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**Conference Proceedings**

Symposium Facilitators: **David Martin, Kern Alexander, and David Alexander**

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**Session 1: 6 December 2017**

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**Antecedents of Student Teachers' Prospective Commitment and Turnover Intentions in Finland and Norway**

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*Eyvind Elstad, Professor, University of Oslo, Norway*

This paper explores how student field experiences and campus experiences influence Finnish and Norwegian student teachers' prospective commitment to the teaching profession and their intent to leave the teaching profession. Research indicates that prospective commitment to a profession is an important factor in sustaining good professional practice. This study explores the antecedents of both prospective commitment to the teaching profession and intent to leave the school among student teachers in Finland and Norway. The analysis shows strong associations between the reflective practice and student teachers' prospective commitment among Finnish student teachers and strong associations between clear supervision and prospective commitment among Norwegian student teachers. The comparison shows also differences between the reflective practice in Finland and clear supervision in teacher education in Norway. These differences are discussed, and implications for practice and further research are deduced.

**Culturally Relevant Pedagogy and Culturally Sustaining Pedagogy: A Review of the Research Focused on Student Academic Achievement**

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*Wayne Slater, Professor, University of Maryland, US*

In this review, I present a synthesis of classroom-based research on the implementation of culturally relevant pedagogy (CRP) and its more recent iteration, culturally sustaining pedagogy (CSP) to examine effects on students' academic achievement. Building on the research and practice of CRP over the past 27 years, CSP evolved by addressing the changing lives and practices of youth of color to perpetuate and foster linguistic, literate, and cultural pluralism as part of the democratic goals of schooling. The review's specific purpose then is to determine what approaches and practices used to operationalize CRP and CSP in classrooms are the most efficacious in building cultural congruence in highly diverse classrooms while enhancing students' achievement.

I reviewed published research on CRP and CSP implemented in mathematics and English language arts classrooms. Key terms used in database searches include culturally relevant pedagogy, culturally sustaining pedagogy, achievement, culture, teaching, urban, race, context, teacher, teacher effectiveness,

diverse, critical race theory, and cultural congruence. I examined peer reviewed published research to map the intersections of CRP, CSP, mathematics, and English language arts from January 2000 – March 2017. Then I identified consistent findings across the research literature while addressing gaps and limitations in findings for future study. It is important to note in this review that only four studies were found that could legitimately be classified as experimental or quasi-experimental. Because of this extraordinarily small sample, a limited number of non-experimental comparative studies were added. Only one study found provides insights on how researchers might show a direct relationship between CRP, CSP, and improved student academic performance in mathematics or English language arts. Implications for implementing CRP and CSP in classrooms and recommendations for strengthening the research base are discussed.

### **Are Charter Schools the Second Coming of Enron?: An Examination of the Gatekeepers and Governmental Agencies the Guard Against the Dangers Posed by Related-Party Transactions**

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*Preston Green, Professor, University of Connecticut, US*

This presentation discusses how some charter school officials in the United States are using related-party transactions to funnel money fraudulently into other business ventures. This presentation also explains how this behavior is similar to the Enron scandal. Further, this presentation identifies several measures that can be taken to strengthen the ability of charter school gatekeepers to protect against this danger.

In 2001, shareholders lost \$63 billion when Enron declared bankruptcy. Enron had benefited from the deregulation of the United States' energy markets. Special purpose entities (SPEs) were instrumental to Enron's demise. Corporations create SPEs to fulfill specific purposes. Enron parked its bad assets in SPEs to improve its credit rating. Enron violated accounting principles by not revealing that its SPE partnerships were related-party transactions. Related-party transactions occur between parties that have pre-existing, special relationships. Andrew Fastow, who was also Enron's CFO, made millions of dollars by managing the SPEs. He also used these illegal proceeds to invest in other ventures. Enron exposed the inability of gatekeepers to guard against accounting fraud. These gatekeepers included auditors, corporate boards, and the Securities and Exchange Commission (SEC).

Related-party transactions now pose a problem to charter schools in the United States. Charter schools are deregulated public schools that are exempt from many laws governing financial transparency. Similar to Enron, bad actors are using fraudulent related-party transactions to funnel money into real estate. They have also benefited from exorbitant management fees.

Despite this evidence, the federal government has consistently encouraged charter school growth but not oversight. This approach creates more opportunities for fraudulent related-party transactions. Government policy also runs the risk of harming students in low-income and minority communities – the very children whom charter schools are supposed to serve. Therefore, charter school gatekeepers must take appropriate steps to protect against fraudulent related-party transactions. These gatekeepers include at the state level, auditors, governing boards, authorizers, and at the federal level, the U.S. Department of Education.

This presentation discusses how some charter school officials have engaged in Enron-like, related-party transactions and why such illegal activities might become more widespread. This presentation also analyzes the steps that state and federal gatekeepers can take to reduce the likelihood of fraudulent related-party transactions in the charter school sector.

My research has focused on the legal and policy issues experienced by charter schools in the United States. While charter schools are commonly defined as public schools, they are really hybrids that have both public and private characteristics. For instance, my co-authors and I have explained how charter schools have emphasized their public characteristics when it comes to eligibility for governmental funding. We have also discussed how charter schools argue that they are “private” in order to circumvent rules that they dislike, such as student discipline protections.

Recently, my research has focused on how charter schools might replicate the problems that have arisen in other privatization contexts. For instance, my co-authors and I have argued that charter school growth has similarities to the subprime mortgage crisis. This presentation, which compares charter school fraud to the Enron debacle, identifies another concern.

My research has international implications because charter schools and other market-based reforms are becoming more popular across the world. It is imperative that other countries learn the lessons that can be gleaned from the charter school experience in the United States.

### **How Policy Travels: The Case of School Funding Policy on Equity Across the Different Levels of the Education System**

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*Itumeleng Molale, Senior Lecturer, North West University, South Africa*

*Diko Nolutho, North West University, South Africa*

This paper will represent a combination of qualitative and quantitative multicase study conducted in the North West Province in South Africa. The study is the product of a doctoral study plus vast experience as both chief director and head of education department. The purpose of the exploratory study, which employs both systems and socio-political perspective, is to trace the implementation pathway travelled by the school funding policy from the centre (national) to the school level and its effects on equity. The objective is to explain where, how and why and to what extent discrepancy develops between policy and effects. It also looks at how different stakeholders understand the policy so as to maximize the effects on equity at school level.

The underlying theoretical framework which guides the study is underpinned by both systems and socio-political perspectives. Systems perspective views the organisation both as a whole and part of the larger environment, hence the views of the participants at the individual levels (national, province, regional and schools) of the education system are looked at in the tracing of the school finance policy movement from the centre to the school level. On the other hand, the socio-political perspective, examines the behaviour of policy implementers or participants because it gives recognition to the presence of power and fear in the process of implementing policies. It furthermore views policy as a contested process. In this regard, a multi-case study is identified as the suitable research design because it allows for the use of multiple

data gathering techniques and sources thereby enhance the credibility and trustworthiness of key findings through triangulation. To this end, data collection instruments such as semi-structured interviews and document analysis were used on a purposive sample at each level of the system while the questionnaires were used as additional tools at school level with the objective of generalising the key findings. The rich and thick data was analysed through content analysis method with the help of Atlas-ti program while quantitative data was analysed through the SPSS computer program.

Research findings indicate that the “understanding of the policy varied among and between different levels of the education system, from national down to schools, where the regional officials showed a limited understanding of the policy. The study also reveals that “the effects of the school finance policy on equity differed across the five selected case studies, where the previously advantaged schools experienced negative effects due to the inadequacy of state allocation. And such outcomes led to the unintended consequences where such schools increased school fees. The study concludes by indicating that successful implementation of equity driven policies has proven to be difficult and vexing issue especially in developing countries.

### **Teachers as Health Workers: A Consideration of the Economic Impacts**

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*John Mangan, Professor, The University of Queensland, Australia*

Teachers face a multiplicity of tasks in undertaking their work. Some of these tasks are not primarily educational and may be described as health-related. In the provision of these services there is a net transfer of economic benefit from the Education Sector to the Health Sector. Disentangling the net amount of this transfer is difficult and depends largely upon the substitutability between teacher initiated health-work and “market” based health work which might reasonably be carried out by health professionals. This study is one of the first to attempt to disentangle these links and place a value on the extent of the net subsidy provided by teachers. It uses a unique data set compiled by MacDonald (*et al*) and combines this with an economic impact model developed at the University of Queensland, Faculty of Business, Law and Economics. The results of this study will influence both teacher training and remuneration as well as highlighting the important role played by teachers in student health.

### **Ubiquitous Learning: Academic Achievement and Attitudes of Students toward Social Networks as Learning Delivery Platforms**

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*Yaacov J Katz, President, Michlalah-Jerusalem Academic College, Israel*

Social networks are technology-based websites or applications that enable network members to efficiently communicate with each other by posting information, comments, messages, and images for mutual benefit. Learning is perceived to be a specific area that can benefit from social networks. Research evidence has indicated that social networks have the potential to serve as learning delivery platforms and it is becoming increasingly evident that they can effectively contribute to the enhancement of student learning at university level.

In the present study three groups of first year university students, enrolled in a “Introduction to Ethics” course, were exposed to either Facebook-based, WhatsApp-based or Twitter-based delivery of ethical concepts to their smartphones. At the conclusion of the course students' were administered an achievement test to assess their understanding of ethical concepts. In addition they were administered a questionnaire to examine their impressions of the user-friendliness, motivation and satisfaction associated with the social networks they experienced.

