

# EDUCATION STAFF/STUDENT CONFERENCE PROCEEDINGS 2018/19



ANTONIN ARTAUD BUILDING  
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#edbrunelconf2019

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## Contents

<b>Introduction .....</b>	<b>4</b>
<b>Proceedings Papers .....</b>	<b>5</b>
Rich Barnard: Attitudes towards Science: Teachers and their students.....	6
Sichen Chen: An Investigation into How Chinese Undergraduates' Learning Experiences Influence their Attitudes, Values, and Beliefs about EFL Learning. ....	12
Shane De Fonseka: Widening participation in Executive Education .....	16
Ozdemir Tiflis: Developing a Framework for Students' Error Analysis .....	22
<b>Oral presentation Abstracts .....</b>	<b>28</b>
Refika ARABACI: KS3 pupils' perceptions and understanding of cultural, national, and global identities and their relationships with citizenship education .....	28
Naseem Butt: Secondary Science Teachers as Curriculum Developers: a case study of three schools in London .....	28
Hsiao-Ting Chang: The Impact of Photovoice on the Self-efficacy of College Students Presenting with Autism .....	29
Sichen Chen: An Investigation into how Chinese undergraduates' learning experiences influence their attitudes, values, and beliefs about English learning ....	29
Annie Chohan: Focused training for teachers in FE and HE .....	29
Shane De Fonseka: Widening participation in Executive Education .....	30
Joe Hanley: An exploratory study examining the perceptions of social work students of those qualifying through alternative pathways .....	30
Tooran Issapour: Iranian Women and the English Language.....	31
Maninder Jalaf: How can engagement with artefacts nurture creativity in young children in early years settings? .....	31
Balbir Kaur: How do teachers 'making sense' of subject and pedagogical practices when planning a STEM based curriculum in a primary school?.....	31
Asma Lebbakhar: Intercultural education in UK secondary schools.....	32
Sophia (Yujuan) Luo: An investigation of university students' perceptions and acceptance of mobile technology use in learning English as a second language in China .....	32
Pauline Nevin: The impact of creating time for professional dialogue (through coaching) after the NQT year, on teacher agency, confidence and well-being.....	33
Colin Pereira: Does online social collaborative learning enhance the student experience in programmes delivered through transnational education partnerships .....	33
Ibrahim Sayid: The perception and experience of the Restorative Centre (RC or internal exclusion unit) on student's behaviour .....	34
Mehmet Akif Senturk: Does Recognition Make a Difference?.....	34
M. ZIKRA TANRIVERDI GOKCELI: How do teachers see their responsibilities in relation to moral education?.....	35

Ozdemir Tiflis: Developing a new model for students` error analysis .....	35
Nehal Vanjani: Apprenticeships are not for everyone...or are they? .....	36
Jørgen van Waes: Citizenship, a school subject in daily life.....	36
<b>Poster Presentation Abstracts .....</b>	<b>37</b>
Mohamad Adning : The potential of mobile phones to improve teacher competence through teacher working groups for professional teachers In Indonesia.....	37
Monia Al-Farsi: The Impact of E-Learning on Development of Students ' Skills .....	37
Jawaher Almutairi: The impact of introducing Lesson Study in EFL education: a case study of Saudi Arabia.....	38
Sahar Alnofaie: E-Learning in the EFL Classroom: The Impact of Digital Technologies on Student-Centred Pedagogy in Saudi Arabia .....	38
Hanan Alsidrah : The Acceptance of Blended Mobile Learning in Higher Education	38
Shafeena Anas: Higher Education Policy 1960-2017. An analysis through the lenses of two competing ideologies in English higher education policies; social democracy and neo-liberalism.....	39
Rich Barnard: Attitudes to science of Y6 and Y7 students (re-visited).....	39
Deborah Bell: Is Education the vehicle for social mobility that politicians claim it to be .....	39
Kellie Brown: Black child to black teacher. The educational history of black British teachers .....	40
Arthur Burnham: How do Black Caribbean Boys' perceive the teaching of history in the English secondary school system. ....	40
Shelly-Anne Clarke: An evaluation of the influences contributing to the uptake of qualifications in Level 3 Business .....	40
Alan Edmiston: Categorising children's talk in KS 3 Science .....	41
Hebatalla Elhelbawi: Arabic Language Teachers' Beliefs & Attitudes on Communicative Language Teaching in U.K .....	41
Ann Dale-Emberton: How do social workers engage with CPD to sustain and develop their practice and professional identity? .....	42
Catrin Evans: How children use manipulatives to solve problems in maths: A classroom-based case study .....	42
Lewis Fogarty: Leading Pedagogy in Early Years? .....	43
Ruth Hill: Dystopian fiction: a window for viewing educational policy and practice.	43
Najwa Iggoute: The history of teacher retention.....	43
Mariam Khokar: The search for meaning in maths mastery: Attempting to take a mastery approach to mathematics teaching with Service children.....	44
Julie Matton: High Expectations - Primary Mathematics Teaching .....	44
Jackie McBride: History of Nurse education: Full Circle ? .....	44
Khalil Muhammadi : Educational Development Plan – Pakistan & Afghanistan .....	45

