientific Knowledge Scale was prepared. After the translation of these instruments into Portuguese, scientific and linguistic validation by experts was made.

The EAC was performed before (EI) and after (EII) the development of the CoAstro. It involved 9 elementary teachers (8 females and 1 male, with an average age of 44.8 years) with no degree in science and who volunteered to participate in CoAstro.

The results show that there has been an increase of interest in astronomy that can be substantiated, namely by: i) a greater demand for news, motivated by intrinsic pleasure in astronomy (and not merely by professional necessity, as happened in EI) that became a more intelligible science; ii) a greater interest in seminars, classes or lectures; iii) an increase of interest in citizen science projects. On the other hand, teachers considered to be more knowledgeable about science, allowing them to make greater use of this knowledge in their daily lives and to assess claims about science.

Epistemological beliefs data reveal that the time between EI and EII reinforced the conviction: i) that it is possible to judge the applications of scientific knowledge, but not knowledge itself; ii) that creativity is associated with science, essentially at the beginning of the scientific process; iii) that repeatability and consistency of results are conditions for the validation of scientific knowledge; vi) the strong relationship between the various scientific fields.

For teachers, since EI, scientific knowledge is provisional and a consequence of its predecessor. The concept of parsimony that was completely strange to teachers has come to be understood, but the tendency to consider scientific knowledge parsimonious is not univocal.

Analysing the evolution of teachers’ attitudes and epistemological beliefs will help to better assess CoAstro, by measuring the relevance of a citizen science project (which combines remote interactions with systematic bilateral interactions) for a more holistic awareness and understanding of knowledge and scientific processes in Astronomy.

**Keywords:** *Citizen science, Science communication, epistemological belief, attitudes towards science.*

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## **EFFECTS OF EXPERIENCE-BASED CREDIT-BEARING COURSES ON COLLEGE STUDENTS' CAREER ADAPTABILITY AND EMPLOYMENT SKILLS IN KOREA**

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### **Abstract**

Several universities in South Korea started to provide experience-based course-bearing courses for college students. This new curriculum was launched in 2017 to help college students develop their career adaptability and job competencies. The application process includes developing course topics, designing the whole course process, planning specific course activities, proposing their course designs and presenting to the committee, and interviews by the committee. Once their application is accepted, students can implement their courses for a semester. They can obtain 3 credit hours to 12 hours per semester. Students who are at the junior level are recommended to apply this course system. A professor is voluntarily assigned to the student whose proposal is accepted as an advisor besides an academic advisor. We examined the theoretical and empirical support for career experience at the college level. Specifically, this study sought to explore the value of experience-based career experience courses, what changed on students' attitudes toward their careers after attending experience-based career experience courses, and how do students perceive experience-based career experience courses. Five college students from five different colleges who participated in the courses were interviewed. The data collected from the interviews were analyzed, using coding and theming. The results of the interviews revealed that experience-based course-bearing courses were effective in developing students' career adaptability and employability skills such as interpersonal skills, creativity, entrepreneurship, problem-solving skills, initiatives, critical thinking skills, and team-work skills for future careers.

**Keywords:** *Experience-based course-bearing courses, career adaptability, employment skills, work-based learning at college.*

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## **STUDENTS IN RESEARCH - EXPERIENCE WITH RESEARCH-BASED TEACHING**

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### **Abstract**

One of the challenges of today's universities is to adapt the sharing of knowledge to the needs of modern students. Today's students want an education that is relevant, engaging and interesting, and which should provide good job opportunities. Unfortunately, it is not possible to predict what kind of knowledge will be needed in a few years' time. Therefore, universities and colleges must not emphasise specific topics, because they can be soon outdated, but they should rather emphasise innovation, curiosity, arousal of interest, partnership and interdisciplinary cooperation. Different research shows that the activity of students is critical for their learning outcome. Therefore, engaging students in present research can be a way of helping them to learn.

On Western Norway University of Applied Sciences (HVL) and Volda University College (HVO) we are working to improve the quality of teaching through research-based teaching. This means that teachers can integrate research with their own teaching and involve students in it. It is about facilitating students to contribute to innovation and research, as well as showing that their ideas can be interesting and important. Usually, students do not understand the whole research process, but can participate in some parts of it. This participation can be very helpful in carrying out smaller tasks, like collecting, analysing and processing the data.

There are many factors which can both help or prevent the process of learning. These include such elements as: teaching style, form of learning and resources. Modern teachings styles, like for example streaming, can give the students better flexibility of learning, but in the same time it can increase the distance between teachers and students. The style of teaching is also important. There are different methods of teaching; lectures, exercises, labs and projects, and all of them have different effect on students learning process.

We at the HVL and HVO have practice similar activities. We have had many projects with students participating in research with good results. In addition, our students presented their results at national and international conferences. We want to share our experience and present our projects, research and experience in close cooperation with students and discuss how this has affected their motivation to learn and develop their competences.

**Keywords:** *Active learning, integrated learning, students as researchers.*

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## **THE CHINESE EXPERIENCE IN PROMOTING TEACHER PROFESSIONAL DEVELOPMENT IN DISADVANTAGED AREAS**

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### **Abstract**

Teacher is the quality safeguard of education and the practitioner of education reform. Due to the difference between urban and rural, it couldn't be ignored that teachers are exposed to the dilemma between teaching and training, the weak of teaching ability and the increasingly job burnout in disadvantaged areas in China. It's no doubt that teacher in-service training is the key to promote teacher professional development. However, there are also many problems as well, such as the rarely opportunities to training, the lack of practical content in training, the lower quality of training. In order to give full play to outstanding teachers acting as teacher educators, "Master Teacher Studio" is established. It could promote accumulating teachers' practical knowledge, improving abilities of reflection and teaching research, and alleviating teacher's job burnout, by means of expert lecture, educational research, different teaching for the same course, reading & sharing, reflection & communication. As a kind of teacher learning community, it is important to cultivate outstanding teachers and improve the quality of teachers in disadvantaged areas.

**Keywords:** *Master Teacher Studio, teacher training, teacher professional development, teacher education in disadvantaged area.*

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## **SUPPORTING RESEARCH STUDENTS IN THEIR CHALLENGING TEACHING ROLE: EXPERIENCE OF ONE HONG KONG UNIVERSITY**

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### **Abstract**

Internationally, research students at universities have multiple roles to play during their study period. One main role is to support teaching and learning. In Hong Kong, one university, namely, the Hong Kong Polytechnic University, has a policy to require research students to attend a training programme jointly organized and delivered by its Educational Development Centre (EDC) and its English Language Centre (ELC) in order to equip them for this challenging role. The current training programme focuses on basic pedagogical skills which enable participants to utilize techniques to build rapport in the classroom and use effective classroom English, learn about and apply grading criteria, and conduct different types of tutorials. Between 2014 and 2016, the programme was developed into a blended programme in order to demonstrate to participants some possible ways to enhance teaching and learning via the use of online tools yet maintaining face-to-face interactions. In order to identify the challenges associated with the new global trends and strategic directions of the university and to provide stronger support, a study was conducted in May 2019. Data were collected via two means, an online survey and a focus group interview. An online survey was sent to research students who took the training programme between January 2017 and May 2019 (N=808). In addition, a focus group interview with 16 research students was held to collect rich qualitative data. Overall, the data suggest that the current university programme is providing the right kind of training and support required by research students to do their job effectively. However, the data also



reveal that they need more disciplinary training to strengthen their necessary knowledge, skills and confidence to perform in their teaching duty. In terms of delivery format, majority of research students prefer fact-to-face to a pure online delivery mode. They strongly feel that teaching is composed of interactions and a face-to-face training context would certainly be more beneficial.

**Keywords:** *Research students, training programme, higher education, teaching and learning.*

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## PRE-SERVICE ENGINEER EDUCATORS LEARNING MATHEMATICS: MAPPING THE LIVED COMPLEXITY

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### Abstract

In this paper, we adopt a systemic perspective to investigate the teaching of mathematics in ASPETE, which is a tertiary education institute in Greece that offers a two-faceted degree: an engineer degree and a pedagogical degree as engineer educators. We focus on the complex lived reality of first year Electrical Engineers students through a multileveled affective mapping of their studying in ASPETE, including: approaches to study, confidence in learning mathematics, conceptions about mathematics and its role in their studies and career, and views about mathematics teaching effectiveness (considering both what they actually experienced and what they would prefer to experience). The results of our study suggest that the students show a lack of preference for the surface approach (though not combined with a preference for a deep approach), neutral-positive confidence in learning mathematics, whilst they seemed to be satisfied by the teachers' effectiveness. Qualitative differences in the affective relationship with mathematics were identified with respect to the students' approach to study. Finally, the students' conceptions about mathematics seemed to be related with the desired characteristics of mathematics teaching.

**Keywords:** *System, approaches to study, mathematics teaching effectiveness, mathematics conceptions, mathematics confidence.*

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## EVALUATION OF FACTORS THAT INFLUENCE SCHOOL FAILURE IN A GROUP OF ADOLESCENTS IN IASI COUNTY

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### Abstract

**Introduction:** school activity is characterized by high physical and mental demands. Any failure to adapt these requests to the possibilities of the age group can be associated with school failure. **Material and method:** the study was carried out on a group of 208 students from the 9th grade from a National College in Iasi (54 students), a National College in Pascani (80 students) and from an Economic High School in Iasi (74 students). A questionnaire regarding school activity and the causes of the phenomenon of school fatigue was applied. The results were processed using Pearson's chi-squared test. **Results and discussions:** The students are constantly preparing only for certain subjects (72.59%). The young people from the National College in Iasi stand out, as we find numerous answers of "I do not continuously prepare for any subject", so the calculated differences are statistically significant ( $p < 0.01$ ,  $f = 4$ ,  $\chi^2 = 14.254$ ). In most cases (65.86%) adolescents admit that they have been trained how to study only in certain subjects. In the students from the National College in Iasi there are few explanatory answers in all the disciplines, so the calculated differences are statistically significant ( $p < 0.001$ ,  $f = 4$ ,  $\chi^2 = 19.465$ ). Young people study for pleasure only in certain disciplines (86.53%). At the National College in Iasi there are no students who study for pleasure in all disciplines, so the differences obtained are statistically significant ( $p < 0.05$ ,  $f = 4$ ,  $\chi^2 = 11.072$ ). Fatigue is often present in 58.65% of students, with significant differences between high schools ( $p < 0.05$ ,  $f = 4$ ,  $\chi^2 = 11.807$ ). The students attribute the occurrence of this phenomenon to the numerous subjects

they have to study (55.76% - statistically insignificant differences), the large volume of homework (51.92% - significant differences) and insufficient sleep (48.55% - statistically insignificant differences). **Conclusions:** there are many factors that generate school failure that must be known and carefully assessed in order to reduce the frequency of this phenomenon.

**Keywords:** *School failure, fatigue, demanding activity.*

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## THE CHANGING ROLE OF SUPPORTING EDUCATIONAL DEVELOPMENT

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### **Abstract**

Globalization has caused dramatic changes to the character and functions of higher education (Meyer, Bushney, Ukpere, 2011). Highly skilled, motivated and globally competitive workforce is always needed, pushing universities to put their priorities to prepare students to operate globally. As a result, higher education institutions are under pressure to change their role towards teaching excellence and more focus on the quality of teaching and learning. Along the trend, university academics are urgently needed to emphasize on not only research, but also improvement of pedagogical skills. This paper explored the views on professional development from a group of teachers at a university in Hong Kong. Using both quantitative (survey design) and qualitative (face-to-face interviews) methods with over 120 teachers, this study investigated the role of a unit in providing staff development within the higher education institution. In particular, it addressed the planning process of supporting staff development to bridge the gap between the needs from teachers and the institution. Results showed that university academics is required to adapt to the changing culture in higher education and to pursue different types of professional development to keep abreast of new development in both teaching and research. Thus, it affects the role of the institution in providing professional development to teachers. In particular, there is an increasing trend for teachers to engage in scholarship of teaching and learning, which imposes more challenges for both teachers and the institution in terms of the accountability and quality assurance. Results of this study provided implications for practice and policy in relation to staff development in the higher education sector in Hong Kong and the regions.

**Keywords:** *Professional development, higher education, teaching quality, scholarship in teaching and learning.*

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## THE CONTRIBUTION OF DRAMA AS AN ALTERNATIVE TEACHING APPROACH TO REFUGEE STUDENTS

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### **Abstract**

Differentiation is nowadays a rule in contemporary education, as it is generally accepted that today's classrooms are mixed ability classrooms and present heterogeneity in the interests and the characteristics of the children, their abilities and skills. Consequently, there is an urgent need for differentiating the educational process in order to respect the evolutionary stage and the needs of all students, as well as encourage active participation of them and academic achievement. The school provides the foundations for the educational process and for this reason the trainees must follow some basic principles that will form the basis for a successful project. Learning is a creative process that is constantly being built and the goal of education must be to seek a pedagogical act that helps students broaden their spiritual horizons, develop important skills such as critical thinking and, through experimentation and active participation, lead them to a joyful conquest and experience of knowledge. This study aimed at exploring the use of differentiated pedagogical techniques, focusing on drama techniques, for teaching Greek vocabulary in refugee students who learn Greek as a foreign language.

**Keywords:** *Drama techniques, refugee students, vocabulary, differentiation, education.*

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## **TEACHERS' PREPAREDNESS AND EXPERIENCES IN TEACHING MEIOSIS TO GRADE 12 LEARNERS IN LIMPOPO PROVINCE**

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### **Abstract**

Over the years, learners have failed to perform satisfactorily in the final examinations in Grade 12 Life Sciences in South Africa. Examination reports have consistently cited the poor performance by learners in questions on meiosis and related topics. In a qualitative case study research design, three Life Sciences teachers were purposively selected to determine their preparedness and experiences in teaching meiosis to Grade 12 learners. Data collection involved administration of a test on meiosis, observation of each teacher four times whilst teaching meiosis and interviewing each teacher once. Teachers' test scores were analysed using descriptive statistics and observations and interviews were coded manually. The findings showed that only one teacher possessed satisfactory levels of the content required to teach meiosis and was very versatile in her teaching. One teacher relied heavily on the textbook, the other employed teacher-centred approaches. The findings provide implications for in-service teacher professional development.

*Keywords: Meiosis, Life Sciences, teacher preparedness, teacher experiences.*

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## **VALUE OF EFFECTIVE FEEDBACK TO CANDIDATES LEADS TO IMPROVING THE LEARNING GOAL**

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### **Abstract**

Feedback is designed to respond to candidates' work in an online environment and/or face-to-face environment. University faculty members can give feedback to candidates in many ways such as oral and written responses with attached notes for improvement. For the purpose of clarity and accountability, feedback in written form is preferred in most academic settings. In order for candidates to know how they are performing, feedback is necessary. Using a qualitative study, these researchers provided a perspective of what graduate candidates thought about the feedback that was rendered to them by faculty and faculty members gave their own views regarding the rendering of effective feedback being given to graduate candidates. Emphases for this study included best practices, ways to give online and off-line feedback timelier. The major finding suggested that there was a disconnect between what candidates and faculty members thought about how feedback was given. In this study, the findings further suggested that faculty members felt that candidates received feedback very well and timely feedback on work presented. However, candidates felt overall that feedback was not done timely enough so that their work could be improved upon in the class now, not after candidates leave the class. In conclusion, faculty members must do a better job giving helpful, relevant feedback and must give feedback timelier were the common words expressed by candidates.

*Keywords: Effective and timely feedback, perspectives, learning outcomes.*

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## **TOEIC SCORE PREDICTION ACCORDING TO STUDENT'S LEARNING PERFORMANCE ON UNIVERSITY ENGLISH COURSES**

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### **Abstract**

With the development of globalization, "English" has become an important international language. The test of English for international communication (TOEIC) was established in 1947 by the Educational Testing Service (ETS). The test is designed for non-native English people. The TOEIC score represents the familiarity of the subjects in communicating with others in English in the international workplace.

The TOEIC is based on the English language of daily life in the workplace, so it is often used as the industry's standard for measuring the English communication of job applicants.

The study object is students of the Department of Applied English from the University of Technology, Taiwan. The department uses the students' TOEIC of simulation score as an assessment tool to check the student's learning effectiveness in the four years of college. The purpose is to ensure that the student's workplace English communication ability meets the needs of the industry and strengthen the student's employment ability.

For understanding students' TOEIC performance in advance, the learning performances of required English courses (at least three courses) in Grade 2, 3, and 4 were collected and applied to predict their TOEIC scores. The traditional linear model, linear regression (LR), and an advanced nonlinear machine learning model, support vector regression (SVR), were used and compared in this study. Comparing the true TOEIC scores and the prediction TOEIC scores, the average absolute differences of LR are between 21 and 63. The average absolute differences of the nonlinear models, SVR, are between 14-34, whose range is quite small. Hence the prediction of SVR is more accurate than the traditional and linear model, LR. The prediction results can help teachers to understand students' abilities. Teachers can provide some personalized teaching materials according to the predicted achieved results of students to increase students learning performance on TOEIC.

**Keywords:** *TOEIC, learning performance prediction, machine learning, artificial intelligence.*

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## **TEACHERS' INCLUSIVE VALUES AND TEACHING PRACTICES IN WORK WITH STUDENTS WITH ADHD**

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### **Abstract**

This study aims to analyze and compare teaching practices in an inclusive setting. The implementation of an inclusive education model depends largely on the capacity of teachers to cope with challenges. The study focuses on teachers' self-evaluated teaching practices with students with seven or more symptoms of ADHD, depending on their beliefs about the values of inclusive education and some demographic factors. Results are situated in the context of current literature on inclusive education practices, teacher attitudes towards students with ADHD, and teaching practices/classroom strategies for work with students with ADHD.

The questionnaire was administered to 660 teachers from 13 Croatian counties. Participating teachers were asked to complete a standardized questionnaire including demographic questionnaire and two scales: *Teaching practices self-evaluation scale* – TPSE (Vlah & Grbić, 2017) and *Teachers' beliefs about the values of inclusive education scale* – *TBIES* (Skočić Mihić, Gabrić & Bošković, 2016).