Results indicate that students in the WhatsApp group attained significantly higher grades on the achievement test than students in the Facebook group who, in turn, achieved significantly higher grades than students in the Twitter group. Additional results indicated that students in the WhatsApp and Facebook groups held significantly more positive impressions of user-friendliness and motivation associated with their respective delivery platforms than students in the Twitter delivery group. The students in the WhatsApp group also held a significantly more positive impression of satisfaction with their delivery platform than students in the Facebook group who maintained a significantly more positive feelings of satisfaction than students in the Twitter group. Thus, WhatsApp delivery, and to a lesser extent, Facebook delivery, are associated with enhanced academic achievement as well as with positive feelings of students' toward the respective delivery platforms with Twitter lagging behind on both achievement and affective variables. One can conclude that the study confirms the steadily accumulating evidence that social networks have the potential to serve as legitimate learning delivery platforms.

### **The Impact of a Professional Development Model on Teacher Implementation of Cultural Responsive Teaching**

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*Elsa Anderson, Professor, Texas Wesleyan University, US*

Culturally and linguistically responsive teaching should drive instruction in schools with diverse populations. Bridging Academic and Social Experiences (BASE) is an instructional model designed to build academic language and address cultural and linguistic differences. This is a model developed by the presenter and a colleague, both professors at a university in the north Texas area. Pivotal to this model is the idea of using social language as a connection to academic language. The model involves strategies at three levels of engagement through the teaching cycle. For a period of three years, we developed and piloted BASE as a professional development intervention with teachers at one campus in a large urban Texas district. We gathered data regarding implementation using field notes from classroom observations and through interviews, focus groups and artifacts. Our research was focused on the following questions: What impact, if any, does the professional development have on the beliefs, attitudes and actions of this group of teachers regarding culturally and linguistically responsive teaching?

What impact, if any, does the BASE instructional model have on the academic achievement of diverse populations?

Findings indicate that teachers increased in awareness regarding the needs of diverse students and effective practices to meet those needs. Additionally, findings indicate that the acceptance and participation of the campus administrators positively impacted teacher implementation of the professional development. Finally, findings indicate that when implemented with fidelity, the BASE Instructional

Model increased student engagement and the use of social and academic language for diverse populations.

### **Team Based Simulations Among Teacher Trainees: Psychological Empowerment and Ethical Aspects In Coping With Bullying At School**

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*Yifat Davidoff, Doctore, David Yellin College of Education, Israel*

*Orly Shapira-Lishchinsky, Associate Professor, Bar-Ilan University, Israel*

The objective of this doctoral research was to measure group simulation (role-play) as a method of training teachers and teacher trainees to deal with social, physical and verbal violence at school. The choice of simulation groups is based upon cognitive-science research showing that simulations are an accelerated instrument for enhancing empathy and for ‘fabricating’ a deeper understanding of situations. The participant population comprised 90 elementary school teacher trainees in their 3rd year of college. The workshops lasted 30 hours in total, spanning a whole academic year. Two experimental groups were involved: the role-play group and the theoretical group. The process for the role-play group was as follows: Stage 1: Present a violent school incident e.g. social media bullying. Hold discussions on the ethical characteristics of the incident. Stage 2: Role-play the scenario 3 times and film on mobile phones. Stage 3: Watch the simulations and analyze ways of solving the ethical dilemmas through reflective discussions.

The theoretical group underwent a similar process, but did not role-play. The role-play groups demonstrated (Research results were obtained using mixed methods):

1. A significantly higher awareness of the importance of creating relationships built on mutual understanding and empathy when coping with school violence.
2. A heightened awareness of “clear lines” to create respectful/equal discussions
3. A deeper awareness of the teacher's role as a continuous and significant influence in the student's life.
4. A wider variety of possible solutions for the ethical dilemmas.
5. Better team co-operation and a higher likelihood of promoting openness in confronting the most complex ethical challenges.

Furthermore, the findings indicated that simulations contribute significantly to self-confidence, sense of control and decision-making capabilities in handling violence. Theoretically, this study broadens the landscape of ethics in school violence and delivers a unique, meta-cognitive methodology for training teachers to confront school violence.

### **How Is Bullying Portrayed in a Collection of Selected Picture Books?**

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*William Bintz, Professor, Kent State University, United States*

Research Objective: The purpose of this research study is to conduct a collaborative, content analysis of selected picture books on the topic of bullying.

Research Question: How is bullying portrayed in a collection of selected picture books?

Methodology: The methodology for this research project is content analysis. Content analysis is a qualitative research methodology that focuses on describing and interpreting written artifacts (White and

Marsh, 2006). It “involves the inspection of patterns in written texts, often drawing on combinations of inductive, deductive, and abductive analytical techniques” (Hoffman, et al., 2011, p. 29). The goal of content analysis is to generate “knowledge and understanding of the phenomenon under study” (Hsieh and Shannon, 2005, p. 1278). Here, written texts is operationally defined as a collection of selected picture books that deal with bullying.

A total of approximately 132 picture books were selected for content analysis. This total represents a sample of convenience. Two principal investigators and one research assistant possess collections of literature, especially picture books, they use when teaching their respective classes. The investigators searched their collections and selected books based on ten criteria: 1) the books are picture books, e.g. books that contain traditional story elements, 2) the picture books are fiction or nonfiction, but not informational, 3) the books are narratives, fiction or nonfiction, but not informational, 4) the words “bully” (The Bully and the Shrimp), “bullied” (Are You Bee-ing Bullied?) or “teasing” (Teasing isn’t funny: What to do about Emotional bullying) are included in the title, 5) the words “bully”, “bullied” or “teasing” were mentioned in the synopsis for the book, but not in the title, 6) picture books do not deal with sibling rivalry, 7) picture books appropriate for grades K-8, 8) picture books are accessible and available to teachers, e.g. no rare or out-of-print books, 9) no digital books, e.g. Kindle, and 10) no self-published books.

Findings: Data collection and data analysis are currently in process. The research team will complete collection and analysis by December 1, 2017.

Conclusions: Preliminary findings and conclusions will be presented at this session.

### **Exploring 'School Ethical Culture' in TIMSS International Assessments**

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*Orly Shapira-Lishchinsky, Associate Professor, Bar-Ilan University, Israel*

Objective: to explore whether a shared concept 'school ethical culture' could be observed from 45 countries participated in TIMSS international assessments, based on teachers' perceptions.

Methodology: Our analysis focused on 7,890 teachers' questionnaires participated in TIMSS 2015 (8th grade) science assessments among 45 countries. By expert rating, exploratory factor analysis, and confirmatory modeling approach, focusing on multilevel and multiple group analyses, we tried to found out whether there is an additional layer of meaning of 'school ethical culture' within TIMSS 2015 teachers' questionnaire.

Findings: Our analyses lead to a multi-dimensional structure with cross-national meaning, including four dimensions of 'school ethical culture': teachers' profession, caring for learning, respecting the rules, and interaction with colleagues. Our results indicate a high level of reliabilities (composite reliability > .70) for all four dimensions. Model fit is above acceptance level, e.g., CFI=.93, TLI=.93.

Conclusions: We found a shared meaning to the concept 'school ethical culture' based on teachers' perceptions, supported by international assessments in TIMSS, focusing on common ethical aspects

among participating countries as equity and quality. Our study gives a broad view of shared 'school ethical culture' across 45 countries. It generated the common meaning of ethical culture in schools, based on teachers' multi- interactions with colleagues, students, parents, community, and regulations. Moreover, this study provides knowledge about what characterises schools with 'ethical culture', a perspective that had not been investigated despite the widespread recognition of the importance of ethics in an organisational context.

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Session 2: 7 December 2017

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### **LeVar Burton and the Evolution of Language Arts and Literacy Education in the Digital Age**

*Mark West, Professor, University of North Carolina at Charlotte, US*

The nature of language arts and literacy education has changed significantly in response to the rise of new media and digital technology. A key player in this change is LeVar Burton, the long-time host of the American educational television program called *Reading Rainbow*. Burton served as the host of PBS's *Reading Rainbow* from its debut in 1983 until PBS cancelled the program in 2006. Throughout the twenty-three-year run of *Reading Rainbow* on PBS, Burton became a fixture in the world of educational television. During the years that *Reading Rainbow* aired on PBS, Burton became increasingly involved in the production of the program. He continued to serve as the program's host, but he also took on the responsibilities associated with being a producer of the program. In the world of education television, he achieved tremendous success as is reflected by the fact that he won twelve Emmy awards as the host and producer of *Reading Rainbow*. When PBS canceled the program in 2006, Burton decided to come to the rescue of the program.

By taking advantage of the opportunities offered by new media, Burton reshaped *Reading Rainbow* for the digital age. He created a *Reading Rainbow* app in 2012, and it quickly broke records as the top downloaded educational app. However, Burton was eager to expand this initial app into full-fledged website with an interactive digital library that could be accessed on computers, smart phones, and other devices. Burton and his colleagues launched an online digital library in March 2016. They named it the Reading Rainbow Skybrary for Schools. As a result of his visionary and innovative leadership, Burton has not only saved *Reading Rainbow*, but he also made it available for free to elementary schools in economically depressed neighborhoods. Burton has also shown how digital technology can be used to promote reading. The leadership role that Burton has played throughout the long history of *Reading Rainbow* has resulted in Burton becoming one of America's premier promoters of children's literature and literacy.