Abdirazak Osman : NEW Vocationalism: Unification of Hand/Mind Activities.....	45
Ioannis (Yiannis) Paschalis: Finding a remedy for illusions of linearity through TPACK .....	46
Elenor Paul: The Bitter Truth about Religious Education .....	46
Mohamed Sannoh: Develop sustainable education, leakage-free innovative examination and student assessment systems for primary schools and secondary schools in Sierra Leone .....	47
Pauline Sithole: Comparing welfare and safeguarding policies in two educational contexts .....	47
Darryl Slack: The role of mixed reality virtual field trips in veterinary science classes to support experiential and inquiry based learning .....	48
Bhavisha Soma: High-Stakes Assessment? The stories of children, parents and teachers .....	48
Lucy Spence : An investigation into whether Lego Therapy can have an effect on the social communication of boys and girls with ASD .....	48
Rotimi Taiwo : Education and Cultural Nationalism: the Case of Yorubaland, 1861-1950 .....	49
Patricia Tiwalade-Soyemi: From Statements of Special Educational Needs to Education Health and Care Plans What Has Changed? .....	49

## Introduction

Welcome to Brunel's Education Department's first conference proceedings. All doctoral researchers in the department are required to present their work at the staff-student conference each July, either via a poster, or an oral presentation. The abstracts for these presentations are included at the end of this booklet. Following the conference, all students were invited to write a six page paper about the work they presented.

Doctoral researchers in the department are either on the PhD or EdD programme. The EdD is a part-time professional doctorate, designed specifically to enable professionals working in education, often on a full-time basis, to undertake close-to-practice doctoral research. For the first two years, doctoral researchers on this programme complete the 'Applied Research Training' so the work they present at the conference is via a poster on the *historical context* of their chosen topic (year one doctoral researchers) and via an oral presentation on their '*Professional Contextualised Study*' (year two doctoral researchers). From year three onward, EdD doctoral researchers enter their thesis writing stage so these students, and all other PGR students may select to present their work via either a poster or oral presentation. As such, some students are in the early stages of conceptualising their study, and they presented their early ideas about their work, while others are near to completion.

We hope you enjoy reading this work!

## Proceedings Papers

# **Attitudes towards Science: Teachers and their students**

Rich Barnard

*PhD (part-time) Year 1, 2018-2019*

Teachers are key to their students' science learning. So, the attitude towards science of both students and their teachers must be explored. Aspects of teachers' scientific background should also be investigated to determine whether these affect their students' attitudes. I hypothesise that science specialist teachers will have an impact on students' attitude towards science. This paper reports early findings from a pilot research study

Keywords; attitudes, science capital, students, teachers, phase-transition,

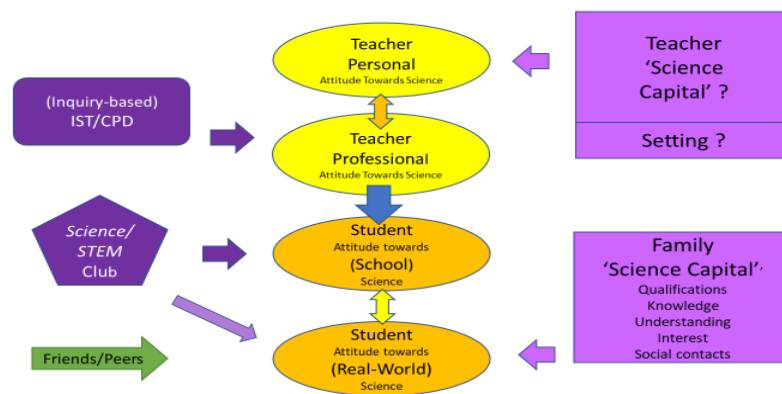
## **Research aims**

These were to survey students, and their teachers, through 'Middle Years' (Years 5-8) and to focus on whether the science capital of science specialists makes a difference to their own attitudes and thus affects the attitudes of their primary class before its students make their primary-secondary transition. It will investigate if students' attitudes are linked to their primary teachers' attitudes.