In an attempt to answer the research question on the relation between teachers' self-reported teaching practices used in work with students with ADHD, settlement and school size, classroom vs subject teaching, teacher education level, work experience and beliefs about the values of inclusive education, we used both correlation and hierarchical regression analysis.

Correlation analyses was the first step in investigating the relationships among the explored variables. The results indicated a correlation between teachers' self-evaluated teaching practices described by three indices (student praise and supportive communication; adjustments to assessment for students; and comprehensive approach to inclusion of students with special needs), teacher education level, and classroom/subject teaching, which also related to teachers' value of inclusive education.

Next, we explored the relationships among the investigated variables in more detail using a hierarchical regression analysis in which different indices of teachers' self-evaluated teaching practices served as the criterion. In the proposed model inclusive beliefs were revealed as significant predictors of teaching practices. These results extend previous research. Implications for teacher education are discussed, and suggestions are made for future research on the relationships between teacher beliefs about inclusion and the use of teaching practices supportive of students with ADHD.

**Keywords:** *Values of inclusive education, teaching practices, students with ADHD, inclusive setting.*

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## **TEACHER ENHANCEMENT OF INTERACTIONS IN LIFE SCIENCES ENGLISH-SECOND-LANGUAGE LEARNERS CLASSES**

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### **Abstract**

Classroom interactions shape the teaching and learning process in science classrooms and can be influenced by the language of teaching and learning, and the teachers' choice of teaching strategies. Teaching Life Sciences to English-second-language learners can be a challenge when learners do not have a rich vocabulary of the medium of instruction. The use of English language by second-language-speakers have a negative impact on meaningful classroom interactions especially in the case of township school learners. Previous researchers alluded that Africa remains the only continent where formal education is conducted in instructional languages that are foreign to most learners and their teachers. In particular, some researchers found that poor performance of South African learners in science and mathematics are related to deficiencies in the language of instruction. Interactions encourage the exchange of talk, teachers' and learners' roles and simultaneously develops learners' cognition skills for effective communication in the science classrooms. Through sharing their own ideas, learners co-construct new scientific knowledge. Not only do these English-second-language speakers struggle with the medium of instruction which is different from their home languages, they also struggle to understand the technical and non-technical language of science, which compounds the problem. The current study sought to document how teachers assist learners in such classroom contexts. The study was guided by the research question: How do teachers assist learners in enhancing meaningful interaction in life sciences classrooms with English-second-language learners? In a qualitative case study, two Grade 11 Life Sciences teachers were purposefully selected from two different schools. Each teacher was observed whilst teaching two lessons to a Grade 11 Life Sciences class and then interviewed once to make a total of four lesson observations and two interviews. Data was analysed using Saldana (2009) manual coding. The findings showed that teachers engaged learners in question and answer sessions, debates, class discussions and class presentations to motivate them to communicate their ideas. Code switching was also used to explain the concepts in both English and learners' home languages. Some of the teachers acknowledged that learner participation was minimal due to their lack of fluency in English. Classroom interactions improved when learners were allowed to discuss in their home languages. The findings help in building a repertoire of teaching strategies teachers can employ in a class of English-second-language speakers.

**Keywords:** *Classroom interactions, life sciences, English-second-language speakers, township.*

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## **INVESTIGATING THE IMPACT OF LEARN BY DOING IN CIVIL TECHNOLOGY CLASS: STUDENTS ACTION**

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### **Abstract**

Learn by doing is one of the critical teaching approaches in Civil Technology as a subject, of which it consists of both theoretical work and practical skills. The study aims to explore the effectiveness of hand-on skills learning as a teaching approach in Civil Technology class. While the main objective of the study is to examine the impact of hands-on skills learning in Civil Technology. The study used a mixed-method approached to collect data which of consist quantitative (practical test) and qualitative (presentations). Purposive sampling was used to select 20 participants, from different gender (males and females) also from a diverse background. Findings of the study reveal that students managed to demonstrate competence in totality (both theory and practical) and also by completing their work within the scheduled time.

**Keywords:** *Learn by doing, hands-on, civil technology.*

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## **A ‘DIGITAL PEDAGOGIES’–BASED LEARNING PLATFORM**

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### **Abstract**

Virtual Learning Environments and Online Learning Platform have been around for some time, yet the problem with the majority of them is that they either attempt to replicate the Face-to-Face equivalent, or are simply development and deployed without a learning model or theory at their basis. In this paper we present a bottom-up development of a learning platform that is entirely based on a sound educational principles that include Ubiquitous learning, Active knowledge making, Multimodal meaning, Recursive feedback, Collaborative intelligence, Metacognition, and Differentiated learning. We will show how this platform has been employed for these last few years and has provided ample data to evaluate the added advantage that digital pedagogies provide especially as the same data is employed through the learning analytics feature that has embellished the platform in this last year. We draw numerous conclusions and recommendation on our experiences as well as on the feedback received from numerous learners and educators that have made good use of the same platform.

**Keywords:** *Digital pedagogies, e-learning, virtual learning environment, ubiquitous learning, learning analytics.*

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## **HISTORICAL ANALYSIS OF STUDENTS' PERFORMANCE: AN AGE AND GENDER PERSPECTIVE**

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& Josué Figueroa-González**

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### **Abstract**

It is possible that innate characteristics can have a certain effect on the students' performance. Two of the most important characteristics of a person are their gender and their age. Universities are institutions that must be opened for every person, not mattering their age of gender, however it could be possible that these factors could represent a decisive factor over students' performance. For this reason, educational analytics must be performed for determining if there is a relationship between the age, the gender and both of them over students' performance. The goal of this work is to show if there is a relationship between age and gender over the performance of engineering students. Results show that gender is not a decisive factor for determining if a student will finish their studies, but age clearly represents a topic to be considered.

**Keywords:** *Students' performance, measurements in education, educational analytics, age and gender influence.*

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## **IMPROVING KNOWLEDGE TRANSFER IN SIMULATION GAMES BASED ON COGNITIVE LOAD THEORY**

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### **Abstract**

The aim of this paper is to develop a framework for case study teaching with the combined measurement of the student's cognitive load supporting by an integrated learning management system. Therefore, the authors have implemented some pre-studies and collected lots of experience before establishing this particular, on literature-based, framework how the case-based teaching could be transferred to a new digitalization level. The motivation therefore is based on the lecture topics of the authors and the curricula they are teaching in bachelor and master classes. All necessary theoretical background information as well as the in details explained framework of how to implement the correct setting is explained in this paper.

**Keywords:** *Simulation game, case study teaching, cognitive load.*

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## **EFFECT OF STUDENTS THAT MUST REPEAT A COURSE IN THE DISTRIBUTION AND CAPACITY OF GROUPS**

**Lourdes Sánchez-Guerrero, Beatriz A. González-Beltrán, Josué Figueroa-González, & Silvia B. González-Brambila**

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### **Abstract**

In educational institutions, there is a need in the right use of human resources. Consider, for example, the number of groups for certain courses, the offer of professors and spaces is limited, and many times, there is many students that desire a certain course and for reasons of capacity and availability, it is not possible to satisfy their demands. Sometimes, the fact that students must repeat a course, is considered to have only academic relevance, however, this issue can have implications in other topics, for example, the resources one. In order to have a better idea of how much does this affect in a superior institution, this work presents a statistical analysis of the effect of students that must take a course twice and how this affects the available spaces for those who will take it for first time. For this were analyzed the eight more demanded engineering courses in a Mexican university.

*Keywords: Measurement in education, educational management, educational analytics, students' performance impact.*

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## **ACADEMICS' PERCEPTIONS OF EDUCATIONAL DEVELOPMENT IN A CHANGING HIGHER EDUCATION LANDSCAPE**

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### **Abstract**

The development of teaching skills is playing an increasingly significant role in higher education with government in different parts of the world taking teaching quality in higher education and its enhancement more seriously. Academics are required to be competent in both research and teaching. Universities around the world began to demonstrate their commitment to the improvement of teaching skills through professional development programmes offered by their educational development units. In Hong Kong, universities are placing greater priority on professional development programmes to strengthen the teaching skills of their staff. This study is conducted at one university in Hong Kong where academics are required by policies to attend certain training programmes and to demonstrate their abilities of using a variety of approaches in their teaching. Even though academics understand that research, in comparison to teaching, allows them to gain tangible results, they need to spend more time than they did in the past to continuously develop their teaching skills. This study was prompted by the authors' role as educational developers and their interest in the needs of their target audience, i.e. the academics. Having to support academics in different ways, the authors have, over the years, met academics who genuinely appreciate the help they acquire from the educational development unit. They have also met academics who reluctantly came to the trainings to fulfil policy requirements. This study was conducted in early 2019 to investigate the perceptions of academics towards the educational development unit and the support it provides. A survey was sent to over 100 academics and in-depth interviews were conducted with 9 academics. This presentation draws upon the qualitative data from the interviews. Results show that academics generally feel positive about the teaching and learning related support provided by the educational development unit. Although some policies generate more work for them, they think the unit has been effective in bridging between the university and the academics in understanding and implementing important policies and supporting the departments as well as individual academics to do their job effectively. Results also suggest that academics in different stages of career have very different needs. While the new academics focus on survival in teaching, the more experienced academics have more diverse needs. They look for support in keeping up with latest trends in higher education, doing well in teaching and learning projects and sharing the results of their good work to the wider community.

*Keywords: Higher education, teaching development unit, academics' perceptions, teaching and research.*

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## PROJECTS AND TRENDS

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### **WHAT IF OUR SCHOOLS ARE WORKING?: BASE, SUPERSTRUCTURE, AND HEGEMONY IN EDUCATION**

**Alan Singer**

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#### **Abstract**

This paper is based on a chapter I wrote for a collection on *Confronting Capitalism in the 21st Century*. The modern public education system in the United States and other industrializing nations, initially developed to serve the managerial needs of industrial capitalism in the first half of the nineteenth century. It reached maturity along with the economic system as the factory-model in the 1920s and has changed very little since; except, perhaps, in style as it has adjusted to the emergence of new educational theories, conflicting political demands, different population groups, and different occupational skill requirements. Part of my argument in this paper is that contemporary high-stakes standardized testing and value-added evaluations of teachers are structural adaptations to new computer technology that maintain the basic purpose of education in a capitalist society and the function of schools, sort them out and convince them the system is fair. Can anything be done to change our schools and society and eliminate some of the gross inequalities short of revolutionary turmoil? I hope so, but I am not sure. A first step is to admit that schools in the United States and other advanced capitalist nations are not failing. Unfortunately, they are working exactly the way they are designed to work.

**Keywords:** *United States, schools, capitalism, tracking, Gramsci.*

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### **SELF-PRODUCED VIDEOS IN FLIPPED CLASSROOM FOR PRE-COURSE ENGINEERING STUDENTS, ENGINEERING STUDENTS AND NURSING STUDENTS**

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#### **Abstract**

Western Norway University of Applied Sciences at Campus Førde offers nursing education, engineering education in electrical engineering and a one-year preparatory course for engineering education. Teachers on the different programs cooperate in the production of video-based resources. The study investigates students' use of videos made by the teacher as part of flipped classroom in three different subjects. These subjects are Control Systems in engineering education, Communication and Norwegian in the preparatory course for engineering education and Anatomy/Physiology in the nursing education. Control Systems, taught in the fourth semester of the engineering education, has traditionally been classroom-based, with a lot of blackboard teaching. Learning sessions have been a combination of problem solving and review on the board. Communication and Norwegian has largely consisted of presentations and related exercises. Anatomy/physiology is part of the course Anatomy, Physiology, Biochemistry and Microbiology, taught in the first semester of the nursing education. Lectures in plenary have traditionally been the most widely used teaching form in this course, but the number of lectures has been reduced in favor of learning sessions in smaller groups. 21 engineering students, 17 nursing students and 17 students in the preparatory engineering course answered a questionnaire about the use of videos. The study shows that the nursing students use videos more before the learning sessions than the other two groups. Videos produced with simple tools are technically satisfactory, and make it easier for the students to understand the material, which contributes to increased learning outcomes. Students express that videos are more motivating, and that they learn more from watching a video than readings. Nursing students expressed a higher degree of agreement to replace the traditional lectures in other topics with videos.

**Keywords:** *Inverted classroom, teaching videos, motivation, learning outcomes.*

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## **SERVICE-LEARNING AT UNIVERSITY: ADDRESSING SOCIAL CHALLENGES FROM THE EDUCATION**

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### **Abstract**

The work presented is part of the Teaching Innovation Project ‘Social responsibility in the University: APS in the Degrees of Education’. In the development of this project, a collaboration agreement was signed with the Spanish Committee of Acnur (UNHCR). Within the university volunteer program of this NGO “Let's not leave anyone behind”, students of the Degree in Early Childhood Education of the University of Jaén have had the opportunity to deepen their knowledge of the living conditions of refugees.

The main aim of the collaboration with UNHCR has been to offer university students the opportunity to build the learning process acquired in the Degree by promoting social transformation, through the Service-Learning methodology, developing training activities, raising awareness of this issues and proposals of work to develop them with the students of Primary Education.

After a period of intense training, university students have subsequently designed and implemented their own awareness campaigns in different schools in Jaén.

Through real material used in the refugee camps and the material created by the students themselves, more than a hundred primary school students have been able to approach the reality of forced displacement and have better understood in the lives of more than 70 million people in the world who are suffering it.

In the implementation of the project, there has been the participation of an asylum seeker, which has provided the activities carried out with the precise contextualization of being able to share real experiences in a live voice.

Once the evaluation of this experience is achieved through discussion groups, the results show that the experience has been enriching for all those involved in the project and that Service-Learning fosters motivation, social responsibility, reflection and ethical commitment in the students.

**Keywords:** *Service-Learning, university, refugees, social commitment.*

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## **FOSTERING CREATIVITY OF STUDENTS WITH INTELLECTUAL DISABILITIES THROUGH MUSIC LISTENING ACTIVITIES**

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### **Abstract**

This study investigates special schools music teachers’ reflections on their design of music listening activities that could foster musical creativity of students with intellectual disabilities. Nine cases of special school music teachers are documented. Qualitative data were collected by classroom observations and face-to-face video elicitation interviews. The findings indicate those special school music teachers designed active listening activities that integrated with other music learning activities for enhancing students’ enjoyment of music learning as well as their development of creativity and imagination.

**Keywords:** *Music, creativity, listening activities, students with intellectual disabilities, Hong Kong.*

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## **DEVELOPING DOMESTIC STUDENTS’ INTERCULTURAL COMPETENCE — A CASE STUDY: IMMERSION PROGRAM OF SICHUAN UNIVERSITY, CHINA**

**Xianghan Liao**

*Sichuan University (China)*

### **Abstract**

Intercultural competence refers to the comprehensive ability required in multicultural interactions. Under the background of globalization, there is no doubt that developing students’ intercultural competence is important for higher education institutions. As the number of Chinese students studying abroad has increased dramatically in recent years, most studies have focused on Chinese students’ study abroad experiences and how these students adapt to different cultures, however, internationalization of education

is equally important for non-mobile domestic students. In China, how to achieve internationalization at home and help domestic students to develop intercultural competence deserves more attention. University Immersion Program (UIP) in Sichuan University (SCU) is a short-term summer international program involving domestic and international students, aiming to cultivate globally competitive talents at home. By using participant observation method, the researcher participated in UIP in the role of a student and observed the interaction between domestic and international students. The observations have revealed: First, there are three main advantages of UIP—the discussion-based learning, the mixed accommodation pattern, and the cultural trips. Second, in order to better promote positive interactions between international and domestic students, proper intervention should be given to students' behavior in curricular and extracurricular activities. In conclusion, based on the method of participant observation, the study is a case analysis of UIP aiming to explore how to develop domestic undergraduate students' intercultural competence through promoting intercultural interactions in a short-term international program.

**Keywords:** *Intercultural competence, university immersion program, internationalization at home, higher education.*

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## **DIGITALISATION OF HIGHER EDUCATION – TEACHERS AND STUDENTS EXPERIENCE**

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### **Abstract**

In Norway, as in the rest of the world, the development is constantly moving towards more and more automatization and digitalization. Increasing the efficiency of tasks by leaving them to computers and implementing modern technology in the private and working sectors is becoming. Digitization is about using the technology to innovate, simplify and improve tasks and to offer new kind of services that are easy to use, efficient and reliable. Digitalisation in the higher education is about facilitating the use of digital tools and technological solutions to emphasize learning and to create new opportunities for learning and teaching processes.

Times are changing, and institutions in the higher education sector need to create a learning model that blends curriculum with changes in the society, receiving and adapting technology and varying expectations of the students. When studying, you want to get an education that is relevant, quality assured and provides the opportunity for a good job afterwards. One challenge for the higher education sector is to adapt new kind of learning design to modern students and technology. Lectures are undoubtedly an important part of the learning process for the students, which the school system is based on, but the lectures do not provide an automatic professional competence in an arena. To hear about something or to follow a recipe for a task is not the same as having knowledge, skills and being self-reliant. What is important that students take responsibility for their own learning, and that they are active, mentally active. To do so, students need to be motivated for learning.

We think that the solution for learning with or through digital tools have a potential for improving the efficiency and quality of teaching and research. In order to succeed in exploiting this potential, teachers should know more about how their use of digital tools affects students' learning patterns and motivation, something we would like to explore further.

This paper will be based on our previous experiences and research on what teachers and students think about using digital tools for learning. In this project we will compare teaching with or through digital tools at different institutions for higher education. We would like to find and analyse how students studying and university colleges, in different cities, with different subjects are affected by teaching with or through digital tools and how does it affect their study patterns and motivation for learning.