### **Design Ethics: Prolegomena to Teaching Design at University**

*Alan Garfield, Chair, Professor, University of Dubuque, US*

“Why should designers go to university?” We will need to develop a 21st century answer sufficiently different from our 20th century answer. The often heard rational “because it will make learning more



efficient and more interesting” is totally inappropriate. That comment simply does not answer the question. It only argues for efficiency and interest, which are a means, but they are not ends. New technology has imperiously commandeered our most important methodologies, our energies and certainly our budgets. But while design through new technology has opened up so much to the university student, we should cautiously remember that the manner of technology is, simply, that it is unpredictable. Lack of design ethics (bad design ethics) can and in fact does cause physical and emotional harm. In this position paper, examples of ethical considerations of design and technology will be examined. I would like to conclude this paper by stating that the mixture of university design education and new technology has (all the wonderful, powerful options and alternatives notwithstanding) produced a very real crisis in university design education in the 21st century. This crisis is not, as is usually suggested, between the sciences and the humanities; this crisis is in ethics between technologists and the rest of us.

### **Supply and Demand of Scarce and Critical Skills: Implications for National Strategies and Plans for Skills Development in the Schooling Sector**

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*Bongani Bantwini, Research Professor, North West University, South Africa*

This article discusses some of the factors that influences the supply and demand in the scarce and critical skills areas in the schooling sector. The article draws from the interviews conducted with various stakeholders in the schooling sector during a consultation process. The findings suggest that currently the supply of teachers in the scarce and critical areas hardly meets the demand. The shortages were visible in: mathematics, science, economics, accounting and language learning areas. The findings also reveal that the quality of some of the new graduate entering the schooling system was questionable as they were perceived as not competent enough to teach. Additional to the inadequate supply was a general consensus that there was a high rate of teacher shortages at every level of schooling system, facilitated by high attrition rate among teachers. Several reasons were attributed to this attrition rate including financial reasons, poor working conditions, lack of support and more. Undoubtedly, these findings have some implications for the higher institutions of learning’s production of teachers, which need to be more focused on the problematic areas but without completely neglecting the other areas as this may later create other problems. The universities have a critical role to play in order to ensure that all their graduates exit their system with basic expertise necessary for teaching in the diverse contexts in South Africa. Also, school districts need to speed-up the process of establishing induction programmes that will ease the new graduates into the schooling system. Furthermore, there is a need for continuous professional development that will help teachers to stay updated regarding the new teaching and learning approaches in their specific areas.

### **A Framework for Integrating STEM and Supporting Teacher Learning**

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*Teruni Lamberg, Associate Professor, University of Nevada, Reno, US*

A framework for teacher professional development on STEM integration will be presented. The context of science is important to meaningfully explore the mathematics. Furthermore, it also engages teachers’ interest to solve the problem because there is a purpose to use the mathematics. Researchers have pointed out that an interdisciplinary approach to teaching can provide more meaningful and stimulating learning

experiences for learners. This is because the information is less fragmented. Frykholm & Glasson (2005) point out that students have a harder time solving problems because they don't understand the context in which problems are embedded. This can also be the case for professional development in math. Data from a year-long professional development project integrating STEM education and nanotechnology using a design research approach was conducted. A study took place in the United States in a Western State. Four iterations of the professional development were conducted across the geographic regions. The pre and post tests were administered to measure teacher growth in content knowledge. The findings revealed there was growth in math and science content knowledge. Qualitative data that included journal entries and analysis of video recordings revealed that formative assessment was critical for making design decisions. Video coding software atlasTI was used to analyze the data. Strauss and Corbin (1998) Constant Comparative method was used. At times the mathematics was needed as a foreground to support the learning of science. Other times the science context was needed to support the understanding of mathematics. Formative assessment became critical for making design decisions. The formative assessment included paying attention to teacher's understanding of math and science and figuring out more efficient ways to make design decisions.

Project website: <http://www.nevadamathematics> project.com

### **The Bearing that the South African Mathematics Curriculum Design has on Underachievement**

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*Bonani Sibanda, Lecturer, Vaal University of Technology, South Africa*

The objective of this paper is to investigate the perceptions of the teachers and subject advisors on the bearing that the South African Mathematics school curriculum design has on enhancing or inhibiting achievement in Mathematics at the Grade 12 level. Data was obtained from the interviews which were conducted with the Mathematics educators of the selected schools, and the Mathematics subject advisor of the district to find out about their perceptions with regard to the impact of Mathematics curriculum design on students' underachievement in Grade 12. In addition, the contents of the National Curriculum Statement for Mathematics documents were analysed.

The findings revealed that the scope (contents coverage) is too wide, and that the skills which are supposed to be developed in learners per term are not fully developed. Time allocation is unreasonably limited, and as a result, learners are unable to cover the scope for the term. Revisiting of topics done every year in a spiral fashion is good but the balance between superficiality and depth is not achieved, and that it is done without checking and understanding learners' previous knowledge on the topic. The sequencing of certain topics has to be looked into and revised. The study also revealed that Mathematics curriculum design, link and progression from primary to high school is good but not all details are covered, which leave students with content gaps that impede the learning of certain topics.

### **Undergraduate Social Sciences Students' Attitudes Toward Statistics**

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*Asal Aslemand, Sessional Instructor, University of Toronto, Canada*

Undergraduate students, particularly those in social sciences programs, face many challenges in learning introductory statistics—a course needed to fulfill for their degree requirements. This study investigated the changes in undergraduate social sciences students' attitudes toward statistics from the beginning to the end of an introductory statistics course designed for the social sciences students using ordinary least squares in linear modelling procedure. Additionally, the interrelationships among students' past mathematics achievement, their attitudes toward statistics, and their statistics outcomes were investigated using path analysis, a technique in structural equation modelling procedure. The Survey of Attitudes Toward Statistics (SATS-36©) was used to collect data on students' attitudes toward statistics.

By the end of their introductory statistics course, students' attitudes improved for those with low initial scores regarding their feelings concerning statistics, their competency in doing statistics, their valuing of the subject in their personal and professional lives, their perception of the difficulty of the subject, and their efforts to learn statistics. However, their interest in statistics remained the same. Students' attitudes-scores dropped for those with high initial responses regarding their competency to do statistics, their valuing of the subject, and their interest in statistics. However, their feelings concerning statistics, their perception of the difficulty of the subject, and their effort to learn statistics remained the same.

Students' past mathematics achievement, their valuing of, their interest in, and their effort to learn statistics predicted their statistics outcomes by the end of the course. Additionally, students' past mathematics achievement predicted their cognitive competence in statistics, and their cognitive competence in statistics predicted their affect toward statistics by the end of the course. Also, students' interest in statistics predicted their effort to learn statistics and their value of the subject by the end of the course, which in turn contributed to their statistics outcomes.

### **Multiple Intelligence Theory in a Science Classroom: General Chemistry Ii Combined with Pltl, Online Homework, and Typical Lecture**

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*Issa Salame, Assistant Professor, The City College of New York, US*

Current trends in the sciences include the integration of Howard Gardner's Multiple Intelligences Theory into the curricula. The multiple intelligences that this paper focuses on are Linguistic, Logical-Mathematical, Bodily-Kinesthetic, Spatial-Visual, Interpersonal, and Intrapersonal. Teaching, particularly in the sciences, needs to integrate at least these six out of eight intelligences to serve an increasing population of students who are not able to obtain the one-to-one individual attention they may need or are not able to learn as effectively through a lecture-based classroom. A blend of Peer Led Team Learning (PLTL), online homework, laboratory, and lecture based learning was studied to determine whether students benefit from a multi-modal approach to learning. The participants in this study included 140 City College of New York students that were enrolled in General Chemistry II (10400). The study obtained data through a Likert scale questionnaire, an open-ended survey, and individual interviews. The results showed overall positive results in students learning better and retaining the information when studying through different modalities.

### **Everyday Matters in Learning Science: Evidence from Classroom Discourse in Two Chemistry Classes in Thailand**

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*Nantana Taptamat, Graduate Student, University of Queensland, Australia*

At the core of inquiry learning sits the demand of questioning scientific knowledge. In the classroom, challenging such knowledge is orchestrated through conversation among the teacher and students. This conversation incorporates the use of everyday words, general academic vocabularies, and scientific terminologies. Some theoreticians in science education include scientific language comprehension as a part of science literacy. Many researchers report students' everyday experiences including daily language are a source of learning struggle or an obstacle to teaching science. In contrast, others argue daily experiences are a primary source for learning and teaching science. This presentation describes both positions by using classroom discourse in two chemistry classes in Thailand as a source of discussion. Grounded in a socio-cultural perspective, which engages directly with cultures and contexts of research, this study propose the effects of everyday experiences in learning science. The data were collected from two chemistry classes in two secondary schools from June to August of 2016. One participating school is a girls' school located in an urban area while another is a coeducational school located in a rural area. However, both schools are located in the northeast of Thailand, which is considered least developed compared to other regions. The urban teacher used explanation-based model of teaching while the rural teacher used problem-based approach. However, both teachers put an emphasis on promoting discourse of inquiry. The empirical data were gathered through video and audio taping, interviews, field observation, students' written responses, and researcher's journal. Additionally, the primary data including video and audio recordings were partly transcribed and translated from Thai to English. The results demonstrated 1) how and when students used their everyday experiences in their classroom discourse 2) how these experiences affected classroom discourse and 3) to what extent this discourse was related to students' learning chemistry in Thai contexts.