The research questions were:

1. How do students' attitude towards science change after their move into secondary education?
2. What effect does a school's location and school type have on students' attitude towards science?
3. How does the science background and In-Service Training of primary teachers (and/or Science Leads) affect their student's attitude towards science?
4. Is there a role for science specialist teachers in the upper primary years of UK schools?

My conceptual model is shown in Figure 1.



**Fig 1.** Conceptual model for this research

The specific research focus was on comparing teacher types (specialist against generalist) and comparing teaching contexts (for example, laboratory and classroom).

### Research method

For this research's pilot study, two established questionnaires (based on Likert scales with supporting open-ended questions) were used as online surveys:

ASPIRES (for students): for the science capital and attitudes of students (Archer et al, 2013). Their theoretical model of science capital combines the following (sub)constructs: (a) science-related Cultural Capital (Scientific literacy, attitudes, values and dispositions and knowledge about the transferability of science, in for example, the labour market); (b) science-related Behaviours & Practices (consumption of science media, participation in out-of-school science learning contexts); (c) science-related Social Capital (family science skills, knowledge and qualifications, knowing people in science-related roles, talking about science in everyday life); dependent variables (Future Science Affinity, Science Identity); with their independent variables being age, gender, ethnicity, socio-economic status, parental jobs, and school sets (see Archer et al, 2015 and Godec et al, 2017). Archer et al (2015) used logistic regression to identify 14 questions, across their sub-constructs above, and assigned each with a theoretically derived weighting to generate a composite science capital score for each student.



University of Twente (for teachers): for attitudes and scientific background. Following a systematic review of relevant literature, Dutch researchers constructed a new theoretical framework for primary teachers' attitude towards science (van Aaldren-Smeets, 2012). Their framework covered both their personal and professional attitudes towards science (see Figure 1) including cognitive beliefs (relevance, difficulty, gender), affective states (enjoyment, anxiety), control (self-efficacy, context) and teachers' intent and behaviour. The validity and reliability of the resulting Dimensions of Attitude toward Science (DAS) questionnaire was confirmed by van Aaldren-Smeets (2013).

## Data

This research is focused upon collecting data from clusters of Primary and Middle schools and their link Secondary/High schools (see table 1). These will have either KS 2 science specialists or KS 2 generalists but all with science specialists at KS 3.

Schools	Years	No. of Teachers	No. of Students
Middle1	Y5-8	2	294
Middle2	Y6-8	5	282
Middle3	Y6	3	74
Primary1	Y5-6	16	14
Primary2	Y5-6	2	3
Primary3	Y5-6	3	44

**Table 1** Data sample, surveys received by July 2019

Likert questions from both questionnaires were analysed with SPSS while for open-ended questions Nvivo will be used. The science capital scores were calculated:

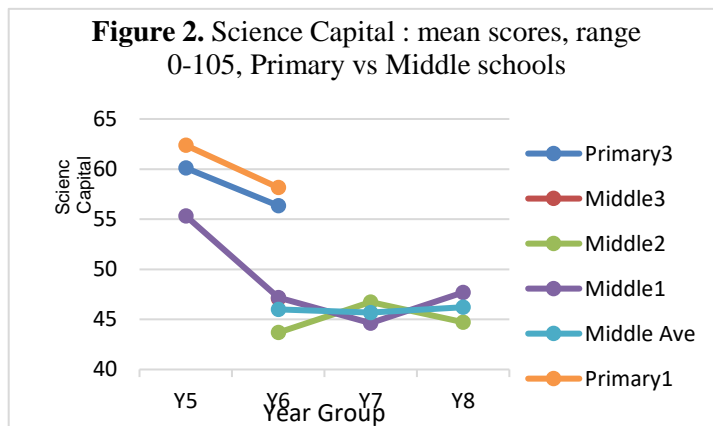
- for all student responders for this research (N=720), the data was normally distributed (SPSS: 'Test of Normality') while its mean (standard deviation) is 47.69 (14.42), compared with that of 43.65(15.45) from ASPIRES' (N=3,658) (Archer, 2015)
- for each year group in each school. Their means (M) and standard deviations (SD) are illustrated in Table 2, below.