**Keywords:** *Students, digital tools, higher education.*

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## **INNOVATIVE USE OF ICT IN EARLY YEARS CURRICULUM BASED ON 5E INSTRUCTIONAL MODEL**

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### **Abstract**

Active learning constitutes an essential part of the early years curriculum. A well-known instructional model which is based on active participation and inquiry learning is the 5E model which includes the following five stages a) Engage, b) Explore, c) Explain, d) Elaborate, and e) Evaluate. Moreover, over the last decades ICT has been widely used to engage students in learning and enhance both the learning and teaching process. However, a paradox is noted regarding ICT; although practitioners have commonly accepted the beneficial aspect of ICT, they demonstrate limited use of new technologies within the teaching process. Therefore, the present work proposes a methodological approach aiming to investigate, whether the incorporation of the 5E model into ICT activities could benefit the use of new technologies in the early years curriculum. A pilot study was performed on early years practitioners in kindergartens. For the purposes of the current experiment, an ICT-based activity was designed using the 5E model. The activity's layout, including the objectives and the learning outcomes, is outlined. The main benefits, according to practitioners, are that the 5E model not only provides multiple opportunities for students to build new knowledge through inquiry and active engagement, but also enhances practitioners' confidence in terms of using and integrating ICT into the teaching process. This result, despite being preliminary, indicates that the integration of ICT activities through the 5E model can be an effective approach. Lastly, since this is an on-going study, more results will be published in the near future.

***Keywords:** ICT, early years curriculum, 5E instructional model, inquiry learning, engagement.*

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## **AUGMENTED REALITY IN INTERVENTION WITH PEOPLE WITH AUTISM SPECTRUM DISORDER: PROTOCOL ACTIVITIES**

**Alba Gilabert Cerdá, Eva García Albaladejo, Elena Pérez Vázquez, Gonzalo Lorenzo Lledó, Asunción Lledó Carreres, & Alejandro Lorenzo Lledó**

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### **Abstract**

Over the last few years, Augmented Reality (AR) has become one of the newest trends in technology due to its characteristics: ease of access to information on the world's reality and superimposition to the society of digital data in real time. Since the smartphone revolution, virtually everyone uses them continuously in their daily lives. These devices have a processor, GPS, screen, camera, microphone, etc., indispensable tools for AR experiences. Because of this, among other things, AR technology is constantly growing and captures the attention of many users around the world. Various studies show some relevant results in the intervention of Augmented Reality with students presenting with Autism Spectrum Disorder (ASD) in the acquisition of social skills that worked with parents, teachers and peers. Although ASD is highly heterogeneous, both in etiological issues and in the manifestations and evolution of symptoms at different stages of development, expression and presentation according to sex, age or co-morbidities presented; some of the impairments in the social skills of people with ASD have been described in various researches such as, for example, the presence of difficulties in intuitive comprehension in the social situation. Due to this, the objective of the work is to create a protocol of activities using Augmented Reality as a teaching methodology, to learn a specific routine that allows people with ASD, with verbal communicative behaviors and non-verbal communicative behaviors, to improve in the acquisition of communication and response to tasks and routines. The results obtained indicate that this protocol of activities that has been created allows people with ASD to obtain information from the world around them and respond safely to the demands of the environment. In addition, this protocol is characterized by following a favorable learning style for this disorder, as it studies how people with ASD obtain information about their environment.

***Keywords:** Augmented reality, ASD, social communication, social interaction, routines.*

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## THE CONTEMPORARY EDUCATIONAL AGENDA \_ EDUCATION AND REALITY

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### **Abstract**

One of the most forgotten topics in the various educational agendas is the anthropological reflection for the teachers themselves, as well as for the students. Essential questions of a fundamental educational character arise without any doubt: who do we educate? and where do we educate from? Having in our hands, as teachers, the cognitive destiny of our students, being able to influence their freedom of thought, and forge an ethical framework, are very important aspects, especially when the constructivist educational philosophy, which most reforms have assumed, implies anthropological concepts that influence educational approaches under an eminently humanistic profile, and integrate basic assumptions such as: a) the person is a biological, rational, and social being; b) his cognitive ability is essential; and, c) he has a psychic dimension. The following paper discusses our beliefs and truths towards our students as future generations, and tries to outline the anthropological vision that we have regarding the educational aspects, because without pretending it, we will always be configuring and contrasting the student with models, whose foundations can be determinants for their future.

What does a true transformation imply and the philosophical and epistemological absence in contemporary educational currents? Readers interested in this field of education will find also in this article considerable ideas that would help them to understand the transcendence of the mission and the vision in the education of the future as a utopia; the paradigm of pedagogical "Complexity" in postmodern society when it comes to gender from the perspective of beliefs and axiology, and the challenges of the school as an educational institution. They will complement their didactic training and thus make practical decisions that allow them to reach the established objectives.

**Keywords:** *Anthropology, dimensions, education, gender, reflection.*

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## DIFFERENCES BETWEEN TRADITIONAL AND AUGMENTED REALITY TEACHING

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### **Abstract**

Nowadays, we are faced with the constant development of a technological revolution. As a result, new paradigms are emerging in education that pose new challenges for schools that need to move in the same direction as society does. In this sense, the so-called traditional method is being replaced by new teaching methodologies that are characterized by the use of technological tools with the aim of achieving a more complete knowledge and personalized to the specific needs of students. Educational institutions include these changes, since they expect an improvement in student motivation and, as a consequence, an increase in academic performance. After studying the results of different studies, there is no doubt that the inclusion of new technologies is responding to the demands in education. One of the technologies used in education that has acquired a great boom in recent years is Augmented Reality (AR). This tool is being progressively incorporated as one of the emerging technologies with the most future projection. In this line, the real change is located in the school that defines the AR with characteristics such as efficiency, innovation and creativity. The aim of this study is to explain the differences between the traditional method used in school and teaching through the Augmented Reality of 21st century education. The results obtained show improvements in the teaching-learning process in the students according to the adaptability to the different learning difficulties of the students, changes in the organization and methodology of the classroom and, finally, the need to train teachers in all stages of education in information and communication technologies, specifically in the AR.

**Keywords:** *Augmented reality, technologies, didactics, teaching, learning.*

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## MOOCS FOR BRIDGING THE SCHOOL - UNIVERSITY GAP

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### **Abstract**

This paper presents an update of the MOOC orientation strategy implemented by Federica Weblearning, the Centre for Innovation, Experimentation and Diffusion of Multimedia learning at the University of Naples, Federico II since January 2019 and already published in the same year. The adoption of a solid orientation strategy continues to be driven by the need to support students in their university choice and prepare them for the intellectual demands of university life and study. According to OECD, the number of graduates in Italy has increased in 2019 from 20% to 28% in the 25-34 age range, and Italy has high numbers of post-graduate degree holders. However, as in the rest of the world, dropout rates in Italy continue to be high, currently standing at approximately 25% of registered students. The MOOC-based orientation strategy addresses possible ways of bridging the gap between school and university. The initial Federica meta-MOOC strategy provides a tool for helping students choose the right degree. Meta-MOOCs offer experiential chunks of real university courses, thus demonstrating content type, learning approach and expected levels of attainment. In 2020, the Federica Weblearning orientation offer has been extended via a new partnership with the CISIA inter-university consortium. This initiative focuses on MOOCs that fill in the knowledge gaps, providing preparatory courses in key areas where weaknesses have been identified to support students through first-year university exams, or indeed, university entrance tests. A further prong is currently being added to the overall Federica orientation strategy: MOOC activities to foster student awareness to deal with change positively, and adopt the path towards self-fulfilment.

**Keywords:** *MOOCs, Freshman orientation.*

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## PHYSIOTHERAPIST STUDENTS' PERCEPTIONS IN A GAMIFICATION PROJECT

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### **Abstract**

Motivation is a crucial aspect in the students' learning. Thus, active learning methods encourage students to become active protagonists of their own learning processes. Gamification is the use of game elements in a non-game context. The use of gamification as an innovative teaching-learning strategy rises from the need for change in teaching methodology. By applying gamification to the classroom, students could be motivated to learn in new ways or enjoy otherwise tedious tasks. For that reason, a gamification project entitled 'Jeopardy', based on a cooperative methodology, has been developed in the first semester of the academic course 2019-2020. The participants have been students of 2<sup>o</sup> course of Physiotherapy degree from San Jorge University, enrolled in the subject 'General Procedures in Physiotherapy 1'. Jeopardy project consisted in the implementation of educational games that gave students, divided into small groups, tasks to earn points and feature a leaderboard to track progress and increase students' engagement. Our main objective was to analyze the perception of learners about their participation, the impact of the project and, the integration of content from this subject. In order to assess students' perceptions and satisfaction with the gamification project, an online survey was designed to collect quantitative and qualitative data. Results show that students value this project positively in terms of the way in which it facilitates the integration of content in a collaborative way. To conclude, this study provides that the use of a gamification project is a valid active learning strategy.

**Keywords:** *Gamification, cooperative learning, active learning, physiotherapy.*

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## **IS KNOWLEDGE PRICELESS? A CASE STUDY ON THE CHANGING FACE OF EDUCATION**

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### **Abstract**

Current developments in the Western economies have turned some universities into corporate institutions driven by practices of production and commodity. Academia is increasingly becoming integrated into national economies as a result of students paying fees and is consequently using business practices in student retention and engagement. With these changes, pedagogy status as a priority within the institution has been changing in light of these new demands. New strategies have blurred the boundaries that separate a student from a client. We believe that this has led to a change of the dynamic, disrupting the traditional idea of the knowledge market and emphasising the corporate aspect of universities. In some cases, where students are seen primarily as a customer, the purpose of academia is no longer to educate but to sell a commodity and retain fee-paying students. By analysing a case study of the Student Success Festival, an event that involved academic and marketing teams, we consider the differences between the respective visions of the pedagogic arm of the university and the corporate. We argue that the initial concept of the event, which was based on the principles of gamification, independent learning, and cognitive criticality, was more clearly linked to a grounded pedagogic approach; however, when liaising with the marketing team, is a crucial step in creative process, it became apparent that these principles were not considered a priority in terms of their remit. This paper will consider these two opposing viewpoints, reflecting on the reality of maintaining a pedagogic grounding in an increasingly commercialised sector.

**Keywords:** *Economic pressure, commodification, pedagogy, gamification, higher education marketization.*

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## **CATCHING TWO BIRDS WITH ONE STONE - THE CASE OF MUSIC AND PROGRAMMING FUNDAMENTALS**

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### **Abstract**

This study describes a unique learning experience of elementary school students that learn programming fundamentals via engagement in music programming of known melodies using the Scratch 3.0 environment. Eleven six-grade students participated in weekly activities each lasting 90 minutes along one semester. The learning units were planned in a way that the engagement with the programming of well-known melodies stimulates the curiosity to get mastery over the above programming concepts and structures. The research aim is to explore the effects of teaching fundamental programming structures and concepts via music. Since it is a pilot study, the research method used is of action research in which each lesson is redesigned according to conclusions and insights gained from previous lessons. The research data include transcripts of the class discussions, the students' feedback after each lesson and the researcher's reflective journal. From the data analyzed so far, four categories emerged: enjoyment, interest, gaining of programming knowledge and experiencing feelings of success. Instead of the teacher's initiation of teaching new programming concepts, the need for these concepts emerged from the students during their engagement in music programming. The students were enthusiastic during the learning lessons, and they were curious to learn and were eager to get mastery over advanced concepts right from the first lesson. The music programming provided them with practical meaning for the learned programming structures and concepts.

**Keywords:** *Music, programming fundamentals, Scratch 3.0, spiral learning, constructivism.*

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## **SCHOOL PRINCIPAL LEADERSHIP IN RURAL SOUTH AFRICA: CHALLENGES, EXPERIENCES AND OPPORTUNITIES**

**Leentjie van Jaarsveld**

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### **Abstract**

The competence of principals in remote areas is often questioned as principals are moved to remote areas for various reasons. In many remote communities, the parents, learners and governing body function separately. Learners have no sense of responsibility towards their school commitments, parents have no interest in their children's daily school routine and the governing body uses its power to make decisions regarding the school without the permission of the principal. This study dealt with principals located in remote areas that had their own unique challenges. Some of the challenges included poor infrastructure, poor socio-economic conditions and appointment of new principals. The overall aim of this study was to gain more insight in the daily duties of principals, that was, their leading and management practices. The objectives were to determine the perceptions of principals in remote schools on leadership and management, to determine the perceptions of principals in remote schools on challenges experienced by them and to determine how leadership and management of remote school principals are influenced by internal and external determinants. The study followed a qualitative approach from the interpretivist paradigm. A phenomenological design was applicable to the study. The study aimed to gain a holistic perspective of principals' leadership and management within the environment in which they interact with people daily. The study sample consisted of ten principals, both male and female. Schools in towns with fewer than 4 600 residents in the Northern Cape were identified. Semi-structured interviews were conducted to gain insight into the leadership of the principals. The inductive data analysis process was used. The data were coded and subdivided, and themes were formed, linked to the research objective and deduced by referring to the literature. The required ethical clearance was obtained from the Research Ethics Committee of the university as well as the Department of Education of the specific province. The results revealed principals in remote areas, in the absence of technology, infrastructure and support bases, had to use their skills creatively, and they needed the support of the community, teachers, school management and governing body. Without the approval of the community, principals found it difficult to become part of the community. Being accepted by the community requires a lot of trust. Principals had to prove themselves first and were only then accepted. In conclusion, the support of the teachers, school management and governing body was of utmost importance in remote schools.

**Keywords:** *Challenges, leadership, qualitative research, remote schools, school principals.*

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## **SUSTAINABLE DEVELOPMENT INDICATORS – A POTENTIAL FOR ENHANCING ENVIRONMENTAL LITERACY**

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### **Abstract**

Sustainable Development Goals (SDGs) represent a broad agreed concept for development of human society till 2030. One of the SDGs targets is to ensure that all learners acquire knowledge and skills needed for sustainable development implementation. More specifically, environmental literacy of learners and students is to be developed for ensuring people's profound understanding of complex (interrelated) environmental, social and economic issues and principles that enable addressing today's social and environmental challenges in the globalized world.

Although there is more than thirty years' effort to educate people about sustainable development there is still a lack of understanding of the concept by the general public mostly because of its complexity. In our paper we want to show that one of the ways to raise public and students' awareness of sustainable development is to apply sustainable development indicators and indices.

To demonstrate this, we analyzed major sustainable development indicators and indices in relation to environmental literacy components using the system of codes. Based on this qualitative analysis the relevant indicators and indices with the potential for development of students' environmental literacy in all

its components were selected. These indicators and indices were further assessed by the expert panel according to predetermined criteria (e.g. importance, attractiveness of the topic, indicator communication style) and indicators/indices with the best potential for the use in sustainable development education were finally chosen.

The study results will provide inputs for the development of a new didactic method and materials that will be tested and subsequently used in secondary school education. We believe that the results of the study might be of interest to other countries with similar socio-cultural conditions as the Czech Republic.

**Keywords:** *Sustainable Development Goals (SDGs), environmental education, environmental literacy, indicators and indices.*

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## **TEACHING DISCOURSE ANALYSIS OF THE CATEGORY OF SUBJECT**

**Marina Fomina**

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### **Abstract**

The paper focuses on the DA of the category of semantic subject and aims to introduce a step-by-step algorithm that can be applied for the analysis of Russian and English academic texts. Despite its status of being a well-established and viable research method, DA's framework to be introduced in the classroom and its teaching effect are still relatively under-researched.

**Keywords:** *Discourse analysis, semantic subject, academic discourse, dialogue with the reader, academic writing skills.*

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## **INTERDISCIPLINARY INNOVATION CAMP FOR NURSING AND ENGINEERING STUDENTS AT WNUAS**

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*Western Norway University of Applied Sciences (Norway)*

### **Abstract**

Learning outcome descriptions from the Norwegian qualifications framework for lifelong learning expects students to get acquainted with innovation, entrepreneurship and innovation processes. Western Norway University of Applied Sciences (WNUAS), in cooperation with Junior Achievement Sogn og Fjordane, organizes interdisciplinary innovation camps for nursing and engineering students. This has been an ongoing process since 2014 with one innovation camp every year. The innovation camp is organized by staff from WNUAS, and the student assignments are provided by local businesses and organizations. These businesses and organizations are present and available for student guidance during the innovation camp. In total we have had 20 different assignments from 12 businesses and organizations since 2014. The aim of the study is to find out about the students learning outcome from innovation camp as a strategy for learning, and to evaluate and improve the innovation camp concept. 6 students participated in the study through a focus group interview, and 71 participated through an online survey. Findings in this report shows that the students were satisfied with innovation camp as a method for learning, and they describe their own learning outcome as good. They regard innovation camp as a diverging learning method that varies from the more traditional methods of learning. An evaluation study from the innovation camp shows that students lack a common understanding of innovation and entrepreneurship before participating at the event. The students also found that the assignments were too limited, hence that they were not challenging enough for creative thinking. This report leads to several conclusions in order to improve upcoming innovation camps at WNUAS. The improvements can be separated into two categories: 1. The students needs to be better prepared for the event. 2. The assignments need to be more open.

**Keywords:** *Innovation, entrepreneurship, higher education, pedagogical model, innovation camp.*

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## **GLOCALITY AS INSTRUMENT OF CULTURAL POLICY AND ITS ABILITY TO PRESERVE CULTURAL CAPITAL**

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### **Abstract**

Glocality today is a universal form of reflection of contemporary reality and, as a category of social philosophy, dialectically connects the concepts of "global" and "local." The terms "glocality," "glocalization," and "glocal" have their definitions and are actively used to describe and analyze the corresponding phenomena occurring in the life of society. Some events in the life of modern society can be explained only with the help of the concept of "glocality."

In this work, the authors set the goal of analyzing the nature of the interaction between global and local and identifying the possibilities for their harmonious coexistence. The research methodology determined the purpose and focus of the work. The authors conducted a comprehensive analysis of examples, which are a synergy of global and local characteristics of the existence of human society. In the course of the work, various methods were used, the main of which was inductive empirical, which consists in observing, fixing, generalizing and interpreting facts that serve as the basis for general conclusions. The hypothetical-deductive method was used to present the results of the study when, in some cases, general observations were given before particular examples.

Property rights may collide with other rights. We must understand the complex process of glocalization through direct and critical research simultaneously - detailed research and fine-tuning of everyday cultural practices, symbolic imaginary, and social relationships that reproduce global processes, connecting various distant planetary points. This includes looking at how global markets interact with political rules, social forms, and the production of cultural property through disparate and heterogeneous stories and geographies.