### **Who Participates in Vocational Education and Training in India? An Empirical Analysis of Determinants**

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*Andrea Vincent, Senior Research Fellow, India*

India's expectation of a demographic dividend, due to the increase in the working age population, signifies the need of developing skills in the youth. Considerable emphasis has been given to the skill development programmes, including the revamp of formal Vocational Education and Training institutions (VET) that is in progress. The number of formal vocational training institutes more than doubled in last decade. But there had been an underutilization of formal VET facilities in India. This paper investigates socio-economic determinants influencing the participation of formal VET in India using the unit level data from nationally representative survey on social consumption/education conducted in 2014. Four options available to students in India after completing secondary education are to drop out, to pursue academic higher education, to pursue technical education, or to pursue vocational education and training. Findings from multinomial logit analysis suggest that making an educational choice in favour of vocational courses increases when the gender is male, being in the religion Islam and being in the social group of Scheduled caste, scheduled tribe or Other Backward classes. This suggests social stereotyping. The probability of making an educational choice in favour of vocational courses decreases when parents are educated, when there is more number of children in house hold and being in the urban sector. Findings suggest that VET is still not accessible to the children of illiterate and poor parents as they tend to drop

out after secondary level of schooling. Children of educated parents are less likely to take VET suggests low priority and status assigned to VET. To increase VET participation in India there should be targeted intervention among the lower socio-economic groups. Gender specific interventions are necessary to increase women's participation in VET. Issues of image and attractiveness still persists, which needs to be addressed, in order to ensure better participation in VET.

### **Designing Personalized Vocational Teacher Training Programs at Diverse Socio-Economic Schools Within the National School System**

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*Sarit Ezekiel, Lecturer, David Yellin Academic College of Education, Israel*

My research concerns the vocational training of student teachers, where training takes place on-site in actual school classes. Via this training program, professional mentoring is provided by pedagogic trainers and guidance is also provided by the full-time school teachers in whose classrooms the trainees are teaching. The proposed study is focused on several years of experience in providing the vocational training for trainee teachers at socio-economically challenged schools. The trainee teachers were exposed to a variety of experiences dealing with children and parents from communities where a relatively high level of social services and community care programs are needed. The objective is: (1) to understand what have been the experiences of trainee teachers who are teaching in such school environments; (2) to determine whether the type of school where trainee teachers gain their vocational training is a contributing factor in the success or development of skill sets of the trainees. If so, (3) what should be the criteria for determining which schools should be chosen for vocational training of trainee teachers and in what way can the trainee teachers be prepared for a variety of different teaching environments. These issues are primarily to be examined via the narrative provided by actual experiences of the trainee teachers. A final question for which we can attempt an answer is in what manner does the experience provided by such schools constitute an element in the consolidation of the trainee teacher's professional identity. The methodology is qualitative research using a narrative approach. Our findings are that there are certain students who flourished in this environment whilst others were found to have been held back in their vocational training. Our conclusions are to match in advance each student to the most suitable school via an assessment of each student's personal characteristics and skill sets.

### **Tetrahedral Model of Transfer for Online and Blended Learning**

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*Tamara Galoyan, Graduate Student, Drexel University, US*

In any academic domain, it is essential for an individual to be able to transfer learning across a variety of educational and real-world contexts. Based on one of its broader definitions, transfer is "a term that describes a situation where information learned at one point in time influences performance on information encountered at a later point in time" (Royer, Mestre, & Dufresn, 2005, p. vii). Despite the significant role of transfer in human learning, enhancing student abilities to effectively transfer newly learned knowledge and skills has always been one of the most challenging problems in education. While much research has been conducted on transfer of learning with traditional onsite educational programs, there has been limited research on how learning transfers within online and blended learning contexts. Research indicates there are three major issues relating to transfer of learning: (a) the complex nature of

transfer; (b) the multiple variables affecting transfer; and (c) the lack of knowledge of the instructional strategies that can be used to facilitate transfer in online and blended learning environments. This study used integrative literature review methodology to (a) analyze the various conceptualizations of transfer of learning across disciplines; (b) examine the existing traditional and contemporary models and taxonomies of transfer; and (c) develop a new tetrahedron model of transfer for online and blended learning.

The presentation will provide an overview of the literature review and then introduce the new model focusing on four broad transfer dimensions, namely pedagogical, personal, contextual, and content which can serve as a conceptual framework for researchers, educators, and instructional designers interested in transfer research. The presentation will conclude with the discussion of the future application and validation of the model along with the implications for future research on the effective instructional strategies for enhancing transfer in online and blended learning contexts.

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### **Determinants of Indigenous Student Learning with Digital Technology: A Qualitative Study in a Remote Canadian First Nations Community**

*Ben Akoh, Graduate Student, University of Manitoba, Canada*

This goal of this qualitative study was to identify the determinants that assist remote postsecondary Indigenous learners (in an isolated fly in-only community) to adapt and orient themselves both to Eurocentric and Indigenous ways of learning. Digital technology such as mobile devices was used to produce documentation that served as the data for the research. The outcomes of the study led to the identification of determinants. This is a first step towards such identification, which provides a base for further research. Eight participants were directly involved in the study activities and six other participants provided contextual information.

Participants showed a deep understanding of the problem, they were well meaning, eager and responsive to the study. The complexity of participant responses indicated that rethinking learning and understanding the place of Indigenous learning methods in education were needed. Rethinking solutions may require the direct participation of various stakeholders including educators and Indigenous communities. The solutions cannot be simply more technology or more pedagogy although a careful reconsideration of pedagogy is required. Future research is key, but those research efforts must enter the community with a truly open mind and with culturally appropriate approaches without any pre-fixed solutions.

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Session 3a: 8 December 2017 Group I, St Hugh's College, Oxford

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### **A Meta-Analysis on the Relationship Between Character Education and Student Achievement and Behavioral Outcomes**

*William Jeynes, Professor, Witherspoon Institute, US*

An extensive meta-analysis, including 40 studies, was undertaken on the relationship between character education, on the one hand, and student achievement- and behavioral- outcomes, on the other. Additional analyses were done to determine whether the effects of character education differed by student grade

level, locale, and race, etc. The results indicate that character education is associated with higher levels of educational outcomes, no matter what type of standardized or non-standardized measure was employed. Character education was also related to higher levels of expressions of love, integrity, compassion, and self-discipline.

Overall, character education had somewhat greater effects for children in high school rather than those who were in elementary school. The effects of character education did not differ by the race of the children. The results of the study indicate that there is a clear relationship between character education and student outcomes overall. The overall relationship appears to be about .3-.45 of a standard deviation, which in academic terms would be about .4 of a GPA unit on a 4-point grading scale. The effects of various components of character education such as those emphasizing honesty, love, respect, and self-respect were examined.

There is some indication that the relationship is probably somewhat larger between character instruction and student behavior than that for character education and achievement, especially for younger children. These findings are consistent with what one would expect given that character instruction is inherently more concerned with the hearts and behavior of youth than they are with scholastic outcomes. The significance of these results is examined.

### **The Impact of School Fieldtrip to Mainland in Hong Kong Secondary Schools: Students' Self-Authoring Civic Identity**

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*Tracy Chui Shan Lau, Assistant Professor, Hong Kong Baptist University, China*

The main purpose of this study is to understand how students' involvement with these trips contributes to their civic development. Despite that a field trip to the Mainland has become a popular form of educational activity in Hong Kong, there are little academic attempts to date to assess the effectiveness of different pedagogies of experience on students' civic development.

In the past two decades, students' civic development has been considered to be one of the major academic missions of schools and colleges in the West. For some decades, the question of whether citizenship can be taught has been an issue of contention, even before getting onto the controversy over whether it should be taught. In fact, much of the early work showed that teaching civics was not something that was easily achieved (Morris, John & Halpern, 2003). Denver and Hands (1990) and Niemi et al. (1999) suggested that courses about citizenship can help to improve students' knowledge, but have no effect on students' attitudes. However, since the 1980s, more and more research studies have demonstrated that extra-curricular activities are a better option for civic learning (Beck & Jennings, 1982; Musil 2003; Lawson, 2001).

This research is conducted in the context of three different types of field trip to the mainland by students in Grades 9-11 (S3-5) in secondary schools in Hong Kong. The study combines qualitative and quantitative research methods. Using Baxter Magolda's (2001, 2004) self-authorship, this study examines student's development of civic identity on three dimensions: (1) the cognitive dimension; (2) the intrapersonal dimension; and (3) the interpersonal dimension. Therefore, by addressing the most

prominent types of field trips in practice, this project has yielded findings that are most relevant for the assessment of current practices and making future recommendations towards better implementations.

### **Parent Involvement in Educational Activities in Tanzania: Understanding Motivational Factors**

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*Janeth Emanuel Kigobe, Graduate student, KU Leuven, Tanzania*

**Introduction:** Studies have shown a positive association between involvement of parents in their children's educational activities and children's academic achievements. In Tanzania, however, the education system focuses mostly on schools and teachers as key educators of children, while little attention is paid to the role of the home environment in children's learning. This study examines motivational factors that may influence parental involvement at home and at school, using Hoover-Dempsey and Sandler's model of parental involvement as a theoretical framework.

**Methodology:** Participants were 580 parents of grade 2 children attending 18 public and 6 private primary schools in three districts of Dar Es Salaam, Tanzania. Parents were invited at school to complete a questionnaire (Geyer & Jianhua; 1993; Walker et al, 2005), questions were read aloud for illiterate parents. Dependent variables were parents' academically focused home involvement activities (e.g. reading together) and school-based activities. Predictor variables were Parents' role construction, Self-efficacy for helping children succeed in school, Parents' perceptions of invitations for involvement from (a) child, (b) teachers, and (c) school, Parents' perceptions of time and energy, Parents' understanding of their own skills and knowledge, and parents' expectations on their children's future educational success.