The significance threshold was set at 0.05. The differences, as calculated using either

independent sample t-test or one-way ANOVA, between schools and between each's Year Groups were mostly not significant. Only those with significant p-values of  $< 0.05$  are indicated in Table 2 below.

School	Year 5	Year 6	Year 7	Year 8
Primary1	N=8: 61.38(15.07)	N=6: 56.50(6.41)		
Primary3	N=27:60.11(8.75)	N=17:56.35(12.45)		
Middle1	N=57:55.33(12.68)			
Middle1	N=57:55.33(12.68)	N=81:47.19(16.64)	N=81: 44.63(14.63)	N=76:47.70(12.08)
Middle2		N=98:43.68(13.62)	N=101:46.73(13.38)	N=83:44.72(13.44)
Middle3		N=74:47.08(15.60)		
	**p=0.006	**p=0.009	**p=0.002	

**Table 2.** Student results



### Early analysis

A 'dip' in students' science capital is apparent between Years 5 and 6. One-way ANOVA revealed there were significant differences between Middle1's all Year Groups (Welch's  $F(3, 157.131) = 4.819$ ,  $p = 0.003$ ). The significant difference between science capital scores of Middle1's Year 5 ( $M = 55.33$ ,  $SD = 12.68$ ) and its Year 7 ( $M = 44.63$ ,  $SD = 14.63$ ) were Post Hoc: Games-Howell  $p=0.002$ . Between Years 5 & 6, Games-Howell  $p=0.072$  but becomes  $**p=0.002$  between Years 5 & 7 then back to  $p=0.052$  for Years 5 & 8.

For Primary1 and Primary3, the differences between Year 5 & Year 6 students are

however not significant ( $p = 0.431$ ,  $p = 0.24$  respectively). Two other significant difference in science capital scores were also found between:

- The Year 6s of Primary3 and Middle1-3, one-way ANOVA,  $F(3, 268) = 3.658$ ,  $p = 0.013$ . Differences between Primary3 ( $M = 56.35$ ,  $SD = 12.45$ ) and Middle2 ( $M = 43.68$ ,  $SD = 13.62$ ) were Post Hoc: Bonferroni  $p = 0.009$
- The Year 5s of Primary3 ( $M = 60.11$ ,  $SD = 8.75$ ) and Middle1 ( $M = 55.33$ ,  $SD = 12.68$ ),  $t(70.895) = 2.685$ ,  $p = 0.006$  (using independent-sample t-test).

The small sample sizes from the Primary schools however prohibits reliable analysis between the two-tier and three-tier schooling. For example, Primary3's response is 30% of its Y5 and 14% of its Y6. Whereas, for middle schools, Middle1-3, the response rates for each school represent an estimate of 49%, 66.6% and 61.7% respectively.

For the Year 6s of Primary1, Primary 3 and Middle1, note how, as the sample size ( $N$ ) decreases, the mean increases while the standard deviation narrows. This could be attributed to highly motivated students being more likely to voluntarily participate and thus skew the overall response towards a 'High' science capital data set, defined by Archer (2015) as scores 70–105, the top 5%.

## **Discussion and Conclusion**

The one-way ANOVA of middle schools, Middle1 and Middle2, could be challenged thus: *Are schools' year groups truly independent of each other?* Each year group will be influenced by the same 'institutional habitus' (for example the school's culture as defined by its Head and Senior Management Team, its science culture by its science Lead and so on). A more rigorous ANCOVA (Covariance) analysis could be deployed to clarify this should an issue exist.

The response from primary schools (and lack of engagement by Y7 & Y8 at their link Secondary) was disappointing. Nevertheless, clearly there seems to be something

happening during their Year 6 that merits further investigation. The surveying of the primary school cluster will need repeating in June/July 2020 for a higher response rate, which would allow genuine comparisons to be possible, to the middle school data reported here. On-going analysis of the eight 'Dimensions of Science Capital' for middle school students and that of their teachers' surveys will, it is hoped, provide clearer insights into the cause of the Y5-Y6 'dip' that we see in Figure 2. This research was also presented at the British Educational Research Association's 2019 conference, University of Manchester, England 10<sup>th</sup>-12 September 2019.