**Keywords:** *Globalization, glocalization, localization, culture, civilization.*

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## **COMMUNICATION REVOLUTIONS THAT MARKED THE HISTORY OF EDUCATION. PROVERBS IN EDUCATION - THESES AND PARADOXES**

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### **Abstract**

As part of human society as a whole, the education system continues to play its role – addressing the newer needs of an increasingly technologized society (essentially new communication and information technologies – C&IT). The education system, changing itself, has to answer to all changing needs and challenges of the contemporary society; and the solutions offered are, in general, technology-based solutions. This paper aims to offer a different prospective, looking backwards in history still focused forwards, on the educative role of the wisdom literature and proverbs in particular, as educative means – not as an alternative but as an additional, particular instrument to be used during the education process. Also, this does not entail, by any means, to undermine the role of new technologies in education.

The author's approach is to survey the history of education from that standpoint of the history of humans' communication – which was definitely marked by several stepping-stones, actually four communication revolutions, namely: (i) language revolution; (ii) writing revolution; (iii) printing revolution; and (iv) contemporary e-communication revolution.

As part of the books of wisdom (books of knowledge) or independently, the proverbs always played an important educative role – as subtle yet solid and continuous, particular kind to educate – before invention of printing and even writing. Praising the collective and anonymous author as universal and immortal educator, the main objective of this paper is to launch *four theses* related to the proverbs' resilience, durability and continuity, as well as *five paradoxes* regarding the proverbs' dynamics.

The novelty of this paper, besides emphasizing the communication revolutions that impacted the history of education, consists of launching the concepts of the proverbs' theses and paradoxes – specifically the four theses related to the proverbs' resilience and the five paradoxes of the proverbs' dynamics.

The subject and research path initiated may, eventually, enlarge future research avenues, and/or provoke discussions among [higher] education strategists, policy makers, scholars and educators.

**Keywords:** *Communication revolutions, communication and information technologies (C&IT), proverbs and education, theses on the proverbs' resilience, paradoxes of the proverbs' dynamics.*

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## **CHILDREN WITH VISION IMPAIRMENT AND MULTIPLE DISABILITIES: ISSUES OF COMMUNICATION SKILLS AND PROFESSIONALS' CHALLENGES**

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### **Abstract**

People with vision impairment and multiple disabilities (MDVI) constitute a population with an enormous heterogeneity due to the combination of various disabilities. Education of children with MDVI concerns different domains and it is considered one of the most demanding fields in Special Education as each student with MDVI has different needs and entails unique educational challenges. In specific, the development of communication skills of children with MDVI is a fundamental domain of their education which affects their learning and active participation in all sectors of life. As a result, professionals are very concerned in which way they can design and develop effective intervention programmes, in order to assess accurately children's communication levels and in turn set realistic goals to consolidate and advance them. The present paper refers to an Erasmus+ project entitled "Promoting effective communication for Individuals with a Vision Impairment and Multiple Disabilities" (PrECIVIM) which acknowledges the need to train teachers in this field and bridges assessment and intervention for the development of communication skills for children with MDVI. The authors present and describe in this paper the following: a. the structure and the content of a training manual for the enhancement of teachers' and professionals' competences in communication skills of children with MDVI, and b. the training process, based on the developed training manual, in three countries (Greece, Cyprus and Romania) in different educational settings for children with MDVI. The obtained data regarding teachers' and professionals' feedback from the training process and their corresponding intervention programmes, revealed a range of good practices as well as concerns and challenges confirming the need of more focused training programmes regarding the education of children with MDVI. The authors conclude that the implementation of intervention programmes, when it comes to communication and levels of communication, depends significantly by a number of factors such as diagnosis, early intervention, system of support for professionals and families, assessment, teachers and professionals' competences, effective use of technology, alternative and augmentative communication, environment, and so on. Finally, it is argued that the aforementioned issues, should be an integral part of a systematic educational policy for the provision of educational opportunities in terms of equality and inclusion for all children including children with MDVI.

**Keywords:** *Children with vision impairment and multiple disabilities, communication skills, teachers' training.*

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## **TODAY'S HIGHER EDUCATION AT A CROSSROADS: IS THE EDUCATOR'S ROLE UNDERGOING A PARADIGM SHIFT?**

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### **Abstract**

The education is currently under the pressure of environmental forces that induce challenging and rapid changes; these changes are interlinked, and influence or are influenced by the education systems and processes – in all their dimensions: students, educators, teaching infrastructure and methods. The higher

education has to answer to new challenges and most answers gravitate around getting the best compromise between traditional versus new education technologies. If the blended learning seems to be a common sense solution applicable in several instances, a question stands still: If the source of information/knowledge can be quasi-instantly accessed then how to deal with this tremendous amount of data which develops exponentially in time? What should be the educator's role in the next future?

From the educator's standpoint, focused on the educator's role, observing the different progress rates of the available data, information and knowledge (on one side) and human capacity to process these available data, information and knowledge (on the other side), the author becomes aware of the higher pace of the first – in the midst of impetus of new communication and information technologies – and argues that, at this point in time, we are eye-witnessing a real education paradigm shift. The education system is at a critical point in time (call it *critical point of education – CPE*) when the educator's role must change from knowledge repository to skilled, expert knowledge explorer and identifier, switching from teaching the subject to teach students how to pick the right and relevant information related to the subject – from the ocean of available data.

Besides all the above questions, this paper launches the thesis of the *education paradigm shift* – in that respect of the educator's role in the predictable future, to provoke a discussion, and to open a research path, for higher education strategists, policy makers, scholars and educators.

**Keywords:** *Higher education, educator's role, education paradigm shift, critical point of education (CPE).*

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## **SPECIAL EDUCATION TEACHERS: TRAINING AND INTERVENTION STRATEGIES FOR INTERNET RISKS OF STUDENTS WITH INTELLECTUAL DISABILITIES IN SPANISH CENTRES**

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### **Abstract**

The use of the Internet is a key aspect in the inclusion of students with intellectual disabilities (ID) in the current information society, although this process entails both benefits and potential risks. The perceptions of teachers and, in particular, of special education teachers are of interest for taking advantage of the benefits of the Internet since they are essential supports in the digital literacy of their students. In the same way, these teachers can favour the prevention and management of online risks. The purpose of this study was to explore the training received as well as their perceived ability to prevent and manage risks online. A cross-sectional study was conducted based on a survey design in which 134 Spanish special education teachers participated (27 male, 107 female), belonging to ordinary centres ( $n = 56$ ) and special education centres ( $n = 78$ ). Teachers had an average of 16.31 years of teaching experience ( $SD = 10.40$ ). Descriptive and contrast analyses were performed using the T and Chi square tests. The results show that 88.1% of the participating teachers have not received any training on online risks. Consequently, teachers perceive themselves as little or nothing at all prepared to prevent online risks (51%), or to manage them if they occur (61%). There are no significant differences in the competence perceived by teachers according to whether their educational centre is ordinary or special, or according to gender. On the contrary, there were differences in the application of five of the 24 preventive mediation strategies analysed. These results show that the participating teachers have not received adequate training to optimize the potential benefits of the Internet for people with ID, neither to prevent nor manage the associated risks. Hence, teachers tend to feel barely competent to address this issue. This fact is of important relevance since the special education teachers are one of the key supports in schools for students with ID both in direct educational intervention and in the advice of the rest of the teachers. Their lack of training calls into question their ability to develop a digital literacy that favours the inclusion of these students. Therefore, the need to design and implement specific training plans on this subject for teachers as well as measuring their effectiveness is concluded.

**Keywords:** *Intellectual disability, Internet, mediation, training, teachers.*

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## **DIMENSIONS OF STUDENTS' ENGAGEMENT AND SELF-INSIGHT IN UPPER SECONDARY EDUCATION**

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### **Abstract**

The aim of this study was to analyse the dimensionality and reliability of an instrument capable of measuring readers' engagement and self-insight in literature education. A self-report questionnaire was administered to upper secondary grammar school students in three Austrian regions (n=417). Principal axis factoring with Promax rotation was conducted. As the number of factors to be retained was ambiguous, various models were tested. Finally, I arrived at an eight-factor solution which fulfilled the most relevant theoretical and statistical criteria for this study. The factors Insight and Self-perceptual depth are considered to be forms of self-insight, the factors Cognitive Perspective-taking, Identification, Narrative Presence, Pre-enactive Empathy, Realism, and Self-implicating Givenness constitute interrelated modes of engagement. The Cronbach alpha values for the subscales generated by PAF indicated adequate internal consistency. Limitations and implications are discussed.

**Keywords:** *Factor analysis, literature education, scientific study of literature, narrative engagement, self-insight.*

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## **HOMEROOM TEACHERS' STRATEGIES OF POSITIVE AND NEGATIVE DISCIPLINING OF PUPILS WITH ATTENTION DEFICIT DISORDER**

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### **Abstract**

Pupils with the attention deficit disorder are present in almost every class. Positive discipline is interpreted as positive guidance, and effective interventions are used to work with students who have a disorder of attention, which include positive and well-intentioned teacher relationships, small tasks that include praise, verbal, and non-verbal communication aimed at collaboration. Negative disciplining involves a teacher's negative attitude toward the student, criticism, and punishment.

The main objective of this research was to determine the predictors of positive and negative disciplining of pupils with the attention disorder regarding the expected contribution of some characteristics of the pupil (gender, school achievement, hyperactivity-impulsivity, antisocial behaviors, emotional problems) and some characteristics of the classroom teacher (gender, years of work experience, length of teaching, self-estimated relationship with the pupil). We analyzed the expected predictors in *classroom teaching* (first to fourth grade) and *subject teaching* (fifth to eighth grade).

The research covered 131 primary school in 13 counties all over Croatia and the capital of Zagreb. From a baseline sample of students with behavioral problems, a sub-sample of 539 pupils was identified in which the classroom teachers assessed 7-9 symptoms of attention deficit according to DSM V criteria. The majority of teachers were female (N = 484, 89.8%), with an average age of M = 43.65 (SD = 9.82) and an average work experience of M = 18.38 (SD = 10.49). 88.5% of the evaluated pupils were boys and only 11.5% were girls, with an average age of M = 10.54 (SD = 2.07). Somewhat more pupils attended classroom teaching (N = 312, 57.9%) than subject teaching (N = 227, 42.1%). Teachers estimated the pupils' characteristics on DSM V items and the Scale of misbehavior management strategy (positive and negative discipline subscales).

Homeroom teachers use more positive discipline in both classroom and subject teaching when pupils with attention deficit show more severe symptoms of antisociality, more emotional problems and have a better relationship with the teacher. Homeroom teachers use more negative discipline in classroom teaching when pupils have more severe antisocial symptoms, and more negative discipline in subject teaching when pupils

have more pronounced antisocial symptoms and their teachers have less years of work experience. The implications of the results can be seen in the perspective of enhancing teachers' professional competencies to teach pupils with the attention deficit disorder.

**Keywords:** *Attention deficit disorder (ADD), homeroom teacher, classroom management, disciplining, primary school pupils.*

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## LEARNING FIVE-GRADE MATHEMATICAL PI BY COMPUTATIONAL THINKING

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### **Abstract**

Computational Thinking (CT) refers to the skill of using a computer to solve problems. The skills of CT include “abstracting and modeling”, “modularizing and reusing”, “iterative and optimizing” and many other skills. These skills are highly associated with mathematical thinking such as “specialization”, “generalization”, “conjecturing” and “convincing,” refers to the thinking of how to solve mathematical problems. Most of the connotations of these mathematical thinking are the same as those of CT skills, so it can be shown that CT is highly related to mathematical thinking.

Learning the ratio of the circumference of a circle to its diameter course (PI) is difficult to understand and often needs to hands-on to learn for students. The method of PI is generally based on the Practical Method, the Cyclotomic Method, or the Mathematical Formulas. Practical Method refers to wrapping the string around a circle and measuring the length of the string with a ruler to know the circumference. The Cyclotomic Method is learning circumference by approximated by inscribed regular polygons of a circle and finding the relationship between circumference and diameter, PI. This study thinks that the approximation method of the Cyclotomic Method is easier to achieve with CT for 5-grade students.

The purpose of this study is to use the Blockly of Google to develop the relevant teaching materials combining Computational Thinking and mathematics and to explore the influence of teaching courses on students' learning effectiveness. There are three tasks in this course. The first task is to move the position of the "virtual character" through given coding blocks. Its goal is to learn coding blocks. The second task is to observe perimeters of inscribed regular polygons of a given circle and to find the approximations of the circumference by operating coding blocks. Moreover, one can estimate PI by observing the walking path of the "virtual character." In the third task, the operations of coding blocks are similar to the second task. However, the radius of the given circles are different. The purpose is to understand that at different radius, the circumference will be approximately six times the radius (approximately three times of the diameter). Through the above three CT tasks, 5-grade students can observe (not use formulation) the relationship between the circumference and the radius of a circle to understand PI.

**Keywords:** *Computational thinking, mathematical ability, teaching material, circumference of circle course, PI.*

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## CREATING AN INTERACTIVE TOOL FOR STUDENT COMMUNICATION: LESSONS LEARNT

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### **Abstract**

Following significant success in the use of so-called “backchannel” tools in building student engagement within the School of Electronics, Electrical Engineering and Computer Science at Queen's University Belfast a situation arose in 2018 where our choice of provider closed down. We attempted to use other available off-the-shelf tools but for various reasons these were not widely adopted. At the end of 2018 we decided to implement our own student-facing communication, question and, chat tool for students and

lecturing staff to use. Called QChan the system went live, while still under development, to classes as large as 400 in size in January 2019. Developing a system to encourage use, be easily accessible and yet secure and robust enough to withstand experimenting computer science students was something of a challenge. In 2020, QChan is widely used in our school and has been a driver to better student engagement. We continue to develop QChan and also analyse it and the other platforms' content to better understand how to consistently engage with students.

**Keywords:** *Backchannel, engagement, chat, technology.*

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## THE CHARACTERISTICS OF DIALOGUE OF TEACHING GLOBAL COMPETENCE THROUGH AUTOTUTOR

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### **Abstract**

AutoTutor is a dialogue-based intelligent tutoring system and is widely used in various areas, such as mathematics, science, and medicine. Instructional materials for teaching Global Competence was developed by using AutoTutor. Four assessment dimensions of Global Competence of PISA 2018 were included in the project.

The aim of the study was to analyze the characteristics of dialogue when students were interacting with the intelligent tutoring system. Eight units were analyzed. The results showed that the high-level group completed the teaching tasks without going through many conversations with AutoTutor, on the other hand, the low-level group needed more guidance and teaching to grasp the concept of the content. Take unit eight for example, most high-level group participants completed the tasks without prompts and teaching, in contrast, the low-level group interacted with AutoTutor much more frequently to complete the tasks. The characteristics of dialogue of the low-level group often follow the following order: Hint→ Prompt→ Teaching→ Summary→ Hint→ Teaching→ Summary→ Teaching→ Summary, which indicates that students of the low-level group need more teaching assistance to complete the task.

The results suggest the future design of dialogue for promoting and facilitating learning among students who might be experiencing difficulties.

**Keywords:** *Global competence, dialogue-based intelligent tutoring system, AutoTutor, computerized assessment.*

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## EVALUATION OF IMMERSION PROGRAM FROM STUDENT' PERSPECTIVE IN SICHUAN UNIVERSITY, CHINA

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### **Abstract**

The UNIVERSITY IMMERSION PROGRAM (UIP) of Sichuan University is an international communication program. It aims to broaden the global view and cultivate global cooperation awareness of the students. UIP consists of four parts, the first is general or specialized courses provided by professors from all over the world, the second is seminars or symposiums on various topics, the third is field study and visits, and the fourth is local cultural interactions. This paper intends to evaluate UIP in students' perspective. The article evaluates four parts mentioned above by using questionnaire survey and self-report survey. This research includes three steps. First step is evaluating field visits and cultural interaction by using 18 self-reports. Second step is evaluating courses and seminars by collecting relevant data from results of student's evaluation related to professors teaching quality. Third step is evaluating the whole effectiveness through interview method. Findings reveal the following facts. Firstly, students are more satisfied with local cultural interactions than other three parts due to more chances will be given to

communicate freely with professors and international students. Secondly, advanced technology or infrastructure will improve their satisfaction in field study and visit. Lastly, the contentment of English courses is subject to teaching style of professors or the way to organize class. In the end suggestions and strategies are put forward to improve students' satisfaction and influence of UIP.

**Keywords:** *Student perspective, Sichuan university, evaluation, university immersion program.*

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## **LEARNING FIFTH GRADE MATHEMATICAL THE CENTRAL ANGLE CALCULATION OF A CIRCULAR SECTOR OF BY COMPUTATIONAL THINKING**

**Yi-Jin Ju, Chih-Wei Yang, Cheng-Hsuan Li, & Pei-Jyun Hsieh**

*Graduate Institute of Educational Information and Measurement, National Taichung University of Education (Taiwan)*

### **Abstract**

With the rapid development of science and technology, countries all over the world have emphasized the cultivation of students' scientific and technological literacy. Taiwan's 12-year Basic Education of Science and Technology also stressed that through the use of scientific and technological tools to increase students' creative and critical thinking, logic and computational thinking (CT), problem-solving and other high-level capabilities. CT refers to the ability to solve problems using computers. These include skills such as Problem Decomposition, Abstraction, Algorithm, and other skills. Programming is one of the most common ways to cultivate the ability of CT. In addition, most elementary school students in Taiwan learn Scratch when they are 5 or 6 grade to enhance their CT abilities. Therefore, this study uses Scratch to develop teaching materials that integrate a mathematical unit with CT and explores the impact of the curriculum on students' learning effectiveness on both the mathematical unit and CT.