**Findings and Conclusion:** Hierarchical multiple regression and mediation analyses were conducted. Parents' expectancies for children's school success was a major predictor of home involvement, next to perceived time and energy, child invitations and parents' self-efficacy. School based involvement was predicted by parents' perceived time and energy and invitations from school and child. Though we expected that role construction would predict parental involvement behaviors in school-based and home-based activities, the mediation analysis showed that it only had an indirect effect on school based involvement through invitations from child and school and perceived time and energy. In the discussion we go into implications for educational policy.

### **The Impact of African-American Female Leadership on Creating a Positive School Culture and Improving Student Achievement**

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*Beverly Ffolkes-Bryant, Adjunct Professor, The City College of New York, US*

Historically, women and minorities have been underrepresented in executive school leadership. The purpose of this workshop is to describe how female African-American principals and superintendents understand the influence of race and gender on their educational leadership experiences. This workshop will focus on the professional background, barriers they encountered in their pursuit of a principalship/superintendency, strategies utilized to facilitate attainment of a principalship/superintendency and leadership conceptualization.



Three theoretical frameworks, Critical Race Theory (CRT), Racial Identity Development Theory and The Black Feminist Thought Theory as defined by Patricia Hill Collins. Black Feminist Thought focuses on the marginalized status of African-American women and their experiences.

The reason they were chosen to lead schools. They were very good teachers and improved student outcomes. They were able to communicate effectively with parents, community members and staff. They knew distributive leadership and were able to cultivate leaders in their school.

### **The Contributions of Parent-Teacher Relationship and Teacher-Child Relationships to Preschool Children's Academic Behavior**

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*Şükran Uçuş, Assistant Professor, Ahi Evran University, Turkey*

Early school years have been characterized as a “critical period” for children’s development (Entwisle & Alexander, 1989) during which children must negotiate increasing academic demands alongside new social relationships in the school setting. Children’s early academic and social success in school has implications for their later success. It is hard to dispute the importance of early academic success for long-term academic achievement (Duncan et al., 2007). In the current study, we aimed at how to contribute parent-teacher relationship and teacher-child relationships to preschool children’s academic behaviors.

We recruited 150 preschool-aged children from central Turkey. Children’s average age was 62.63 months at time 1 and 66.79 months at time 2. Teachers reported on their relationship with parents using Parent-Teacher Relationship Scale (Vickers & Minke, 1995) and children using Student-Teacher Relationships Scale (STRS; Pianta, 2001) at time 1 and children’s academic behavior using MOCK Report (Pierce, Hamm & Vandell, (1999) at time 2. We ran hierarchical regression analyses to predict children’s academic behavior from parent-teacher relationship and teacher-child relationship. Results showed that higher levels of parent-teacher relationship ( $\beta = .42, t = 2.78, p = .006$ ) and lower levels of teacher-child relationship ( $\beta = -.47, t = -4.84, p < .001$ ) predicted higher levels children’s academic behavior. However, there was no interaction between parent-teacher relationship and teacher-child relationship when predicting children’s academic behavior ( $\beta = .38, t = 1.62, p = .11$ ).

### **Implementation of Additional Skills Curriculum for Students with Visual Impairments in Saudi Arabia: Data Collection and Early Findings**

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*Abeer AlAbdan, Graduate Student, Bangor University, UK*

Visually Impaired (VI) students need academic, vocational and functional life skills to prepare them for work and life. They have additional needs resulting from their vision loss that require a support system to access the general curriculum, including an additional skills curriculum, to give them equal opportunities, in school and beyond (American foundation for the blind, 2000). The additional skills curriculum constitutes the knowledge and skills needed by VI students due to their specific needs (Hatlen, 1996).

This research aims to investigate the provision of additional skills programmes for female VI students in the kingdom of Saudi Arabia (KSA), how students are supported and given equal opportunities. The research question is as follows: How is the additional skills curriculum conceptualised and implemented within the KSA's educational system, and how does it relate to societal, cultural and political considerations? It is intended that this research will contribute to the improvement and extension of additional skills provision in KSA.

This study uses a sequential mixed methods design including observations during the first phase of the study, followed by demographic data survey, as well as structured interviews during the second or main phase. Data were collected by visiting mainstream and special schools catering to students with VI in Riyadh city and by interviewing teachers and parents of students with VI.

Data has been coded and thematically analyzed both manually and using NVivo software, in an inductive approach to exploring the attitudes and experiences of both sets of stakeholders, in relation to provision and life skills development for VI students.

Early findings suggest that more experienced or VI teachers have better conceptual understanding of the need for additional skills curriculum. Also, some parts of the additional skills curriculum are being embedded within main curriculum and others are taught separately e.g. orientation and mobility, braille – particularly in special schools. Furthermore, implementation is patchy between schools and is influenced by a variety of factors: time; space; level of resources; level of support; motivation, parental involvement.

### **Challenges for ECD in South Africa: An Investigation into the Supply and Demand of Scarce and Critical Skills**

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*Rosemary Wildsmith-Cromarty, Research Chair, North-West University, South Africa*

The new national integrated policy on early childhood development for South Africa (2015) proclaims access for all to ECD services. Under the previous apartheid regime, this was a neglected area and only serviced a small section of the population. Currently, statistics show that only 34.4% of children access such services. The aim of the current research was to identify gaps where there is a critical shortage of skills which may affect the implementation of the policy. The research design was descriptive – interpretive - analytical while the approach was participatory and consultative. Data were collected in fifty percent of the districts across eight provinces in the form of individual and focus group interviews using a semi-structured questionnaire which asked for background information for profiling purposes and for information on needs and challenges in the provinces and districts, and their research priorities. Interviews were recorded, transcribed and sent back to respondents for verification. The 388 respondents included officials of the Department of Education and the Department of Social Development, Technical and Vocational Education and Training (TVET) colleges, Non-Governmental Organizations, Higher Education Institutions, teacher unions and ECD centres. Findings reveal that there are various “binding constraints” which hinder effective policy implementation. These include accountability, poor qualifications and training, lack of specialization, poor conditions of service for practitioners and lack of

funding and resources for the sector. The paper concludes that there needs to be more consultation with end-users at grassroots level and that a multi-sectoral, interdepartmental, collaborative, systems-oriented approach is the best way forward.

### **Teaching Statistics to Students with SpLD, ADHD, and ASD Online: Investigating the Role of Social Presence on Conceptual Understanding**

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*Ibrahim Dahlstrom-Hakki, Director, Landmark College Institute for Research and Training, US*

This paper reports on the findings of a National Science Foundation (NSF) funded research project (DRL-1420198) exploring the use of social presence to improve conceptual understanding among students discussing statistics topics online as part of a class at Landmark College, a college that exclusively serves college-able students with SpLD, ADHD, and ASD.

This study used a within subjects repeated measures design to explore the impact of social presence on the conceptual understanding of students with SpLD, ADHD, and ASD in online discussion forums. Data was collected from students taking an introductory statistics course over a period of three academic years. Students alternated participating in synchronous versus asynchronous online discussions over the course of a semester. The discussion format was counter-balanced across sections. Topic specific pre/post tests of statistical concepts were administered preceding and following online discussions of the following topics: Sampling, Central Tendency, Sampling Distributions, Confidence Intervals, Significance Testing, and Correlation. A Generalized Linear Mixed-Effects Model (GLMM) was used to analyze the data for the impact of the interventions while controlling for participant and item specific variability. In addition, surveys and focus groups were used to ascertain student's online discussion preferences.

Participants overwhelmingly expressed developing a better understanding of the content and better engagement in synchronous online discussions and as a result heavily favored that form of interaction. However, their performance on the assessments indicated no significant difference in performance across the two discussion formats, and indeed the trend was in the opposite direction.

Our findings indicate that while many students with SpLD, ADHD, and ASD may feel more engaged and connected to their instructor and peers in a synchronous online discussion, as is predicted by social presence theory, this does not translate into improved learning. Implications for practice and research will be discussed.

### **An Investigation into the Impact of Acts and Policies on the Teaching of Dance to Deaf Pupils in Primary Schools in England**

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*Heashin Park, Graduate Student, Middlesex University, UK*

This paper is based on my PhD research project that investigates the impact of acts and policies on the Dance education of Deaf pupils in Primary schools in England. This paper includes the review of acts and policies, and some findings from on-going observations and interviews, focusing on the strengths and

weaknesses of Deaf inclusive dance classes. It finally discusses improving communication and creating a good supportive learning environment in Deaf inclusive dance classes.

There are several acts and policies that apply to the education of Deaf pupils in Primary schools in England. Some of these acts and policies are likely to be used in helping Deaf children in dance classes of Primary schools. The central questions addressed are: what support are deaf pupils eligible to receive in Primary school dance classes according to the educational acts and policies of England?; and what improvements could be suggested to the acts and policies for hearing impaired pupils in mainstream dance classes in English Primary schools?

In England, the Equality Act 2010 determines what support and help disabled students are eligible to receive in dance classes from their schools. The Equality Act 2010 (c.15) imposes a duty to make reasonable adjustments for a Deaf student on his/her school if he/she is put at a substantial disadvantage in comparison with hearing pupils (National Archives, 2010). Those reasonable adjustments include changing provision, criterion or practice, and physical features, as well as providing auxiliary aids and services (National Archives, 2010). The Act does not state what auxiliary aids and services schools have to provide; however, Equality and Human Right Commission argues that “the duty in relation to the provision of auxiliary aids and services generally means anything that constitutes additional support or assistance for a disabled pupil, such as a piece of equipment or support from a member of staff” (Equality and Human Right Commission (EHRC), 2014: 78). The EHRC also give examples of auxiliary aids and services such as an induction loop and a sign language interpreter. It is clear that the scope of reasonable adjustment stated in the Equality Act 2010 (c.15) does not include providing special teaching to a disabled student.