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# **An Investigation into How Chinese Undergraduates' Learning Experiences Influence their Attitudes, Values, and Beliefs about EFL Learning.**

Sichen Chen

*PhD, 2<sup>nd</sup> Year*

To improve and optimise English Language Education in China, a large number of studies have been conducted to explore Chinese students' attitudes, values, and beliefs about English as a Foreign Language (EFL) learning how to determine the optimal conditions for them to learn English. Among these studies, individual differences, classroom affordances, and government policies are found to be the factors that influence Chinese EFL students' attitudes, values, and beliefs. However, learning experiences, including formal and informal learning experiences, which have been identified as a main determinant influencing students' attitudes, values, and beliefs in other countries are surprisingly fewer in the Chinese context. Therefore, this project seeks to fill the gap, attempting to get an 'inside picture' (Jin and Cortazzi, 2011, p.53) of Chinese university students studying English by analysing how their learning experiences influence students' beliefs, values, and attitudes toward EFL learning.

Keywords: English as a Foreign Language (EFL); Learning Experiences; Attitudes, Values, and Beliefs

## **Aims and Objectives**

The overall research aim is to explore how Chinese undergraduates' learning experiences influence their attitudes, values, and beliefs about English as a foreign language (EFL) learning to develop recommendations to support Chinese educators, teachers, and parents understand what other factors might influence students' achievement in English study. In the case of this study, it emphasises the shifting ground of the relationship between students' experiences and their attitudes, values, and beliefs as the phenomenon under inquiry in a research context. In light of this, specific research questions around this phenomenon raised in a narrative inquiry are developed as the basis for the study:

- What are Chinese undergraduates' attitudes, values, and beliefs about EFL learning?
- What are students' salient experiences of learning English formally and informally?
- How do students see the respective roles and contributions of formal and informal learning experiences in their English language development?
- How do students explain any influences of formal and informal learning experiences on their attitudes, values and beliefs about learning English?

### **Research Methodology**

This phenomenological research will be conducted through a narrative research method. The semi-structured individual interview is designed to collect data, and a narrative inductive analysis method will be applied afterwards. 15 students from three universities in different academic levels in China were selected for this study. Before getting in touch with students, three key teachers in the universities who would mostly have the access to students have been contacted by emails directly. All of these three teachers have replied that they are willing to introduce my research to their final-year students in the universities. Students who are interested in this study will volunteer their contact details via their teachers, and the teachers will pass their contact information to me afterwards. The reason for selecting final-year university students is that they are the easiest to approach. Students in year-one are new to the university, and they do not yet have many experiences of learning in the university, so it may be difficult to motivate them to engage with the project. Most students in years two and three are busy with preparing for the College English Test-Band 4 (CET-4) test that is required for graduation, so they do not have sufficient time to participate in the research. The students who are in year four will have already completed their credits and passed the CET-4 for graduation and will have

an abundance of learning experiences and feel free to take part in this research. However, as they are busy with internships and looking for jobs, they may not appear on campus as normal. Hence, the first individual interview that is taken face-to-face should be arranged in advance, and all of the participants will be recruited individually in their universities. This project will be conducted through the following 5 stages:

1. Identifying background (students' information, students' thoughts about English learning in China, and their view of learning experiences)
2. Semi-structured interviews with a sample of 15 final-year students in three universities
3. Analysis of the first individual interview.
4. Second in-depth interviews with the same sample of 15 final-year students (topic guide designed and informed by the first interview questions)
5. Final data analysis

### **Ethical Considerations**

Before doing this study, the informed consent form and participant information sheet will be given to each participant to read and sign. If they have any questions or worries, they are free to ask or refuse to participate in this study. Hence, students in this project will be voluntary and their rights, dignity, autonomy, and personal data will be respected and appropriately protected. As a consequence, great care will be taken to ensure that participants understand that they are entirely voluntary and will not have any effect on their studies at their universities. The participants will be also informed about the appropriate information of this research, such as the research purpose, data collection methods, and the main features of its design. Although there are limited risks that participants might feel worried and distressed, they have the right to withdraw from the research at any time and without any explanation will be emphasised throughout the fieldwork. Moreover, to ensure confidentiality and anonymity, neither individuals nor

universities will be identified within the written work, no comments will be traceable back to an individual, and pseudonyms will be given and used in the written thesis. Last but not least, all collected data will be sorted in line with Brunel's data protection policy: password protected on a Brunel University London Server and deleted at the end of the project.