This research develops the calculation of the central angle in a circular sector unit of fifth-grade to assist students in learning mathematics through the operations on the project designed by Scratch blocks. Before the activity, students have learned the basic knowledge of the circular sector unit. The first activity is to observe the size circular sector in a circle and the related central angle value automatically computed by the codes by dragging the sliders of numerator and denominator. The second activity is the opposite of the first activity. Students input the central angle values of a circular sector and, then, observe the size circular sector in a circle and values of numerator and denominator of the related fraction. The third activity is based on the real scenario, "calculating the central angle of the circular sector in a clock." The circle is divided into 12 equal parts and simulated as a clock. Students drag the value of the minute-hand slider. Students drag the value of the minute-hand slider and observe the angle of intersection between the hour and minute hands and the related value computed automatically by Scratch codes. Through the above three activities, deepen students' concept and improve the calculation ability of the central angle of a circular sector.

**Keywords:** *Computational thinking, mathematical ability, teaching material, the central angle of a circular sector, Scratch.*

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## **LIFE IN THE BONDS OF SOCIAL EXCLUSION AS A DISADVANTAGEOUS FACTOR OF EDUCATION**

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### **Abstract**

Social exclusion is a phenomenon affecting different spheres of an individual's life, and its consequences are seen at many different levels – economic, social, spatial, cultural and others. Life in the bonds of social exclusion is devastating, especially for children. In the field of education, exclusion is becoming a disadvantageous category that indicates a wide range of causes of school failure. The environment from which children come to schools is naturally of great importance for their educational process. It is therefore necessary to identify obstacles that make it difficult for pupils to learn, as well as phenomena that make children potentially or actually fail in schools.

In our research we focus, from a qualitative perspective, on a description of the role of a socially excluded environment, as even a partial determinant that affects the educational path of children who come from such a background. Our aim is to create a complex picture of the barriers that hinder the educational process of pupils and, subsequently, to identify the appropriate areas of support that the pupils need in order to overcome those barriers, and to make them work in the future.

**Keywords:** *Exclusion, environment, disadvantage, pupil, education.*

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## **PERSONALIZED LEARNING IN MATH, THROUGH PROBLEM-SOLVING, AND THE USE OF ICT**

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### **Abstract**

The challenge of learning math for the 21st century is personalized learning. Personalized learning in math gives everyone the chance to touch the greatness of mathematics.

Personalizing math learning means designing, developing, and applying teaching strategies and techniques while taking into account everyone's skills and intelligence. Personalized learning in mathematics is a necessity, to create opportunities according to the abilities to achieve the ultimate goal, which is the preparation of the capable citizens of tomorrow. Since problem-solving leads the list of skills and competencies that need to be achieved through math learning, developing math learning through problem-solving doubles the importance of learning math. And, if we further add to this mixing with fully defined relationships: personalized learning + problem-solving, we add another element that should characterize today's learning, which is the use of technology, we can prepare generations that not only can learn math but also produce math being the forerunners of technological change to make their implementation in every area of life.

In this article, we will see how we can achieve personalized learning through problem-solving in mathematics in Lower Secondary Education (AMU, in Albanian) and the role that ICT plays in achieving the highest possible results.

**Keywords:** *Personalized learning in math, problem-solving, ICT, gifted and talented, success in math.*

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## **ENHANCING STUDENT SUPPORT THROUGH CLOSE-PROXIMITY PROGRESS MONITORING**

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### **Abstract**

Effective support for new students in their first year of higher education is of primary importance in addressing problems associated with retention and progression. For some technology related programs such as Computer Science and Software Engineering, this has proved to be a significant problem, with increasingly large class sizes difficult to accommodate under strained resources. In such scenarios, individual students can have difficulties in accessing required support, leading to (in some cases) a gradual disengagement and unrealized potential. This work outlines the practicalities of managing lab classes for groups in excess of 250 students, describing the approach taken in decentralizing this task, with the overall aim of improving student access to assistance. This is supported through development of a mobile application for use in group-based student progress monitoring within a lab context.

**Keywords:** *Student progress monitoring, mobile applications.*

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## **DITCH THE PLASTIC TRINIDAD & TOBAGO: THE DYNAMICS OF A MULTI-SECTORAL SCHOOL-COMMUNITY PARTNERSHIP**

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### **Abstract**

In the Caribbean, the average person contributes about 5 kg of plastic waste per day, one of the highest in the world. However, for Trinidad and Tobago (TT) this is about 1.59 kg. A 2018 report found TT produces roughly 200,000 tonnes of waste annually, with 25% coming from plastics, especially from single-use packaging plastic. Though 55% of plastics end up in landfills, just 19% is recycled. In light of this, TT is about to pass legislation to recycle, recover and re-use waste materials and encourages collaboration among NGOs, CBOs, the private sector and government agencies to educate the public on the impact of plastic waste on health and the environment. Such education is urgently needed as a national survey of secondary school population in 2016 found that just 63% possess a pro-environmental disposition and just 51% were environmentally literate. Involvement of all citizens, in particular, youth who will inherit this problem, is clearly needed to advocate for control and elimination of single use plastic.

Building environmental awareness of youth and their communities can be accomplished through advocacy in multi-sectoral partnerships, seen as beneficial to learning for sustainability. The success of such partnerships is contingent on the capacity of stakeholders to articulate a common vision, and negotiate issues of power, accountability and collaboration while being sensitive to cultural context. This study presents an analysis of a multi-sectoral partnership in a semi-rural district in TT. The partnership advocated for the replacement of single use plastic shopping bags with reusable bags, a project which took place over the course of one year. Partners included local and foreign universities, environmental agencies, secondary schools, and community members of the main partner school. Multi-sectoral partnerships which cross international borders then present unique challenges. The study sought to determine the structures and processes that facilitated the partnership, using a case study design.

Data was collected through Interviews of stakeholders, and analysis of artefacts (minutes of meetings, reports, events, and products). Initial themes emerging through thematic analysis included a common vision, equitable power sharing, camaraderie, agency, national and community visibility and status. Few studies of this nature have been done in TT or the Caribbean, and as such the study has potential for providing important understandings of tools and processes for enhancing school-community partnerships in the cultural context of small island developing states

**Keywords:** *Multi-sectoral partnerships, environmental education, single-use plastics.*

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## **EDUCATIONAL AND THERAPEUTIC BENEFITS OF “CONTENT-FOCUSED ACCESSIBLE E-LEARNING MATERIAL” FOR VISUALLY IMPAIRED UNIVERSITY STUDENTS**

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### **Abstract**

The idea of “educational therapy” is quite different in Japan compared to foreign countries, especially in the US, where educational therapy is quite advanced. Therefore, this study determines the educational therapeutic benefits of the author’s “Content-Focused Accessible E-Learning Material” for English self-learning, based on the concept developed in the US, particularly focusing on visually impaired students. These students experience various difficulties in higher education, such as 1) the absence of learning materials in braille, 2) commercial unavailability of magnification-capable learning materials and digital materials, and 3) lack of text-to-speech function in many learning materials. To study whether the material had any therapeutic benefits for these students, the author obtained feedback from 33 students. The feedback was based on the following questions: (1) technical aspects: Did the material reduce/rid the load/concern

they felt; and (2) mental aspects: Did the material increase the willingness/autonomy or decrease anxieties and did they feel accomplished or motivated to improve their longitudinal English self-study? The findings show that the material was beneficial to them in five ways.

In conclusion, the goal of this study was accomplished to a considerable degree; accessible learning material that enabled visually impaired students to study English efficiently was created, and the use of this material reduced students' mental burden in learning. Additionally, it is worth mentioning that students using braille and those who had no major visual difficulties commented that both could share the same learning material, enabling them to study together. Students are hoped to continue carrying out a longitudinal self-learning after graduating, as they build their careers.

**Keywords:** *“Content-focused accessible e-learning material”, educational and therapeutic benefits, visually impaired university students, English learning.*

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## TEACHING AND LEARNING

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### ANALYZING EXPERIENCES OF USING EFFECTIVE FEEDBACK IN THE ESL CLASSROOM THROUGH THE USE OF DIGITAL TECHNOLOGIES

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#### Abstract

This article of systematic literature review presents the analysis of a series of experiences that use effective feedback in educational activities through the use and integration of digital technologies, specifically, in the classes of English as a second language in higher education. The revision analyzed 14 different experiences. As part of the analysis, criteria are defined to describe and compare them, linked with the possibilities of feedback to favor the formative processes at the higher education level. Criteria include: country of origin and level of education, design of feedback used, the timing of the feedback, the means of providing feedback, and the consideration of digital technologies. The main results indicate that the use of feedback, in the ESL classroom, allows learners to boost their capacity of analysis, critical thinking, and the resolution of problems linked with interlanguage. As a conclusion, the salience and positive impact of digital technologies are highlighted in favoring the positive and effective feedback, in the particular case of English as a second language. Finally, it is evident the use of computer -mediation, screencast, and web-based learning environments as the primary sources of authors used more frequently to implement effective feedback in higher education. It concludes that the set of experiences analyzed provides light in terms of the considerations needed to design and adjust formative processes that allow boosting effective feedback mediated by digital technologies. As future work, there will be the elaboration of a methodological proposal that helps to adjust the formative processes that enable the integration of digital technologies as mediators in the process of feedback between teachers and learners.

**Keywords:** *Effective feedback, digital technologies, interlanguage, critical thinking, higher education.*

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### FATHERHOOD AND BEING A FATHER FROM THE VOICES OF SINGLE BLACK FATHERS

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Santa Clara University (USA)

#### Abstract

This qualitative study was exploratory in nature and involved the collection and analysis of data from single Black males in Northern California who were single fathers raised without a father in the home. The purpose of the study was to understand how single Black males between 19 and 30 years of age navigated their roles as single fathers without guidance from their fathers. Fathers in our study shared that they navigate their roles as single fathers through trial and error and by making a personal commitment to do what was necessary for the well-being of their children, while refusing to allow obstacles to get in their way. The absence of their fathers was a motivating factor that increased the devotion they had for their children. In addition, it was their personal understanding of what a father was that determined their actions.

**Keywords:** *Black males, fatherhood, single fathers, parenting.*

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## **THE METHODOLOGY OF ACTION RESEARCH (AR) AND THE IMPACT ON TEACHERS' PROFESSIONAL DEVELOPMENT**

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### **Abstract**

The incorporation of AR into the way of work of in-service teachers is based on the approach by which teachers should be part of knowledge-creating communities and not only engage in knowledge 'conveyance'. The generated research knowledge serves as leverage for professional development and promotes teachers' self-efficacy processes, while taking part in the development and change of knowledge, and in integrating the research process with the teaching. This incorporation promotes teachers' professional development and contributes to the system's quality.

This study was conducted among 44 teachers who engaged in AR. The study data were obtained from the analysis of these ARs. The data focused on elements that serve as guidelines for the ARs, such as the definition of the problem, the intervention plan, the examined issue, the research's target audience, the research partners and social-emotional learning (SEL) expression in the action research. The teachers also shared their insights from the AR – these insights served as basis for the collection of statements.

The research questions were:

1. What characterizes the action research conducted by teachers in their educational environment?
2. Is SEL expressed in the action research proposed by the teachers, even if they were not pointed in that direction?

This study's uniqueness is in its meta-examination of AR variables and an in-depth examination of the respondent's answers regarding the meaning of AR for them as teachers. This study also provides insights for teachers' teachers about the importance of incorporating AR into teacher training and a way of promoting teachers' professional development in the field, a way to enhance team collaboration and a tool that contributes not only to teachers in their classroom, but to the entire school.

**Keywords:** *Action research, SEL, professional development, self-efficacy, teacher training.*

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## **IMPACT OF MAKER-SPACE PROJECT TO PROVIDE COMPUTER SCIENCE EDUCATION TO MIDDLE SCHOOL STUDENTS IN THE ALABAMA BLACK BELT REGION**

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### **Abstract**

This paper describes a program to introduce computer science (CS) to middle school students in rural Alabama, USA, and presents research on the impact of the program on teachers and students. The hands-on program established a dedicated area equipped with grade-appropriate CS resources, in which students receive mentored, structured, and continuous hands-on activities using the Micro:bit system. The goal was to have students engage in "learning CS through making", a pedagogical approach grounded in educational research that is expected to promote deep awareness, interest, skills, and learning about CS. The teachers participated in intensive professional development and received regular follow-ups from the course instructors. Researchers utilized a mixed method, repeated measures design to investigate the impact of the project on teachers and their students. The main research question is: What is the impact of the Maker-Space Project on participating middle-school teachers and their students?

Teacher attitudes and skills were measured at baseline and at two points in the first 2 years of the project. Other measures related specifically to the teacher professional development (PD). A survey was used to collect student data at participating schools. All students completing the 8<sup>th</sup> grade were surveyed to collect baseline and comparison data. The survey included demographic data; prior experience with computing; and confidence, enjoyment, attitudes, and identity. In addition, pre-post survey data from students in the maker-space course was collected and analyzed. Post-course student data was compared to the baseline and comparison group data.

Researchers also visited the schools to observe the maker-space classrooms, visit with students and interview teachers. Researchers talked to the students and videotaped their discussions and their demonstrations of their projects. They also interviewed the teachers using a semi-structured protocol. The professional development positively impacted the teachers' understanding of computer science and their use of active learning and hands-on learning in their own classrooms. The teachers reported being optimistic about their own ability to learn computer science education content and about their ability to teach the content to their 8<sup>th</sup> grade students. Teachers reported changes in skills, competencies, interests and behaviors of their students. The teachers are pleased with the progress of their students in learning about computer science, especially coding. Working cooperatively, creative problem solving, and classroom engagement were behaviors seen in the Makerspace classrooms. Teachers reported seeing increased interest taking courses in high school and in computer science careers.

**Keywords:** *Computer science education, middle school, educational research.*

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## **DOES PARENTAL INVOLVEMENT REALLY MAKE A DIFFERENCE? A STUDY WITH PARENTS OF PRIMARY SCHOOL STUDENTS IN URBAN CONTEXT**

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### **Abstract**

School and family are the closest and most powerful systems in child development. Previously, family is assumed as the main promoter of the child's education, who, inserted in this environment, became aware of social norms and culturally suitable behaviours. However, early family share their responsibility with several other educational entities, especially with the school. In fact, parental engagement in school and its role in the emotional and academic adjustment of children and adolescents has been the subject of multiple studies. Thus, parental engagement is seen as an important resource for the promotion of student learning and development, because it could be changeable, and it is one of the variables more susceptible to intervention, compared to other family characteristics, such as socioeconomic level or parental educational styles. So, the present study aims to explore not only the parental engagement of students in the 3<sup>rd</sup> year of primary school, but also analyse the relationship between parental engagement and their sociodemographic features. In this study, a sample of 556 Portuguese parents was used, from the Lisbon and Porto districts, whose children are at the 3<sup>rd</sup> year of the primary school. The data was collected through a sociodemographic questionnaire built within the scope of a largest research and the Parental Engagement Questionnaire (PEQ). PEQ is a self-report questionnaire that assesses parental engagement in the school context through four factors: parental engagement in school and volunteer activities, family engagement in home-based learning activities, school-family communication, and parental engagement in school activities, such as participation in parent-teacher meetings. The results seem to point out that participating parents perceive their engagement in the school context as relevant and high. The results also show the influence of the various forms of parental engagement, since parents who present higher values in one of the parental engagement subscales tend to present the same results in the others as well. The influence of several sociodemographic variables on parental engagement was also verified. The place of data collection (Porto or Lisbon) was also related to parental engagement in several analysed factors. The results attained will be discussed in the light of the most recent literature on educational psychology, and its practical and research implications are also discussed.

**Keywords:** *School parental engagement, primary school, education, school success.*

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## TEACHER AND PEER FEEDBACK IN AN EFL WRITING COURSE: WHAT DO STUDENTS NEED?

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### **Abstract**

Although teacher and peer feedback is essential in aiding students to progress in their writing skills and is encouraged in any writing class, some classroom circumstances may act to limit the feedback teachers and peers give or may make giving feedback impossible. Conditions that may limit feedback can include heavy teaching loads of teachers, large class sizes, insufficient language knowledge of peers, and cultural limits such as fear of causing loss-of-face or having a “kreng jai” attitude (fear of offending others). Taken together, these factors hinder straightforward feedback from both teachers and peers, impacting growth in student writing skills. This study aimed at finding out students’ needs towards teacher and peer feedback in an English Writing for Daily Life course. Research instruments utilized were a four-point Likert scale questionnaire and semi-structured interview. Participants were 119 mixed-ability third and fourth-year undergraduate students majoring in Business Administration (Management), Accounting, and Mechanical Engineering at a university in the northeastern region of Thailand. Findings revealed that the majority of students had problems with content (59.66%), vocabulary (53.78%), and organization (50.42%). Although these three aspects were their major problems in English writing, teachers emphasized giving feedback on mechanics (54.62%), language use (50.42%), and organization (48.74%), while peers gave feedback more on surface-level features, i.e., vocabulary (44.54%) and language use (41.18%), despite their limitation of language knowledge. Based on the findings, this paper concluded that there was a mismatch between students’ needs and feedback given by teachers and peers, where students needed sufficient feedback to improve their deep-level features, i.e., content and organization. Although students needed to receive more feedback to improve their content and organization, they also needed feedback on vocabulary, language use, and mechanics to improve the quality of their writing. Therefore, it is suggested that teachers give feedback focused on syntax to help students in terms of their language limitation, whereas peers should be trained to give feedback on content and organization to develop their critiquing skills.