To provide Deaf children with effective support to fully include them into PE and dance classes, it is essential to offer suitable auxiliary aids and services for Deaf children. For example, a radio aid or an induction loop generally used in a classroom setting might not effectively work in a gym or dance studio. Strategies for co-operation and communication between PE and dance teachers and sign language interpreters are also needed. To determine the effectiveness of support for Deaf children and whether improvements will help to facilitate access and participation in these, I observed several curricular dance classes including Deaf pupils of Primary schools and interviewed Deaf students and their PE and dance teachers, and their classroom teachers.

In my observation, PE and dance teachers needed to discuss their teaching contents and methods with classroom teachers of Deaf pupils who translated from PE teachers' instructions into Sign Language. Classroom teachers of Deaf pupils needed to share their knowledge regarding Deaf students with PE and dance teachers. Some Year 3 Deaf interviewees were concerned about dancing with hearing partners. Therefore, it is expected that the process of discussion and communication to create, perform, and appreciate dance in a group consisting of the majority of hearing peers or with a hearing partner is likely to be a challenge to Deaf pupils.

To conclude, it can be inferred from these results, that it would be essential to improve communication between Deaf and hearing students, and between PE and dance teachers, and classroom teachers of Deaf

students to provide deaf students with more accessible and comfortable environment in PE and dance classes.

### **Early Childhood Teachers' Challenges in Using English to Interact with Young English Language Learners**

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*Mazlina Che Mustafa, Senior Lecturer, Sultan Idris Education University, Malaysia*

This phenomenological study explores the challenges faced by Malaysian early childhood teachers in using English as a second language to interact with young English language learners. The focus of the study is on the analysis of the early childhood teachers' perspectives about how they could support English acquisition among young children through interaction and how these perspectives influence the teachers' practices in early childhood education settings. The theoretical framework of this research draws on a range of sociocultural perspectives, including (i) the sociocultural positions initially defined by Lev Vygostky (1978) and (ii) theories of second language acquisition discussed by Lantolf and Thorne (2000), and by Krashen (1982, 1985). The main participants of this study were six teachers from one early childhood centre. Research methods included observations and semi-structured pre- and post-observation interviews. Observations were carried out over a six week period which enabled a series of snapshots of challenges faced by the teachers as they used English to interact with the children. The findings were analysed using thematic analysis, and presented three themes: teachers' confidence, attitudes towards English, and teachers' English proficiency. These themes impacted the learning experiences of the children attending the early childhood education centre as well as the teaching approaches of the early childhood teachers. The findings revealed that there were dissonances between the teachers' perspectives and their practices, as well as variation between individual teachers' perspectives and practices. This study will provide a basis from which to consider how early childhood teachers in Malaysia can draw upon sociocultural perspectives to better support young English language learners as they acquire English, while valuing and supporting their linguistic and cultural backgrounds.

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Session 3b: 8 December 2017 Group II

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### **Biomimetic Leadership and Management: From Theory to Practice**

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*Andrea Somoza-Norton, Assistant Professor, California Polytechnic State University, US*

This research presentation summarizes the findings of a mixed-methods study on integrating biomimetic leadership and management principles via interactive, observational and experiential activities in an educational leadership graduate level course. This is a transformational and pioneering instructional approach that prepares students to become better system thinkers, collaborators and decision makers. Students learned about nature's life principles and the dynamics of nature, and how to apply these concepts to solve future organizational and management issues. These practices provided the students with ideas to adapt to the ever-changing and challenging conditions in education. As stated by Tazzi (2014), "The search for more efficient, effective and sustainable ways of managing business, public organizations and non-profits may simply be a question of considering how nature has faced and solved

many of the problems that have to confront every day.” (p. 13) The conceptual framework for this study was based on the seminal work of scientist Janine Benyus. Her book *Biomimicry: Innovation Inspired by Nature* (Benyus, 1997) highlights ten principles such as “nature demands local expertise” and “nature banks on diversity.”

### **Phenomenological Query on Perceptual, Attitudinal, and Value Changes Using Affective Domain Use in Education**

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*Alex Monceaux, Director, Academic English Language Research Global, US*

A growing body of literature demonstrates a learner’s Affective domain importance (Krashen, 1981, 1982; Lewis & Haviland-Jones, 2004; Nesse, 1997; Norton Peirce, 1995; Oatley, 1992). Goleman’s (1997) research indicates that the Affective domain is a better success indicator than intellectual ability. Duncan (2009) shows the Affective domain as key to both performative and knowledge growth. Others (Simonson & Maushak 2001, Pierre & Oughton, 2007) report a dearth in Affective domain educational research with less than 5% all instructional research since 1979 exploring attitudinal domains as a major focus of the study. This phenomenological query sought to understand educator’s process involved in changing perceptions, attitudes, values concerning Affective domain training. Researchers interviewed conference participants to gather and analyze qualitative data on ESOL educator perception, attitude, and value changes related to and involved in the use of Bloom’s Affective domain. Researcher’s hypothesis that the Affective domain helps to lower the Affective Filter while increasing cognitive aspects of learning. Semi-structured individual interviews, using a guided protocol, were used during a one-on-one online interviews session questioning participant’s Affective domain perceptions, beliefs, prior Affective domain and Filter knowledge, participant’s knowledge change, the change agent, new Affective Domain values/appreciation, positive/negative value shifts, and what produced those shifts if they occurred concerning the Affective domain. After researchers receiving the transcripts, researchers coded the collected data by item to locate emergent themes or categories through seeking similarities and differences using a seven-step process to scrutinize the data (Kleiman, 2004) and Alan Bryman’s (Gibbs, 2010) four stages for qualitative textual analysis for thematic coding: analysis, re-reading, coding, theoretical application. The analysis revealed that educators had a limited knowledge or understanding of Bloom’s Affective domain, struggled with the language, but that the session grew participant’s knowledge and understanding. Further, one’s perception of one’s knowledge effected investment greater than conceptual knowledge, that reformation within one’s perception/value/belief shifts precipitated cognitive growth.

### **Collaboration of Organization Development and Project Management**

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*Eric Pool, Senior Project Manager, Mayo Clinic, US*

Projects across industries are failing at an alarming rate. The 2015 Project Management Institute Pulse study stated on average, only 64% of projects are successful (Pulse, 2015, p. 9). Because of these failures there has been an increasing need for more effective communications and greater efficiencies to increase project success rates. Finding organizations with these needs is the easy part; finding practices proven to positively impact these needs is the difficult part. Each of these fields, Organization Development (OD)

and Project Management, employs processes and practices that, if shared, might increase success in both fields. To be clear, sharing these processes does not mean creating a new department or field, but rather utilizing the key disciplines and practices of one field to help the other become more efficient and effective. For example, participating in OD engagements, especially when it comes to consultations covering many cultures, requires strong communication skills. “Those OD workers who are involved in international OD projects will need to pay particular attention to communication styles typical of the cultures on which they are working” (Hotes, 2011, p. 24). Communication is also a key part of Project Management; therefore, utilizing the communication skill sets found within OD to increase the effectiveness of a project manager and the success rates of the projects managed is one way for these fields to collaborate. In addition, OD can provide an increased focus on methods to help an organization run more effectively and efficiently while, on the other hand, Project Management can provide an increased focus on successfully managing scope, schedule, and budget. The efforts spent on change within OD tend to have a project focus but without the advantages of project management structure. However, the collaboration of these two disciplines is a relatively new area of focus. While research, such as Hornstein's (2012) article covering the need for project management and organizational change has initiated the outline of these benefits, answering remaining questions might identify processes for collaboration, and could help increase an organization's ability to effectively execute projects and change across its enterprise, thereby benefiting those executing said projects.

### **A Framework for Improving the Professional Working Conditions of South African Teachers**

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*Raymond Emekako, Graduate Student, North West University, South Africa*

Concerns have been raised in policy documents and scholarly publications on the work environment as it relates to teachers' working conditions in South Africa. I conducted an investigation into the work environment and working conditions of teachers in South Africa during 2016/17. This study was based on the Teaching and Learning International Survey (TALIS) project in which a determination of challenges experienced by teachers in their work environment was done in 5 continents; 34 countries in 2013. The idea was to determine the working conditions by encompassing the quality of infrastructural facilities, the effectiveness of school leadership, the efficiency and effects of the appraisal and feedback system, self-efficacy and job satisfaction and the opportunities offered for teacher development in schools. The study consisted of an empirical investigation which used the mixed methods approach. The main findings is devolved in a diagrammatic form which revealed that there exist big differences between official policies on the working conditions of teachers in South Africa and the actual implementation of such policies in schools. The study recommends a holistic framework encompassing all avenues for improved working conditions in a typical school environment. Part of this framework should include setting up a monitoring and evaluation component specific to the work environment of teachers separate from the accountability systems currently used by the Department of Education.