**Keywords:** *Teacher feedback, peer feedback, EFL writing.*

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## WHEN IT RAINS WHILE THE SUN IS SHINING: SCHOOL CLIMATE AS AN ECHO OF THE (FUTURE) SOCIAL CLIMATE

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<sup>2</sup>*Universidade Europeia (Portugal)*

### **Abstract**

Considering that a society is a ‘particular grouping of humanity with shared customs, laws etc.’, school meets all these criteria and, given that, it may be called a society within a society, a miniature society that exists within a larger society. Schools provide a social context for a broader and more complex social world. Hence, school is more than a context for academic learning, it is also a place where children learn to build positive social relationships, gain independence and develop emotionally, behaviourally, and cognitively. School attendance involves navigating peer interaction, solving social problems, developing the socioemotional and relational skills essential to build and maintain relationships. What happens in the social life of children is central to the sense of comfort and safety in school and to participation in school tasks and their school results. The school climate involves the quality and consistency of interpersonal relationships, the sense of belonging to the school community and the perceived safety that the School conveys and seems to be reflected in the socio-emotional adjustment and mental health of children and young people. In addition, school and behavioural outcomes also appear to be associated with the school climate. There has been a significant and rising interest in improving the school climate in recent years. This is due to the following three factors. First, there is a growing number of empirical researches that support the notion that context is important. Second, there is an increasing perception that a better school climate supports the effective prevention of violence in general. Third, there is an upward interest in the promotion of transversal skills such as moral values, socio-emotional skills, mental health promotion efforts, and the promotion of citizenship through community engagement. This growing interest in research on the school climate has also been seen at the political level. This is considered an essential aspect in the

development of programs to promote socio-emotional skills and to prevent behaviour problems. It is intended that school climate and safety can be non-academic indicators for classifying schools. The present study aims to analyse the school leaders' perceptions about the school climate. It is intended to describe their conceptualizations about the subject, as well as their reflections on the utility and implications of the concept. Through content analysis it will be possible to reflect on the trends, challenges and implications of this concept, presenting the implications for practice and for research.

**Keywords:** *School climate, primary school, education, school success school leaders.*

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## **DIGITAL ENGINES AT WORK: PROMOTING RESEARCH SKILLS IN STUDENTS**

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### **Abstract**

The paper focuses on the digital teaching and research practices which make an indispensable integral component of upscale education. The authors compare traditional approaches to education against the much demanded by the society, promising approaches which heavily rely on the digital engines. Most relevant – education-wise – features of centennials / millennials, also referred to as “digital natives”, are taken into account. The digital teaching practices and digital research practices that can be used in teaching are outlined; teaching potential of some digital engines is examined.

**Keywords:** *Education, digital, teaching, research, experiment.*

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## **OLD TECHNIQUES, NEW COMPETENCES: REBUILDING HISTORICAL INSTRUMENTS TO TEACH AND LEARN PHYSICS**

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### **Abstract**

Experimental activities and the History of Science are one of the possibilities to enhance Science teaching and learning through the Historical-Investigative approach (HI). From this perspective, the HI approach focuses primarily on the use of historical case studies to explore the methodological, epistemological and conceptual aspects of scientific endeavor. Nevertheless, very little attention has been paid to the role of the required competences to the teacher who aims at applying it. In this paper, we discuss the competences that are necessary and developed by teachers and students when using the HI approach. We use a case study example which comprises the rebuilding of a 18th century instrument (Volta's pile) and its use in a Physics class based on the HI approach. Two different realities integrate the case study: a university research group environment and a high school Physics class. As part of the research group activities, an in-training teacher rebuilt that historical instrument based on the original source and designed a didactic proposal. Founded on Volta's report, he noticed some subtleties related to the 18th century knowledge on materials and procedures that were neither explicit in the report nor evident in modern piles. Furthermore, he observed that Volta's instrument was not suitable for educational use, because it required an 18th century expertise for stacking and connecting metal plates. Thus, he built two additional versions of Volta's pile for conciliating the historical report to the educational proposal. During the development of the didactic proposal, the students perceived the complexity of the scientific content on electricity. They noticed that it was impossible to rebuild Volta's pile without his report, and even when it was applied it would require to make new assumptions due to the use of new materials. To accomplish that, it was imperative the participation of the teacher showing the historical context and relating it to Volta's pile. The challenges the teacher faced to rebuild Volta's pile prepared him to deal with the students' theoretical and experimental difficulties. Moreover, they helped him foreseeing both their previous knowledge and future queries. Our research findings suggest that the success of the HI approach depends on the teacher's participation

throughout the process, ranging from the reconstruction of the historical instrument to the planning of the didactic proposal. Finally, the in-training teacher can only learn and teach the methodological, epistemological and conceptual aspects of the scientific endeavor when he participates in the process.

**Keywords:** *Historical experiments, history of science, teacher training, physics teaching.*

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## **A SYSTEMATIC LITERATURE REVIEW OF METHODOLOGIES USED FOR THE DESIGN OF SERIOUS GAMES. A COMPARATIVE ANALYSIS**

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### **Abstract**

This article of systematic literature review presents the analysis of a series of methodological proposals, suggested for the design of educational video games. Nine different methodologies are analyzed. As part of the analysis, criteria are defined to describe and compare them, linked with the possibilities they have for the design of serious games. Criteria include: requirements elicitation and specification, pedagogical intention, pedagogical and ludic objectives definition, educational level and target public, roles identification, feedback type, user experiences analysis, objectives and methodologies validation. Main results indicate the following. 1) It is of vital importance, in the initial phase of a methodology design to incorporate the requirements elicitation and specification, as well as to define and assign roles of the different parties involved in the game production, all of this jointly and by consensus. 2) The definition of pedagogical objectives is closely related to the context use and it is important that it be done in the initial stage and then assess the game quality in the final stage. 3) It is important to incorporate the definition of pedagogical elements in the design. They will be helpful to assess the efficiency, learning and the user experience in relation with the interaction with the game. In addition, these pedagogical elements will facilitate the development of a quantitative record of learning to know the process and its quality by the user. It is concluded that the set of methodologies analyzed provide information in regards to the considerations when proposing a methodology for the design of a serious games. As a future work, there will be a methodological proposal, which will facilitate the integration of the aspects identified through the revision of the methodologies analyzed to guide systematically the design process of a serious game, specifically targeted to the teaching of digital competencies.

**Keywords:** *Serious game, serious games design, methodologies, comparative analysis, higher education.*

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## **INVESTIGATING FACTORS HINDERING THE IMPLEMENTATION OF E-LEARNING AT MOTHEO TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) COLLEGE: A CASE STUDY OF THE NATIONAL VOCATIONAL CERTIFICATE (NCV) PROGRAMME**

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### **Abstract**

This study investigated factors that hinder the effective implementation of e-learning at Motheo Technical and Vocational Education and Training (TVET) College, NCV Faculty Bloemfontein Campus by staff members. The study population was all academic staff in the National Vocational Certificate (NCV) Faculty. A purposive sample comprising four Information Technology personnel, two academic management for the Faculty, campus manager and the head of e-learning department was selected. Qualitative data collected through interviews were categorised into themes. The study identified amongst others, factors that hinders the effective implementation of e-learning at Faculty level. These included lack of Information and Communications Technology (ICT) policy and strategic plan, slow internet connectivity, old software, inadequate ICT/compatible resources for e-learning, lack of training of



personnel, motivation of staff, ICT skills, and administrative and technical support. The implementation of e-learning could be effective through policy consideration that favor e-learning, motivation among the Faculty, using open source software/updated software, skills development and training, management support, resources accessibility and availability.

**Keywords:** NCV, TVET, e-learning.

## **BILINGUALISM IN THE PRIMARY CLASSROOM: AN ADVANTAGE OR A HINDRANCE?**

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### **Abstract**

The main purpose of this study was to ascertain if being bilingual from an early age is an advantage or a hindrance in today's primary classroom. In the context researched here (Primary school teachers and Primary trainee teachers in England), the paper seeks to determine how early bilingualism has influenced the respondents' education, career choices and overall learning and teaching experience at school. The key findings that arose from this study concluded that early bilingualism is an advantage. There are, however, some negative influences but they are outweighed by the benefits that knowledge of home languages bring. In addition, the findings revealed that trainee teachers, teachers and parents are still not fully aware of the importance of bilingualism and its value as a cultural, educational and even political tool. The study concludes with a number of implications for teacher education.

**Keywords:** Bilingualism, language acquisition, proficiency, classroom practice, impact.

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## **THE EFFECTS OF DRINKING AND SMOKING AMONG UNDERGRADUATES ON ACADEMIC PERFORMANCE AND TRANSITION TO EMPLOYMENT**

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### **Abstract**

Alcohol consumption and smoking have various effects on college students' daily life as well as school life. Undergraduates' academic performance is also supposed to be affected by drinking and smoking. Studies, however, on the impacts of drinking and smoking on undergraduates' academic performance and the transition to the labor market is sparse, in Korea. The purpose of this study is to understand the effects of drinking and smoking among college students on school performance and the transition to work after graduation. The 2016 Graduates Occupational Mobility Survey (2016GOMS) was used for this study, which is the largest short-term panel survey of a representative sample of Korean Graduates. A total of 18,199 graduates were used as a sample data: 4,507 graduates from 2- to 3-year colleges, 139 from colleges of Education, and 13,553 from 4-year colleges or higher education institutions. Multiple regression analysis was performed, using Stata 14. The findings revealed that generally, as the frequency of smoking increases, alcohol consumption increases as well, that drinking more than one time per week decreased students' academic performance more than drinking less than one time per week, and that as the frequency of smoking increased the overall academic performance decreased. However, the finding of the study suggested that the higher the frequency of drinking and smoking, the higher the possibility of employment and wage. These results are consistent with those of previous studies that drinking and smoking have been an obstacle to academic learning but can help with employment transition in Korea. This result implies that socializing with colleagues can be an important factor to maintain one's job. Limitations of the study and further studies are discussed.

**Keywords:** *Drinking and academic performance, smoking and academic performance, transition from college to the labor market, college students.*

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## **FIRST-YEAR EXPERIENCE – THE IMPORTANCE OF PERSONAL DEVELOPMENT IN STUDENTS' PERCEPTIONS OF SUCCESS**

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### **Abstract**

Higher education literature has been emphasizing on student retention as a measure of success (Tinto, 2006) while students' perceptions of success are often neglected. This paper explored how first-year students defined their success and how it is related to different aspects of university life. Moreover, predictors were identified for the success in students' perspectives. Mixed-methods study was employed in this study. The first phase of the study, used student focus groups, i.e. qualitative, to explore students' perception of success. The second phase adopted a large-scale student survey to investigate driving forces to the defined success. Results of this study focused on the success in personal development, one of the most important definitions of first-year success. In students' perspective, personal development referred to the development of generic competencies, setting own goals and being able to achieve them. This development is a process that leads to personal growth, which allows students to demonstrate their gains in skills and competencies that permit them to continue to their graduation. The second phase of the study identified driving forces to success in personal development. Findings from the hierarchical regression analysis supported the qualitative results, revealed that students' gain in generic competencies were the most significant predictors in driving personal success. These competencies included a wide range of skills such as critical thinking, problem solving, development of leadership and interpersonal skills, etc. In addition, students' sense of belonging to the institution and their perceived support from the institutions were also highly significant. Results of this study provide implications for policy and practice relating to how first-year success can be enhanced in higher education.

**Keywords:** *First-year experience, personal development, higher education, student success.*

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## **THE TOILING SINGLE MOTHER: DOES HER EDUCATION ATTAINMENT LEVEL MATTER IN A LEARNER'S ACADEMIC PERFORMANCE? EVIDENCE FROM SOME SOUTH AFRICAN HIGH SCHOOLS**

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### **Abstract**

This paper is part of a larger project that investigated perceived effects of single mother parenting on learners' academic performance in selected high schools in Free State, South Africa. The study is informed by Weiner's attribution theory. The research question that was formulated read: How does a single mother's level of education affect the academic performance of the learners? The quantitative method and the descriptive survey design were employed in this study. A questionnaire was used to obtain data from the respondents. A sample of 160 respondents (learners between grades 9 and 12 from single mother and both parent homes) was selected using simple random sampling technique. The data obtained was analysed using the Statistical Package for the Social Sciences (SPSS). The findings indicate that the level of education of a single mother has no significant effect on the perceived academic performance of the learner child, since  $p=0.985$  which is higher than the standard level of significance (0.05). Finally, the level of education of a both parents' family also has no significant effect on the perceived academic perceived of the learner child, since  $p=0.133$  which is higher than the standard level of significance (0.05). Based on the findings of this study, it is recommended that, government should intensify and/or introduce education management skill sessions and the provision of free counselling services in supporting single mothers to instil some confidence in their support efforts. Establishing an education management agency to train and motivate young single mothers to ensure that their children realise their potential.

**Keywords:** *Single mothers, parenting, academic performance, learners, South-Africa.*

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## **AN EFFECTIVE METHOD OF TEACHING ENGLISH TENSE AND ASPECT THROUGH TIME ADVERBS**

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### **Abstract**

The English tense and aspect system is difficult for Japanese learners of English, partly due to the effect of Language Transfer and the difference in tense and aspect in the two languages: the Japanese inflectional ending 'teiru' can mark progressive, stative, and perfective meanings, and Japanese does not have a form corresponding to the English present perfect. We hypothesized that understanding the English time adverbs 'yet,' 'still,' and 'already' would help Japanese learners acquire the English tense and aspect system. We conducted an experimental lesson with Japanese university students using moving pictures to teach these adverbs. We found that these lessons resulted in a significant improvement compared to a control group.

**Keywords:** *English tense, English aspect, English time adverb, SLA.*

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## **THE INFLUENCE OF MOTHER TONGUE IN SECOND LANGUAGE LEARNING IN PRIMARY SCHOOL**

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### **Abstract**

The role of mother tongue in second language learning has been the topic of much recent debates and controversies. This study explores the use of first language (L1) in learning teaching of English as second language (L2) in primary school. The main aim of this article is to establish to what extent and in which

instances first language (L1) is used and response of second language educators when they hear first language (L1) in their classroom. Most educators feel that the use of First Language (L1) should be minimised and they feel guilty if they use it a lot. When challenged they find it difficult to say why. Against the use of First Language (L1), it is the general assumption that English should be learned through English, just as you learn your mother tongue using your mother tongue. On the other side, the idea that the learner should learn English like a native speaker does, or tries to 'think in English', is an inappropriate and unachievable thought. The data obtained showed that Second Language (L2) teachers used L1 mainly to provide feedback; teach new vocabulary; explain grammar; build rapport; manage the class; give individual help to learners and save time in lengthy task explanations.

**Keywords:** *Acquisition, second language, first language, linguistic.*

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## **INVESTIGATION ON TEACHING CRITICAL THINKING IN ENGLISH COURSE TO YOUNG ESL LEARNERS IN CHINA**

**Shu Jia**

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### **Abstract**

In the past five years in China, critical thinking has been mentioned more and more, especially in English courses to young ESL learners. The lessons which are said to lead to development of critical thinking are becoming very popular among modern parents in China.

Critical thinking involves “evaluating the accuracy, credibility and worth of information and lines of reasoning. Critical thinking is reflective, logical, evidence-based, and has a purposeful quality to it” (Ormrod, 2012). Critical thinking always goes hand in hand with Bloom’s Taxonomy. It is always recognized as a process that can be taught (Cole & McGuire, 2012). But it also takes time.

In the autumn and winter of 2019, from observing English lessons given to young ESL learners in Beijing, China, the author collected the data about whether there is training or developing critical thinking in the lessons. The results show critical thinking development in lessons to different ages of students, and the differences between language skills lessons and language knowledge lessons. This study was an attempt to explore the reasons behind this phenomenon and it tried to find some practical ways to improve teaching critical thinking in ESL courses to young learners.

**Keywords:** *Critical thinking, Bloom’s taxonomy, young learners, second language.*

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## **EXPLORING STUDENT TEACHERS’ LEARNING STRATEGIES AND THE RELATIONSHIP WITH ACADEMIC ACHIEVEMENT AND DEMOGRAPHIC VARIABLES**

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### **Abstract**

Diversity in Higher Education implies being able as teachers to meet students’ needs and preferences to motivate them and facilitate their development and learning. This diversity derives, among others, from students’ learning styles and strategies which can determine their academic success or failure. The purpose of this study was to examine student teachers’ learning strategies and to determine whether these strategies differ according to some demographic variables (i.e. gender, Bachelor’s degree, year of study) and students’ academic performance. To this end, a cross-sectional survey design was conducted, and a convenience sample of 141 student teachers (20 males and 121 females) participated in the study. Students were enrolled in the first and second year of two Bachelor’s degrees in Education: Early Education ( $n = 75$ ) and Elementary Education ( $n = 66$ ). Participants’ age ranged between 18 and 42 years old ( $M = 19.88$ ,  $SD = 2.73$ ). The 5-point Likert scale questionnaire CEVEAPEU (Gargallo, Suárez-Rodríguez, & Pérez-Pérez, 2009) was administered during class time and descriptive and inferential analyses were conducted. Overall, student teachers report high intrinsic motivation, task value and internal attributions, as well as high levels of self-efficacy and expectations. Concerning strategies related to information processing, students highlighted the elaboration, transfer and use of information. Female students showed

greater intrinsic motivation and anxiety control than males and used more strategies related to information elaboration, organization and transfer. Early education student teachers scored higher than elementary education student teachers in motivational, affective and information search and selection strategies. Second-year students showed greater motivational strategies than first-year students. They also scored higher in metacognitive strategies such as planning and in information processing and use strategies. Unexpectedly, students with lower academic performance, reported greater use of planning strategies and other strategies related to information processing, compared to those with average academic achievement. Differences in students' learning strategies highlight the need for accommodating the teaching styles to the characteristics of university students and also the development of programs oriented towards the improvement of students' strategic learning.

**Keywords:** *Learning strategies, academic achievement, gender, student teachers, higher education.*

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## **NATURE OF SCIENCE INTERDISCIPLINARY TEACHING BASED ON SYMMETRY AND THE SEARCH OF INVARIANTS**

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### **Abstract**

The project is situated in the field of teaching physics, generally speaking science education, and aims at studying the interplay between physics and mathematics. Although mathematics has always been closely related to physics, the two disciplines are different in objects, aims, methods and tools. Nevertheless, mathematics provides physics with the language it needs. The result is that students are more concerned with the mathematical machinery rather than with a proper understanding of the physical situation. Remarkable studies (Boniolo, G., Budinich, P. and Trobok, M. (2005); Fuson, K. C., Kalchman, M., & Bransford, J. D. (2005)) have been devoted to the problem of teaching together mathematical and science contents. In addition, the language of mathematics makes sense of a wide range of natural phenomena. Despite the fact that mathematical proficiency is highly relevant in and to the research fields, mathematics education is failing to support interdisciplinary and educational connections to physics. The main focus of our study is on how to grasp the challenges of an interdisciplinary approach based on symmetry and invariance. Symmetry and searching of invariants can be employed in interdisciplinary perspective because of its crosscutting character and its historico-epistemological value. In order to test the positive effect of introducing the modern concept of symmetry viewed as sameness within change, we designed and implemented a teaching learning sequence (TLS) according to the didactical framework created by the Claus Michelsen (Michelsen C. 2015). On our side we also introduced interdisciplinary modules in history of physics and education, typically of Nature of Science (NoS) modelling. The materials have been implemented to 96 pupils of primary school in Italy. The data analysis shows that the pupils were in the regime of competence for grasping the changed view of symmetry linked to the search for invariance. It also provides ways for further research.

**Keywords:** *Teaching science, NoS, symmetry, invariants in science education.*

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## **AN ASSESSMENT OF CURRICULUM-SPECIFIC LEARNING DIFFICULTIES IN NATURAL SCIENCES WITHIN THE SOUTH AFRICAN CONTEXT**

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<sup>2</sup>*Department of Science and Technology Education, University of Johannesburg (South Africa)*

### **Abstract**

Some of the identified difficulties across science subjects are universal and have seen education researchers advocate for several reforms in science curricula globally. Internationally and in South Africa, several science concepts within chemistry and physics have been associated with abstraction, representational complexities and the use of scientific terminology. This study reports the findings of curriculum specific difficulties identified by 3rd year science education students at a South African university. The main aim

of the study was to assess perceived difficulties of concepts within the natural sciences school curriculum. 120 third year students in a teacher training program from two different cohorts participated in the survey which was analysed descriptively. At the end of the survey period semi-structured interviews were conducted with five percent (n=6) of the participants, to validate survey findings and obtained the rationale for perceived difficulties. Findings from the study indicated that, for subjects within the natural sciences, chemistry and physics topics were perceived to be more difficult than biology and earth science topics. Descriptive analysis of the data indicated that the topics, “chemical reactions, balancing equations, forces, visible light (optics), the law of energy conservation, animals with skeleton and biodiversity”, were considered the most difficult topics within the natural sciences curriculum. Finding from follow-up semi-structured interviews indicated that, factors like abstraction, the language of science and representational complexities were the key reasons for perceived difficulties experienced by students in learning these topics. We concluded that the identification of context-specific difficulties associated with science learning is crucial in developing solutions that address low performances in science and increase interest in science. The implications for these findings and some recommendations for practice and research are also proposed herein.

**Keywords:** *Difficulties, representation, natural sciences, abstraction, scientific language.*

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## **VISUAL LITERACY FOR THE 21<sup>ST</sup> CENTURY: THE REQUIRED ABILITY TO UNDERSTAND THE POWER OF MODERN IMAGES**

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### **Abstract**

The presentation elaborates on the theoretical concept of visual literacy, which is applied to the contemporary digital age. It gives special attention to developing and cultivating the visual literacy of children who, through television and social networks, in particular, YouTube (video) and Instagram (pictures), „consume” today mainly picture messages. The ability of children to decode this information correctly depends on how they can understand the true meaning of the information. We have studied two generations of young people – Millennials (Born 1981–1996) and Post-Millennials (Born 1997 – Present). They are experiencing technological advances in the digital world like no generations before but at the same time, they show differences in how much time they spend in digital space and their preference for using social networks. For example, Post-Millennials – unlike Millennials – prefer internet access through their mobile phones rather than a PC/laptop, further Instagram over Facebook, suggesting that they are more likely to view images and videos than textual information. We explain this new preference to share photographs and videos from mobile devices, which places it among new visual galleries the content of which is perceived mainly through pictorial messages. The ability of children to decode this information correctly depends on how they can understand the true meaning of the information. Although the concept of visual literacy is broader, in my presentation I will address the strategies and techniques of teaching the reception and perception of visual information of children of younger school age.

**Keywords:** *Visual literacy, Post-Millennials, social networks, primary education.*

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## **A CLOUD IN A CUPBOARD: HOW TO TEACH MODERN TECHNOLOGIES IN A RESOURCE-CONSTRAINED ENVIRONMENT**

**David Cutting<sup>1</sup>, Andrew McDowell<sup>1</sup>, Neil Anderson<sup>1</sup>, Paul Sage<sup>1</sup>, Matthew Collins<sup>1</sup>, & Angela Allen<sup>1</sup>Dr.**

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### **Abstract**

It is highly desirable to provide our computer science and software engineering students with hands-on exposure to currently industry techniques and technologies. One area of extreme growth and skills shortage is cloud computing which led to a curriculum redesign and a new module to teach these skills to final year students. Cloud computing products are available from a number of vendors, but their academic

programmes often leave much to be desired, with limited credits and features. In the resource-constrained university sector simply buying vendor credits for students would be expensive but also wasteful as there is no capital investment. In an attempt to provide hands-on experience with the latest technologies an in-house “cloud in a cupboard” was designed and created at Queen’s University Belfast. This took advantage of the wide range of free open-source software systems which underpin modern cloud vendors and, for very little cost thanks to re-purposed equipment, was able to support a large final-year module and several undergraduate dissertation projects successfully. Student feedback was very positive, and plans continue to grow this system further to support the current functionality and add more in the coming years.

**Keywords:** *Cloud, innovation, resources, teaching.*

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## **EARLY YEAR TEACHERS’ UNDERSTANDING AND IMPLEMENTATION OF SCIENCE PROCESS SKILLS**

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### **Abstract**

The quality of South African learners’ performance in science and mathematics continues to remain poor as reflected in National and International assessments. However, it is believed that learners’ poor performance in these subjects could be attributed to their weak and/or disproportional exposure to science instructions during early childhood development. The research objective of this study was to explore teachers’ understanding and implementation of science process skills (SPS) in the early years. Accordingly, data were collected using qualitative research design of one on one interviews and lesson observations with eight Grade R teachers that were purposively and conveniently selected. The result showed that though participants believe it is important to start teaching science to children in the early years, most of them don’t have adequate understanding of the science concepts in the Grade R syllabus. Though teachers engaged learners in activities that allowed them to observe, describe, measure, classify, predict and communicate ideas during the observed lessons, most of the teachers were unable to describe SPS. However, six of the teachers attributed their ability to demonstrate the process activities to years of experience and indicated that the teaching qualification they have did not accurately prepare them to teach science in the early years. In addition, teachers expressed low level of confidence and competency in planning and demonstrating science activities in early years.

**Keywords:** *Early childhood education, early year teachers, early years science, science process skills.*

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## **THE RELEVANCE OF LEADERSHIP STYLES IN THE QUALITY OF EARLY CHILDHOOD EDUCATORS: A MULTIPLE CASES STUDY**

**Emilio Rodríguez-Ponce<sup>1</sup>, & Liliana Pedraja-Rejas<sup>2</sup>**

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### **Abstract**

The purpose of this research is to analyze whether the leadership style of academic department's directors is relevant or not to explain the quality of the childhood educator's initial teaching. To this end, a study of three programs of early childhood educator's teaching conducted by different university institutions from Chile is carried out using Yin's recommendations (2014) to build the study and achieve internal validity, external validity, and reliability.

The research findings show that the transformational leadership style is associated with a better quality of the formative processes. The relationships found reveal that the inspiring motivation, intellectual stimulation, and individual consideration of the director of the department on which the teachers depend, influences in their degree of commitment, preparation, and in the effort of the teachers in their classes and in their relationship with the students.

These results are consistent with state of the art, except for the fact that, in this research, the charisma of the director of the department does not seem to be a differentiating element that influences the quality of the formative processes. In turn, it should be noted that the originality of this research lies in the fact that

the impact of leadership styles is applied specifically to the case of the childhood educator's initial teaching. Certainly, in this field of application, the relationships found can contribute to the understanding of aspects, not sufficiently considered, that can influence the quality of teaching. Moreover, these results are found in an emerging country, in which this kind of study is rather scarce.

**Keywords:** *Childhood educators, initial teaching, leadership styles, quality, multiple cases study.*

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## **DRAWING VS. DESIGN: A STUDY ON INDUSTRIAL DESIGN BSC IN ITALY**

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### **Abstract**

In Italy, the education on Industrial Design is provided by two categories of institutions: Universities and Academies. The first ones provide a degree course with a strong influence of technical-engineering disciplines (BSc). The Academies have instead a more artistic nature, related to a shapelier aspect of design (BA). These two training paths, while having the same macro objectives, inevitably generate different outgoing profiles.

This study focuses specifically on the BSc students' lack of ability to use drawing to represent the project. This weakness, which is already noticeable within their studies, becomes increasingly evident after graduation, during the portfolio development. Portfolio is the main tool that graduates must submit during selection processes, both professional (job search) and academic (application for admission to higher education courses) when the two profiles (BSc and BA graduated) are in a direct competition.

Indeed, the portfolio, by its very nature, can be much more effective when the projects within it are described through iconographic representation systems such as conceptual sketching and rendering, as well as moodboards and graphs.

The correlation between representation and design disciplines is essential, both in the professional and academic field. Drawing not only plays a central role in the process of "shape - shape perception - transmission of shape perception", but also strongly contributes to the creative process of design "idea - idea formulation - idea realization". The continuum that connects these two areas of knowledge is the one that indissolubly connects the medium (drawing) with the aim (designing). It is therefore fundamental to explore the didactics of drawing not only as a separate discipline, but also in relation to the didactics of design.

Therefore, this study explores the relationship between the disciplines of representation and those of design within the BSc and BA in Industrial Design in Italian Schools with the aim of understanding what the current state of art and what future trends are. This critical analysis, based on data published by the Italian Ministry of University & Research and by each School, will provide the foundations to suggest a proposal of a representation didactics, renovated exploiting also the potentiality available by some innovative teaching techniques.

**Keywords:** *Drawing, industrial design, drawing teaching, innovative education, representation.*

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## **DEVELOPMENT OF AN ANIMATED VIDEO FOR PRE- AND POSTOPERATIVE LEARNING FOR OSTEOARTHRITIS PATIENTS**

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### **Abstract**

Osteoarthritis (OA) is a condition in the joint that is developing for a long time and hit first and mainly articular cartilage, and it is a long-term chronic disease characterized by deterioration. In the final stage it is affected all the tissues of the joints such as bones, ligaments, arthritis, joint fluid and muscles, which results in bones rubbing together and creating stiffness, pain, and impaired movement. This disease can affect the joints in the knees, hands, feet, spine and shoulder. OA is the single most common cause of disability in older adults worldwide. Patients need to receive detailed information about the disability, learn



about their disease, its treatment and how to follow recommendations both before and after the surgery. As hospital stays are shortening the need of information is increasing, as the patients need to prepare themselves at home before the operation, as well as take care of their rehabilitation when they are coming home, discharged from hospital. In this paper we present a case study about the development of a web-based animated video that was developed to support the learning for patients with OA, using a design science research approach. DSR is an iterative process that include three iterative research cycles. The relevance cycle provided the requirements for the application from the very beginning. The relevance cycle, the rigor cycle and the design cycle were conducted iteratively, and have generated design alternatives that have been evaluated in discussions with OA surgery physicians, as representatives from the application domain.

**Keywords:** *Osteoarthritis, animated video, patient learning, surgery, design science research.*

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## ORGANIZATIONAL ISSUES

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### EHEA INTERNATIONAL STUDENTS MOBILITY AND TRANSPARENCY

**Tijmen Weber<sup>1</sup>, Florentin Popescu<sup>1</sup>, & Roman Iskandaryan<sup>2</sup>**

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#### **Abstract**

This paper investigates the importance of transparency of internationalization and various obstacle and barriers that influence international student mobility within the European Higher Education Area (EHEA). Having in mind that due to privacy regulations and availability of data regarding international student mobility, this article is using a framework based on literature review as well as using data made available by Eurostat. The authors analyze patterns in international student mobility, both between countries and over time, using various literature quantitative analyses based on survey data to underline that internationalization and various factors are relevant and can positively influence the international student mobility. Even though transparency is thought of as one of the benefits of European Higher Education Area (EHEA), it has evolved into an essential component of the European Union's strategy for bringing higher education frameworks up to date; students, employers and policy maker must have a greater degree of transparency in order for them to better fill out their roles and achieve their objectives. Higher education management also greatly gains from transparency, since it supplies important data in the process of coming up with new strategies and making decisions. This article presents an important contribution to this growing field of literature by doing a comparative analysis about the factors which positively improve the international student's mobility within the EHEA. The three folded impact of this paper is obvious for the stakeholders mentioned as students, institutions and policy makers are responsible for the smooth cooperation and coordination for a better international mobility.

**Keywords:** *European Higher Education Area (EHEA), student's mobility, international higher education, internationalization.*

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### RESEARCH ON THE CAUSES OF THE "UNDERGRADUATE MIGRANT WORKER" PHENOMENON BASED ON THE THEORY OF LABOR MARKET SEGMENTATION

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#### **Abstract**

"Undergraduate migrant worker" is a kind of special phenomenon during the social changes of China. At present, some college graduates with rural household registration cannot find an ideal job under the background of employment difficulties of Chinese college students, then they choose to converge with the migrant workers of their elder generation in the choice of unemployment and employment in order to achieve short-term transition. Therefore, they are called "undergraduate migrant worker" by the researchers and become another special social vulnerable group which following after the "ant clan". What's more, high human capital is possessed by the group of "undergraduate migrant worker", and the phenomenon of "university migrant workers" would be a great waste of labor resources. Therefore, concerns about this group is the key to realizing the rational allocation of human resources, which is also related to the healthy development of social justice and the socialist market economy with Chinese characteristics in the meantime. Based on the survey of "undergraduate migrant worker" in Chengdu, Beijing and Shenzhen, the article studies the factors that affect their employment based on the perspective of the theory of labor market segmentation, focusing on the influence on the selection of this special group under the background of labor market segmentation in China. The materials in this study are collected through in-depth interviews as well as participation and observation, interview materials are processed by means of using Case analysis. The investigation found that:

(1) The dual segmentation of the labor market makes the main labor market like a huge "black hole", which continuously attracts the in burst of college students, therefore it leads to the increase of barriers to entry continuously and affects the choice of employment market for the rural registered college students.

(2) In China, the inter-regional economic development is unbalanced, and regional differences are obvious. The regional division of the labor market has resulted in an imbalance in the allocation of human resources with partial surplus and shortage of talents.

(3) The market segmentation, which is under the control of social stratification order, has weakened the market competition based on the amount of human capital, moreover, the "crowding-out effect" is existed among the rural registered college students due to the exclusive factors such as internal cultural psychology and professional intergenerational inheritance in the main labor market.

Therefore, it is necessary to give full play to the competitive effects of market factors based on human resources, so as to break the ice of institutional isolation and cultural exclusion, accelerate the coordinated development of the region as well as provide equal employment opportunities for the rural registered college students.

**Keywords:** *Social change, human resource development, the theory of labor market segmentation, undergraduate migrant workers, cause of formation.*

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## **THE EVOLUTION OF CHINA'S PRIVATE EDUCATION POLICY: HISTORICAL REVIEW AND PATH ANALYSIS**

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*Faculty of Education, Beijing Normal University (China)*

### **Abstract**

Based on the policy texts of private education since the founding of the People's Republic of China and from the perspective of historical institutionalism, this article draws the following conclusions: under the shaping of state policies in different periods, China's private education has experienced three main stages: the elimination of private education(1949~1978), the recovery and preliminary development of private education (1978~1992), and the rapid development of private education (1992~2016); the evolution of private education policy has experienced punctuated equilibrium and gradual transformation as two main modes, which is determined by critical junctures and path dependence; government power and market mechanism play the role of dynamic mechanism of institutional change. The article suggests that the state should further clarify the respective responsibilities of the government and the market mechanism to realize the positive interaction between them.

**Keywords:** *Private education, education policies, historical institutionalism, government, market mechanism.*

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## **TEACHERS' OPINIONS ON PROFESSIONAL SUPPORT MEASURES FOR NOVICE TEACHERS IN LATVIA**

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<sup>2</sup>*Latvian Trade Union of Education and Science Employees (Latvia)*

### **Abstract**

Retention of teachers in education system is a serious problem in Latvia. This is a challenging issue, especially for novice teachers. Professional support measures such as mentoring, in-service training or emotional support are crucial for novice teachers to remain and continue working in school. The aim of this research is to explore opinions of Latvian teachers about professional support measures that are both available and needed to be introduced for novice teachers. This paper presents a part of the research results which were obtained during an on-line survey (N=1258) conducted by the Latvian Trade Union of Education and Science Employees in 2018. The questionnaire comprised the statements on following measures of professional support: methodological, financial, material and technological. The statements were assessed by using 5-point symmetric Likert scale (strongly agree, slightly agree, neither agree nor disagree, slightly disagree, strongly disagree). The results witness about regional disparities mainly between the capital city Riga and other regions: there are statistically significant ( $p < 0.05$ ) differences in opinions of the teachers representing different regions of the country. The respondents agree that there is a lack of well-structured and uniform support system for novice teachers at national level. In many schools a

mentoring is not provided at all, or mentoring is not a paid activity for those who support novice teachers. In general, the teachers are positive about availability of an emotional support and in-service training in the school they work. The most critical opinions are about material and financial support that novice teachers can access. The authors conclude that different professional support measures are available for novice teachers in Latvia, however, there is no support system in place to address which functions and support measures should be implemented at national, municipal or school level. Policy makers should focus on national teachers' support guidelines which would allow schools to ensure the most appropriate environment for novice teachers so that they would like to continue their careers in teaching profession.

**Keywords:** *Mentoring, novice teachers, professional support.*

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## **EMPLOYER BRANDING AS RECRUITMENT AND RETENTION TOOL FOR THE UNIVERSITIES**

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<sup>1</sup>*Department of Management,*

<sup>2</sup>*International Relations Office*

### **Abstract**

Increasing competition for the best employees calls for the search of the comprehensive strategies to attract and retain potential and current employees. Despite different business and academic work contexts, number of employer branding activities applied by business companies might be transferred to universities. Literature review shows positive associations between employer branding activities to attracting and retaining employees at various types of organisations. However, the implementation of various employer branding activities remains challenging for organisations and is insufficiently explored in the context of at higher education human resource management. The authors of this paper reflect upon the main aspects of the employer branding strategy, opportunities available and suggest insights into its practical implementation at universities.