### **Autonomy, Collaboration, and the High School Teacher**

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*Ken Reimer, Assistant Professor, University Of Winnipeg, Canada*

When compared to elementary and middle years teachers, some critics contend that high school teachers reject professional collaboration in favour of autonomy (Elfers, Plecki, & McGowan, 2007; Tilleczek &

Ferguson, 2007). This study (Reimer, 2014) invited Manitoba (Canada) high school classroom teachers (n=9) into a think tank and asked them what they believe they do to help adolescents stay in school and graduate. One significant theme that emerged from the study was that high school classroom teachers did enjoy the autonomy their job provided, and found it difficult to collaborate with colleagues. Still, the participants provided numerous examples of creative ways they were able to collaborate with colleagues.

### **Graduate Students' Critical Reflexivity for Teaching**

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*Dawn Lambeth, Associate Professor, Valdosta State University, US*

Research Objective: Critical reflexivity has been suggested to support early career teachers and preservice graduate students' teaching experiences. The objectives and significance of the research project were to determine educational leaders' perceptions on the reality that equitable educators must be proficient, not merely with culture, but also, with the skills necessary for creating an equitable learning environment for all students and families.

Methodology: This critical co-constructed autoethnography draws on critical race theory (CRT) frameworks to highlight the lived experiences and key elements of an effective faculty triad working with higher education students located in the Deep South of the United States. Drawing upon a methodological rhythm, each scholar incorporates the theoretical framework which is reflected into the analysis, interpretations, discussion, moving to concluding thoughts that offer implications for practice of teaching graduate courses with CRT concepts. Participants critically analyzed the relationship between individual as well as broader structural societal inequality, and the reality of structurally embedded inequality in the southeastern U.S.

Findings and conclusions

Findings from this critical co-constructed autoethnography determine that critical reflexivity supports effective faculty cross-cultural mentorship for student relationships.

### **The role of Instructional Leadership in Teaching and Learning: Analysis of Teaching and Learning in Grades 10-12 in a Certain District in the North West Province of South Africa**

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*Nolutho Diko, Professor, North West University, South Africa*

This presentation is focused on presenting findings from a study undertaken to identify factors within the teaching and learning processes, which lead to increased learner performance for learners of Economics in Grades 10 - 12 in some district in the North West Province of South Africa. The aim of the study was to investigate how normal and progressed learners' achievement or performance can be enhanced through curriculum management, monitoring of lesson plans, and allocation of resources. Various factors involved in enhanced teacher and learner motivation were also analysed. A mixed method comprising qualitative and quantitative approach was used in order to yield rich informative and descriptive data about teacher practices, teaching and learning management and learner improvement. Results showed that newly appointed teachers had content knowledge but grossly lacked skills in content pedagogy which implied that they did not have enough teaching practice. Lack of resource provisioning and relevant support materials to teachers were also highlighted as a contributory factor to poor learner performance. In was



also realized that in some schools, principals believed that their jobs only entail sitting in the offices and only looking at reports thus resulting in severe touch and inadequate understanding and knowledge of what is happening in the classrooms.

### **Continuous Evaluation of What Works and for Whom in Enhancing School Outcomes: Realist Evaluation of Live Big Data from Schools and Human Service Agencies in Chautauqua and Rockland Counties (New York State) and Manchester City Council (UK)**

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*Mansoor Kazi, Director, Program Evaluation Center, The State University of New York at Fredonia, US*  
*Yeongbin Kim, Graduate Student, University at Albany, (The State University of New York), US*  
*Amanda Aiello, Teacher on Special Assignment, North Rockland School District, New York, US*

This paper reports on a continuous realist evaluation utilizing big data on the entire school populations, using real examples and an interactive analysis of real data sets from the \$4m SAMHSA System of Care Expansion grants in each of New York State's counties--Chautauqua and Rockland; and from Manchester UK. Mental health, low family income and special educational needs affect school functioning, and human services can be effective (Gracy, 2014; Cappella et al., 2008; Desrocher, 2015; McKenzie et al. 2011; Rossen & Cowan, 2014). However, most studies have focused on at risk groups rather than the total school populations.

This paper demonstrates how real live data from management information systems (schools, social services, mental health, youth justice) can be used to investigate the effectiveness of the human service interventions in the schools. As the emphasis is on data naturally drawn from practice, quasi-experimental designs and binary logistic regression models are used as part of epidemiologic evidence based on association, environmental equivalence, and population equivalence. Evaluators and agencies can make the best use of the available data to inform practice. The demonstration will show how evaluators work in partnership with these agencies, to clean the data, and to undertake data analysis with them at regular intervals and not just at the end of the year. Establishing cause and effect in real time is a particular theme of this demonstration. This is a mixed methods approach, combining the traditions of epidemiology and effectiveness research in human services (Kazi, 2014, 2015) to investigate demi-regularities (Lawson, 1998, in Archer et al., Critical Realism). The author has extensive experience in evaluation of human services programs in the U.S., United Kingdom, and Finland and was awarded the US federal agency Substance Abuse and Mental Health Services Administration's Gold Award for Outstanding Local Evaluation in July 2010.

### **Technical study on the Tutorial Program at Pompeu Fabra University**

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*Lucia Gil Royuela, University Teaching Innovation Specialist, University Pompeu Fabra, Spain*

During 2016, Universitat Pompeu Fabra - Barcelona (UPF) carried out an assessment and a subsequent analysis on the Tutoring Programme (ACTE) at UPF. The objective was to know the proper operation of the tutoring sessions from tutors and students' point of view. The study covers 5 years, from 2011 to 2016, including a whole cohort of undergraduate students.

The assessment methodology was semi-qualitative and was done through surveys and open questions, addressed to students and tutors that were arranged in three groups: 1st year students; 2nd, 3rd and 4th year students; and tutors. Two reasons made us distinguish the 1st year students from the rest: 1st year students are more likely to drop out or show lower performance during the first term. On the other hand, they usually have clearer difficulties in adapting to college. Surveys and open questions were available online.

The results are measured in terms of (1) students participation in the Tutoring Programme (it has increased by 19.72% in first-year students), (2) satisfaction (1st year students' satisfaction has increased over the rest of students in a 19.22% and the 83.74% of tutors say they are satisfied with ACTE, and (3) the type of tutoring that the students prefer (academic orientation 86.7%, personal 57.8%, professional 22.2%, and administrative 13.8%). The results show a students' preference for tutors who have a personal approach, with a strong interest for students' concerns beyond the academic issues, and a certain ability to motivate them to reach their goals. In that sense, the study backs the new role that lecturers need to assume with this new generation of students and underlines the skills they have to get.

After this study, UPF-Barcelona have begun to design and restructuring the Tutoring Programme ACTE, which will be implemented in four years time.

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Session 3c: 8 December 2017 Group III

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### **“Listen-See-Practice with Three Senses” Triangle Approach in Learning Foreign Language Curriculum**

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*Tugba Ece, Academic Director, Bilnet Schools, Turkey*

“Listen, see, practice with three senses” -- This triangle is an essential approach in education; when you learn something new that you never heard before. When the students learn a new subject, they immediately need to put it into practice to place the information into long-term memory by acting; seeing, touching, hearing, imagining, and feeling. And the other important thing is that they should wonder and enjoy. When they don't know what will happen at the end, then they start to be excited to find out. And their wish to learn is getting to increase. Like non-fiction/fiction videos, real materials (bread, fruits etc.), Lego bricks, wooden bricks, play, storytelling corner which signifies the story etc. With those feelings, they find their own method to learn. They should touch while learning even if the subject is abstract, then we need it to turn into concrete via Lego edu bricks. In education every way to learn is passing by acting. If we use the lessons in real life then we feel them in real life with real materials by practicing. For three years according to my researches and observations, elementary students could learn better and faster in this way joyfully without noticing in the period of learning. There should be a leader who leads the students but who doesn't teach directly. With this aim we trained our leaders/teachers before giving lessons because it requires innate feelings: emotional, considerate, passionate, compassionate, having ability to put themselves imaginatively in another's place, foresighted, up to date about the educational innovations in the world, creative, visionary, imaginative. This approach stimulates natural self-driven learning with innate three senses. It covers; research-based, content-based learning, Project-based

learning, learning through creativity and communicative ability, hands-on experience, incentive learning by feeling of “wonder,” student-driven, making use of innate feelings; and three senses (see-hear-touch).

### **The Production of Motion Verbs for L1 Arabic learners of L2 English Classroom vs. Naturalistic Exposure**

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*Maram Alamri, Graduate Student, Bangor University, UK*

This study examines the effects of both English proficiency and exposure to the L2 country regarding the motion event descriptions produced by L1 Arabic-speaking learners of L2 English via two approaches: investigating the tendencies and typological differences that impact the motion event description processes in both English and Arabic and exploring the claim that Arabic and English belong to different categories of languages regarding how they encode motion. It's hoped that this research will contribute to the existing data on motion verbs and inform both current and future policy and EFL teaching practices in Saudi Arabia.

Research studies on motion events and their descriptions in typologically different languages have attracted an increasing amount of interest, which has largely emanated from Slobin (2000), who introduced the ‘thinking for speaking’ hypothesis, stated that lexicalisation patterns affect the expression of motion events and noted that their choices may change with typological variations. Crucial differences may lie in how both the path and the trajectory are encoded in the two languages.

To explore the relationship between the encoding of L1 Arabic and L2 English motion verbs, three empirical tests were adopted and modified from Yu (1996) where each drawing sequence represents both Manner and Path of motion e.g. (the farmer) kicks (the ball) down (the hill); including a written picture description, narration and translation tasks. A separate judgment task was designed by the researcher (Alamri, 2016), which asked participants to rate English sentences. Participants included two groups of 30 female in each, so 60 in total, Saudi Arabian learners of English and a third control group of 30 female native speakers of English. Study participants consisted of individuals studying in Saudi Arabia and those studying in the UK, which allowed for a comparative examination of how students encode motion verbs in English.