**Keywords:** *Employer branding, recruitment, retention, employer value proposition.*

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## **ANALYSIS OF CHINESE POLICY OF TUITION-FREE NORMAL COLLEGE STUDENTS: PURPOSE, CONTENT AND EFFECT**

**Xue Yuankang**

*Faculty of Education, Beijing Normal University (China)*

### **Abstract**

The Chinese policy of tuition-free normal college students implemented in 2007 was replaced by the policy of “state-financed” (also tuition-free) normal college students in 2018. Thus it is necessary to review the process of the policy of tuition-free normal college students, the purpose of this education policy is to alleviate the social problems of the imbalance in the distribution of teachers, the shortage and low quality of rural teachers. The main policy content includes recruit students mainly from poor central and western provinces, and they must teach in their home province for at least 10 years after graduation. The process of policy implementation includes policy propaganda, policy decomposition, organization and material preparation, policy experiment and comprehensive implementation, coordination and monitoring. This article mainly uses document research and interview methods, plus analysis of relevant statistical data, and found that, the policy has basically achieved the expected purpose, but there are still many problems in the implementation process, such as the tuition-free normal college students' studying motivation is weak, the low satisfaction of the tuition-free normal college students with the policy content, and graduates have a relatively higher percentage of defaults of contract.

**Keywords:** *Chinese education policy, policy of tuition-free normal college students, analysis of education policy, tuition-free normal college students, imbalance in the distribution of teachers.*

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**POSTERS**



## TEACHERS AND STUDENTS

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### TEACHING PRACTICES THAT INCLUDE ALL STUDENTS: RECOMMENDATIONS FROM FACULTY MEMBERS WHO DEVELOP AN INCLUSIVE PEDAGOGY

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#### Abstract

This paper explores the recommendations that 119 faculty members who develop inclusive pedagogy give to other colleagues to plan and implement actions that include students with disabilities. The results of this work are based on a broader research project funded by the Ministry of Economy and Competitiveness "Inclusive Pedagogy at the University: Faculty Members Narratives (ref. EDU2016-76587-R)". In this paper we focus on the first phase of research. Specifically, the research question is: What recommendations do faculty members who develop inclusive pedagogy make to plan and implement actions so that students with disabilities can learn and participate?

The data from this first phase were collected through a semi-structured individual interview. The information was transcribed and analyzed through a system of categories and inductive codes that gave meaning to the information.

The results revealed five recommendations: To know and listen to the student and his/her needs derived from the disability; to have a teaching profile characterized by being facilitator, empathic and affective; to propose a universal, accessible, flexible and open curriculum; to have students with disabilities in the classrooms as an opportunity and teaching responsibility; and to be informed and trained.

The faculty members that develop an inclusive pedagogy recommended to other colleagues that, above all, they stop to know and listen to the student with disability in order to understand what their real needs are. Likewise, they consider that it is necessary to facilitate educational processes and see disability as an opportunity to rethink teaching actions.

**Keywords:** Higher education, inclusive education, disability, faculty members, recommendations.

#### Acknowledgements

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### FACULTY MEMBERS' ACTIONS FOR AN INCLUSIVE PEDAGOGY IN HEALTH SCIENCES CLASSROOMS

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#### Abstract

This paper shows the educational strategies developed by the faculty members that their students with disabilities considered as excellent for carrying out an inclusive pedagogy in Higher Education in the area of health sciences. This work forms part of the results of a broader research project funded by the Ministry of Economy and Competitiveness "Inclusive Pedagogy in the University": Narratives of Professors (ref. EDU2016-76587-R)". The data presented corresponds to the first phase of the research. This phase was conducted using a qualitative methodology. As the data-gathering instrument, we used the individual semi-structured interview. Nineteen faculty members from ten Spanish faculties of health sciences participated. Two interviews were conducted with each of them. The objective of this study is to know the

inclusive educational practices that these faculty members develop to achieve the participation and success of all their students, including those who have a disability.

The lack of adjustments in teaching methodologies, educational resources and materials, and evaluation systems is a barrier that makes it very difficult for students with disabilities to learn. There is, therefore, a need to put into practice actions that make learning and real participation possible for all, especially for those groups that are frequently excluded. The teaching staff is a key element in achieving an inclusive pedagogical approach.

The results of this study show participating inclusive teaching strategies that promote and enable the participation of all students, such as cooperative learning or project-based learning. In addition, they offer different assessment and participation options, and make adjustments to educational materials when a student needs them.

**Keywords:** *Inclusive pedagogy, health sciences, disabilities, resources, adjustments.*

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## **SUBJECT TEACHERS AND ENHANCEMENT OF STUDENTS' ENGLISH PROFICIENCY IN SELECTED SENIOR SIX CLASSROOMS IN RWANDA**

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#### **Abstract**

This study was conducted in two public and two private secondary Sixth Form schools in Huye District of the Southern Province in Rwanda. The researchers' concern was that most secondary school leavers enter university with low English language proficiency whereas this language is the sole medium of instruction in Rwanda. This lack of competence in English constitutes a hindrance to the students' academic performance. The researchers chose to focus on subject teachers because they are the ones who spend much more time with students as subject-related courses are allotted more hours than English, and they are supposed to support students across the curriculum (Mora-Flores, 2019). Therefore, this study aimed to explore whether subject teachers offered any assistance in helping enhance their students' English proficiency. The study drew on Language across the Curriculum (LAC) approach. LAC stipulates that all teachers are language teachers, that subject teachers and language teachers should work jointly, and that language should be taught across the curriculum (Lughmani, Chan, Gardner, & Wong, 2017). For validity and reliability purposes, the current study made use of both qualitative and quantitative data collection and analysis methods. Emerging themes from observations and interviews were inductively analysed and numerical data from questionnaires interpreted. The findings of the study revealed that only some of the subject teachers used strategies that could help promote their students' English proficiency. The findings also indicated that content and English language teachers did not collaborate to inform each other on more appropriate ways to scaffold their students' learning, which hindered the latter's acquisition of English skills. In accordance with these findings, recommendations were made.

**Keywords:** *English proficiency, subject teachers, teaching strategies, Sixth Form students, secondary schools.*

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## **THE EFFECTS OF LOCAL-SPECIALIZED CAREER EXPERIENCE PROGRAMS ON KOREAN STUDENTS' CAREER MATURITY AND COMMUNITY AWARENESS**

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### **Abstract**

The purpose of this study was to examine the effects of the Local-Specialized Career Experience programs (LSCE) in South Korea on adolescents' career maturity and community awareness. In 2015, the Korea Congress passed the Career Education Act (CEA), and the CEA was launched on December 23, 2015, which governs the Republic of Korea (South Korea) K-16 career education policy. To achieve the CEA goals, the Korean Ministry of Education established an infra-structure for K-16 students to explore and experience various careers as part of experiential learning. One is Local-industry based career exploration and experience project. The Korean Ministry of Education and 17 local educational departments support the LSCEP to provide secondary school students with the career experience opportunities with collaboration with key local industries and career experience centers as a consortium. Before and after they participate in the programs, students' career maturity and community awareness were assessed to examine the effects of the LSCEP on the study variables. A total of 4,638 secondary school students who participated in the LSCEP in 2019 provided usable data for this study. The independent sample t-test was employed to analyze the data. The findings revealed that the values of the variables after experiencing the programs scored higher than those before. The results of the study suggested that the LSCE programs can promote adolescents' career maturity and community awareness.

**Keywords:** *Career exploration, community-school-consortium based career education, career maturity, community awareness.*

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## PROJECTS AND TRENDS

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### STUDENTS WITH DISABILITIES IN SOCIAL AND LAW CLASSROOMS: KEY ASPECTS FOR THE BEST FACULTY MEMBERS

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#### Abstract

This paper describes key aspects for developing an inclusive pedagogy in the university through the contributions of a group of 25 teachers of Social and Legal Sciences recommended by their students with disabilities. In particular, this study offers a vision of how diversity is taken into account by those professionals who develop teaching methods suitable for all students. A qualitative methodology by means of two semi-structured individual interviews with each participant was used. Data were analysed applying a categories and codes system. The results present three fundamental keys for university teachers to respond to the needs of all students. First, the participants pointed to specific training in disability and inclusive education as the first step in order to be able to adequately attend to the diversity of the student body; this still has, however, a voluntary character in our country. Second, they valued the relationship with their students as a key factor to their integration and to the reduction of drop-out rates. Third, the participants recommended reasonable adjustments in methods, materials and assessment systems for students with disabilities in order to ensure equal opportunities and the participation of everybody. Trained teaching staff, with a positive attitude and proximity to students and developing flexible teaching methods, defines the profile of the ideal teacher as proposed in this article as an example for other colleagues and higher education institutions. Finally, it is concluded that inclusive education practices are not only positive for students with disabilities, but ultimately provide benefits to all students.

**Keywords:** *Inclusive pedagogy, Social and law sciences, higher education, disability, qualitative methodology.*

#### Acknowledgements

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### ACTIVE METHODOLOGIES AND AWARE EDUCATION FOR FUTURE SECONDARY SCHOOLS TEACHERS

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#### Abstract

This experience focus on the use of teamwork techniques such as cooperative learning in conjunction with flipped learning and some computers tools like clickers and digital portfolio as a methodology of learning, reflection, tutoring and evaluation. To promote Aware Education, mindfulness strategies has been used as a way to improve attention and to practice some techniques that can be very useful not only for them but also for their future students when they use them as secondary school teachers.

The experience has been carried out in a subject of the Master Degree in *Secondary School Teachers* at the University of Almeria (Spain) called *Active Methodologies of Teamwork*. In this subject, the learning material is based on the different methodologies they are going to learn and practice. Therefore, they are going to learn what cooperative learning is practicing it in small groups. They are going to learn what flipped learning is practicing it and preparing a video about their subject (maths, biology, etc) for their future secondary schools students. They are going to learn what clickers and portfolio are using them and even preparing some quizzes for their future students, and finally, they are going to learn how aware education (mindfulness) can be incorporated to the subject, practicing different meditations during the class as well as formal and informal practices as homework.

The results show that students are more engaged with the learning process and they have developed a greater responsibility not only with their own learning but also with their classmates learning. Also, an increase in the number of students that have passed the subject has been shown. The Mindful Attention Awareness Scale (MAAS) has been carried out at the beginning and at the end of the course to measure the evolution of the students in different items related to mindfulness. These results show that program efficiency has been proven in the 15 items evaluated, with an average increase of 21%.

**Keywords:** *Cooperative learning, flipped classroom, gamification, computer tools, aware education.*

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## **A SYSTEMATIC SCOPING REVIEW ON SKILLS VARIETY FOR VET IN THE INDUSTRY 4.0**

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### **Abstract**

In the wake of the 4th industrial revolution, the prospects about new jobs and workers' skills, and competence appear to be uncertain. There is a large agreement about the view of the current revolution as characterized by an embedded exponential evolution which will affect the labor transformation as well as future workers' curriculum. Therefore, researchers and practitioners in the field of vocational and educational training (VET) are questioning about which skills and abilities will be the core of the third-millennium jobs 'profiles. Accordingly, the present poster intends to present the results of a systematic scoping review in order to offer a knowledge-based description of VET in the 4.0 industry. By the use of this method among three main databases, the contribution purposes a synthesis of  $n=13$  items by which three classes of competences emerged, namely, scientific-, transversal- competences, and technical skills. All of these classes resulted to be relevant for the futuristic workers to compete in the diverse, and plural world of the 4th revolution of work. Moreover, the present paper offers possible applied implications in VET sectors of training and development as well as a forward perspective for human resources management.

**Keywords:** *Industry 4.0, competences profile; systematic review; VET.*

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## TEACHING AND LEARNING

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### MATHEMATICS IN AGRICULTURAL STUDIES

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#### **Abstract**

Knowledge of mathematics is required for students of agricultural specialities both in their studies of other subjects and in the future organisation of agricultural activities after graduation. At Vytautas Magnus University Agriculture Academy, mathematics is compulsory for students of all specialities. However, the number of semesters, credits and the curriculum vary. The paper discusses the impact of state education reforms on mathematics studies at the university. In the country, demographic factors, as well as mandatory competitive enrolment scores, reduce the number of students in agricultural studies. In addition to university merging processes, students of different specialities are joined in common lectures and mathematics modules are merged. Difficulties arise due to the choice of applied exercises and the lack of time to present mathematical topics required for certain specialities. The mathematical background of the new students has a great influence on the study of mathematics. The paper presents the results of a study of students' mathematical preparedness levels over the last 10 years (2010- 2019). Ongoing education reforms in schools have an effect on these outcomes. In order to ensure successful studies, mathematical methodological material is prepared and presented in the Moodle environment. Student ratings and opinions on the usefulness and intensity of e-learning material are obtained. In the case of a short one-semester mathematics course, mini-tests teaching methodology is applied. It allows for continuous uptake of new material and knowledge testing throughout the semester. A method of statistical quantitative analysis of the research data were used in the study.

**Keywords:** *Mathematics, mini-tests, mathematical preparedness.*

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### ICT COMPETENCIES OF FIRST-YEAR UNIVERSITY STUDENTS

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#### **Abstract**

University students need to be able to work with the information resources that they find for the purposes of their learning activity critically and have the competencies in resolving scientific issues in projects and studies independently. Also, they need to be able to use information effectively regarding its various forms. In recent years, the level of digital literacy among students has not been questioned. The students of higher education often consider themselves as competent users of information resources since they grew up in a world saturated with information and communication technologies (ICT). However, without a thorough study, it is difficult to identify the ways and means of improving the level of digital literacy of university students. The aim of the article is to assess digital literacy skills among the students at the Agriculture Academy of Vytautas Magnus University in Lithuania. The article presents the empirical results of the survey performed in autumn 2019 among first-year students. Data were collected through the completion of self-evaluation questionnaires and the assessment of the exam results. A possible limitation was the validity of student reflections regarding their abilities related to ICT competencies. The results show that although many first-year students had prior experience in technologies, a need to educate students on the basic ICT literacy skills needed at the university level remains. The study results are useful as curricular guidelines.

**Keywords:** *ICT competence, digital literacy, first-year students, university.*

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## **EUGENICS TODAY: AN INTERDISCIPLINARY TEACHING FOR HIGHER EDUCATION**

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### **Abstract**

Eugenics involves the application of scientific practice to promote selective breeding in the human population. Notably, although considered unethical and outdated many science papers on the topic are still heavily cited. In the present study, a lesson plan has been produced for an English for Academic Purposes/English for Scientific Purposes (EAP/EScP) course in a Biology Department in Higher Education, to be held on the occasion of the International Holocaust Remembrance Day (27th of January). In a two-fold approach, students are first introduced to the history and background of the eugenics movement and then presented with current relevant bioethics issues. In the first part, students watch video footage, discuss on archive material and are subsequently asked to produce posters and audiovisual material on seminal eugenics cases. In the second part, students are randomly assigned to one of two groups and a debate is held on the topic of embryo designing and the possible risk of a modern eugenics rise. The activities chosen for this lesson promote interdisciplinary education, student-centered practices and active learning. Importantly, the topic lends itself to the coupling of science communication and humanities, also referred to as biomedical humanities. Post-lesson responses to a questionnaire reveal that although initially largely unaware of the issues discussed here, the students form clear views on the importance of historical memory and bioethics education.

**Keywords:** *Eugenics, higher education, science communication, biomedical humanities, interdisciplinary education.*

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## **BUILDING INTEGRATED PATHWAYS TO INDEPENDENCE FOR DIVERSE BIOMEDICAL RESEARCHERS: PROJECT PATHWAYS**

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### **Abstract**

Diversity of backgrounds and life experiences on scientific teams is known to lead to more innovative ideas and better scientific products. However, in the United States, the percentages of individuals from underrepresented racial and ethnic groups who obtain doctoral degrees in the Sciences continue to be significantly lower than their percentages in the population. This has resulted in the need for nation-wide initiatives to remedy this inequality, and consequently produce more productive teams of scientific minds. Xavier University of Louisiana is a historically Black and Catholic university that is widely recognized in the US for the success of its undergraduate Science, Technology, Engineering, and Mathematics (STEM) programs. *Project Pathways* at Xavier is one of ten federally-funded Building Infrastructure Leading to Diversity (BUILD) programs with the overarching goal of diversifying the Biomedical research workforce. *Project Pathways* is designed as a holistic, integrated, and coordinated program across Biomedical academic departments, student academic and career support offices, and the University's faculty development center.

The overall hypothesis of *Project Pathways* is that if individuals from groups underrepresented in scientific research careers are provided with a) early awareness and deepening exposure to Biomedical careers, b) supportive relationships as they move through the pathway, c) suitable infrastructure, and d) meaningful engagement in Biomedical research experiences and adequate research resources, then a higher number will succeed in entering and successfully completing graduate programs, leading to increased diversity in the Biomedical research workforce. Here, the significant strides of this program during its first five-year funding cycle are presented.

**Keywords:** *Diversity, student research training, biomedical workforce.*

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## **BRAIN MUSIC: INTRODUCING RESEARCH THINKING TO THE SECONDARY EDUCATION CURRICULUM**

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### **Abstract**

Streaming music services are becoming increasingly popular especially among the younger population. Interestingly, this topic is somewhat connected to neurobiology as recent PET and fMRI studies have shown. The present lesson plan aims to educate about the impact of music on the human brain and how it can possibly affect mental health. More specifically, the neural basis for the impact of music on emotions is described along with a peak on brain data and the function of the tools used for imaging the living brain. Students are directed to platforms such as Spotify and YouTube to engage in activities that combine leisure and science in a digital medium. They are asked to record their emotion in relation to the music and to later form a hypothesis that explains their data. This Biology lesson is intended for teenagers and young adults and is designed to promote technology literacy, student participation and initiative. Importantly, the generation of new research ideas and research thinking are actively encouraged.

**Keywords:** *Biology, secondary education, active learning, technology literacy, research culture.*

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