The analyses revealed a positive effect of English proficiency and exposure to the L2 country on motion event descriptions that were produced by Arab-speaking learners of L2. Several significant typological dependencies and tendencies were found and will be discussed.

### **How Much do they Really Know: Investigating Arabic Academic Vocabulary Knowledge among Arabic Native Speaking Middle School Pupils**

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*Baha Makhoul, Professor, The Arab Academic College of Education, Israel*

Academic Vocabulary is fundamental for student success. The purpose of this study is to explore the development of academic vocabulary knowledge throughout middle school while taking into account the role of socio-economic background of the Arab population in Israel. The studied language was Arabic as L1 were 1197 Middle Arabic native speaking pupils from different socio-economic backgrounds have

participated in the study. Based on the existing scientific literature, a corpus based Arabic academic vocabulary list (AAVL) was developed that included necessary academic words required for adequate coping with scholastic materials across the different disciplines. Based on the AAVL list, three academic vocabulary knowledge measures were developed, examining academic vocabulary declarative knowledge, application of academic vocabulary in context and production of academic vocabulary. Differences in academic vocabulary knowledge were assessed in relation to age, Arab sub-group affiliation and gender differences. The results pointed to significant differences between the age groups in all the evaluation measures, where higher performance was noted among 9th graders when compared to 7th graders, age effect being stronger for the application of vocabulary in context. In addition, significant differences were obtained between the Arab sub-groups. The Bedouin subgroup, characterized by the lowest socio-economic background showed the lowest performance when compared to general Arab and Druze subgroup, the later outperforming the two subgroups. In addition, gender differences were encountered, however only on the application of academic vocabulary measure, pointing to girls' superiority in performance. The study carries several implications for future research as well as practitioners in the educational field and policy makers.

### **Examining Grit as an Indicator of School Leadership**

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*Christopher Benedetti, Assistant Professor, Plymouth State University, US*

The purpose of this qualitative case study was to examine the construct of grit, an increasingly commonly referenced psychological disposition in American schools, as an indicator of school leadership. American schools are currently investigating grit as an underlying mindset that can change performance and behavior in students and teachers, and could have broader reaching impacts on leader screening and selection in schools. Ninety-five (95) participants, who were enrolled in a graduate level school principal preparation program over the last three years, formed the case for this study. Participants were asked to complete the 12-Item Grit Scale developed by Duckworth, Peterson, Matthews, and Kelly (2007). In addition, participants completed a written interview as a follow-up to the 12-Item Grit Scale to further explore their understanding of grit based on their school experiences, their self-perceptions of grit, and the usefulness of grit as it relates to school leadership. Data from the 12-Item Grit Scale will be analyzed using the scoring key included in the scale (not gritty to extremely gritty), then compared with themes that emerge from the coding of the interview data. It is hoped that the data analysis will reveal the existence of grit in developing school leaders in relationship to perceived usefulness of grit in school leadership. Findings will be used to inform school leader development policies and practices. Data collection has ended and data analysis is currently underway, with an expected completion date of October 2017.

### **Reform of Legal Education in Ukraine**

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*Oksana Kohut, Graduate Student, National University of Kyiv-Mohyla Academy, Ukraine*

First, I should explain my research objective, the reform of legal education in Ukraine, and its background. Revolution of dignity, which happened in 2014, changed not only the corrupted government, but also had global impact on life of Ukrainians. Our integration to the EU community [EU-Ukraine

Association Agreement – the complete texts, <http://ukraine-eu.mfa.gov.ua/en/page/open/id/2900>] requests serious changes in our system of higher education, especially legal one. Future Ukrainian judicial system, fundamental human rights and freedoms depend on quality of legal education.

Second, Ministry of Education and Science of Ukraine started to make strategy of this reform in order to have better quality of legal education, transparent process of application to Law Schools in Ukraine and equal rights to education. For example, Project of concept of improvement of legal education for professional preparation of lawyers in accordance with European standards of higher education and Project of Standard of higher education of Ukraine. In my paper, I used several methods to analyse those acts and the process of reform: analysis, comparison and observation.

Authors of the reform of legal education abandoned the practice of taking state examinations within the law schools and introduced a single state qualification examination in the specialty "Law" (as a law student I will be taking this examination this summer). Essential part of this reform is standard of legal education, which is reflected in the second chapter. It covers a range of skills and abilities that are necessary for the professional fulfillment of lawyers' professional duties. Authors distinguish general and special competences.

In conclusion, problems of quality of legal education and its transparency should be resolved by the reform. First steps are: introduction of a single cross-cutting master's program in law, ranking of law schools, and a single state qualification examination in the specialty "Law" (in order to check general and special competences).

### **Navigating International Mindedness: Transnational Markers and Allocentric Dispositions**

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*Nicholas Palmer, Graduate Student, The University of Southern Queensland, Australia*

We hear much these days about the transformational impact of globalisation. We hear less, however, of transformations as a result of transnationalism. While not ignored entirely, transnationalism and transnational spaces tend to be viewed as either isolated exemplars of a cosmopolitan ideology, with minimal impact on instrumental progress, or beleaguered conservations of precious pluralistic values. Little attention is paid to transnationalism in and of itself, where transformations occur in the reification of international mindedness and underpinning globalist values. Instead, we get studies circumscribing the role established commitments, such as those presented by the UN, OECD and Oxfam, play in educational strategy. Views of transnationalism, as such, are static and rather two dimensional, circumscribed as either a vague flourishing or the result of splintered diversity. We do not expect a transformational transnationalism to imbue international mindedness with fresh perspectives. This paper presents practical exemplars of transnational learning drawn from a grounded theory study of international mindedness at The International School of Azerbaijan. The resulting theoretical model, foreshadowed by global dispositions, offers an opportunity to capture the agency of interwoven pathways and allocentric response. This paper is applicable to educators seeking to articulate and implement the emerging features of sustainable global interdependency.

### **Kurdish Refugee Youths in Canada**

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*Dilek Kayaalp, Assistant Professor, University of North Florida, US*

This study explores Kurdish refugee youths' educational participations, social/cultural interactions, and their well-being in Canada. Numerous studies already exist about the negative effects of stereotyping and security measures on Middle Eastern young people. However, I argue, very little educational and sociological study has yet investigated the impacts of these discourses on Kurdish refugee youths' lived experiences in Canada. As a response to this research gap, this study aims to develop positive social changes by concentrating on pressing educational, social and cultural challenges of ethnic minority youth for a just society, particularly considering the current flow of Kurdish refugees from Iraq and Syria and their integration in Canada. My methodology is a critical qualitative approach. Twenty young people, aged 15-30, were involved in this research. The findings of this study indicate that racism, social and educational inequalities, and the assimilative identity politics of the nation-states affect youths' educational and social experiences negatively. Taken together, the findings suggest that recognition and acceptance of Kurdish youths' ethnic identities, their historical background, and linguistic affiliations would lead to more inclusive school cultures.

### **The World in my Classroom: Post-secondary Teachers' Beliefs about International Students and Internationalization**

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*Rebeca Heringer, Graduate Student, University of Manitoba, Canada*

The burgeoning and ubiquitous process of internationalization of Higher Education has greatly contributed to the increasing presence of international students in Canadian universities. In the midst of a transforming academic scenario many benefits arise but also challenges. Much has been written demonstrating that teachers' beliefs towards culturally diverse students is pivotal to how they enact their practices. However, there seems to be a paucity of studies on how post-secondary teachers perceive the booming population of international students and the ways in which internationalization have been affecting them. And especially in a country that takes pride in their cultural pluralism such as Canada, it is of chief relevance to understand the way in which professors have been making sense of internationalization and reacting to such diversity. Based on Gloria Ladson-Billings' (1995b) theoretical framework, this critical phenomenological study aims to depict how university teachers perceive their international students, how they experience internationalization and the impact of this process to their practices. Additionally, findings will inform the extent to which internationalized universities have been a hospitable place for international students, allowing critiques to emerge towards a more welcoming and democratic education. Ten semi-structured interviews were conducted with experienced professors across different areas at a Canadian university. The overarching questions addressed in this research are: What are post-secondary teachers' beliefs about internationalization, with special attention to their work with international students? To what extent have their teaching philosophies and practices been impacted as they encounter more international students? To what extent is Ladson-Billings' (1995) framework pertinent for understanding post-secondary teachers' work with international students?

### **Education Not for All: Caste and Education in Rural Punjab, Pakistan**

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*Tayyaba Tamim, Associate Professor, Lahore School of Economics, Pakistan*

This paper is based on some key findings of an original research carried out with the funding and collaboration of the Lahore School of Economics and the World Bank. It explores the issue of inequitable access to education within caste-based social structures in rural Punjab, Pakistan. Data from 36 interviews with low and high caste parents, school heads and 4 key informant focus groups in two villages in southern and central Punjab revealed that schooling costs remained difficult to manage for the poorest low-castes as compared to high-castes, despite provision of government sponsored free schools. Bourdieu's social critical framework is used, with specific reference to his notion of capitals, to analyze the data, revealing processes of social reproduction. The economic capital transubstantiates into social and cultural capital, refracting into schooling costs that are not just economic but also temporal, psychological and social for the lowest caste groups. This limits the impact of economic subsidies offered by the government for expanding educational access. The paper argues that policies aimed at equitable educational access must conceptualize educational costs as multidimensional rather than estimating them narrowly in economic terms to respond to the sociocultural constraints of the given context.