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# **Widening participation in Executive Education**

Shane De Fonseka

*Doctor of Education (EdD) 2018*

Widening participation is an extensively discussed and implemented area within different sectors within education. The agenda focuses on people that belong to BAME backgrounds, those without formal educational qualifications, non- native English language speakers and mature students. It is evident that the same issue is not discussed in such depth by either educators or policymakers when it comes to executive education. Usually accessed by industry practitioners who are either at C level or upper-intermediate level, the objective of executive education is to enable such professionals to gain vital competencies that equip them with specialised skills. By means of interviews and desk research, this investigation expects to evaluate the admissions processes of school A's executive education department, focussing on the different mechanisms that exist to encourage disadvantaged sectors to gain access to executive education, enabling them to climb to the top of their respective careers – breaking the glass ceiling.

Keywords: executive education, equal opportunities, glass ceiling, widening participation

## **Widening Participation and Access to Higher Education**

According to the UK House of Commons (2018), widening participation (WP) has been a topic of discussion for decades, primarily aimed at addressing discrepancies in accessing various aspects of education for underrepresented groups. It intends to minimise or eliminate barriers that prevent or discourage such groups from addressing different aspects of higher education. These groups may include ethnic minorities, differently abled individuals, mature individuals who do not possess formal educational qualifications and persons who come from non-English speaking backgrounds. In England, this agenda is promoted by the Higher Education Funding Council for England (HEFCE), Office for Students (OfS) and primarily by individual institutions of higher or

further education, through their widening participation activities and strategies. According to the UK's Equality Act of 2010, WP's primary objective can be classified as Promoting equality, diversity and choice.

The Higher Education Policy Institute (HEPI), in its 2018 report (HEPI, 2018) identifies three stages of WP. From the three stages of WP and fair access (enrol, stay and complete), this study focuses on the aspect of enrol, where the research project intends to evaluate the effectiveness of different admissions criteria in promoting WP within a large private institute of higher education in London (School A).

### *Executive Education*

According to Knowles (1980) the primary aim of Executive Education (EE) is to equip senior executives, managers and aspiring managers with specific technical, conceptual or soft skills through short seminars, masterclasses, workshops or short courses. Typical executive education courses last for around 2-5 days. Some general features of EE include factors such as: courses pitched at postgraduate level (with a degree as part of its standard entry criteria); non-credit bearing, with the final award being a certificate of attendance or completion; a delivery style of a few days of rigorous, focussed, intensive study blocks; a very high level of delegate input and a "hands-on" approach to modern scenario/case study based discussions; a lecturer (usually an industry practitioner) who is usually a facilitator of stimulating, thought provoking discussions; a high level of focus on real-life application—NOT entirely theory based.

The use of experiential learning or action-learning methods is particularly relevant in an executive education context, where delegates usually comprise of mature individuals who possess commercial experience with a high level of understanding of organisational realities and management practices (Garvin, 2007; Newman and Stoner, 1989).

According to Fry et al (2003), individuals acquire knowledge by means of constantly building and amending structures and constructs while fresh experiences are integrated. Learning will not take place if these structures do not change. The constructivist perspective capitalise on the use of reflection, understanding and experiential learning and it is not in favour of more traditional teaching methods that focus on passive learning and memorisation.

However, when discussing widening participation, there has not been much research or discussion that has critically looked at EE with the WP agenda in focus. As argued by Groysberg et al (2011), EE is considered to be an important tool in gaining access or performing within either the “C-suite” jobs or in other corporate leadership jobs.

### ***Case study of School A***

Owned by a global consortium which comprise of private Universities and institutes of higher education, School A is a London based market leader in providing professional, higher and vocational education in the UK with branches overseas and online. It is accredited by EU based Universities and UK based professional accreditation bodies.

One of School A’s London campuses is home to its Executive Education (EE) department that runs over 40 different EE courses that range from two days to 24 weeks, with the most popular courses being its four day specialist short courses. Its faculty comprise of 100% industry experts who counts at least 10 years of leadership experience within their relevant area of specialisation. In order to maintain this competitive stance, the hierarchy is designed in a way that the teaching faculty acts as part-time contractors or suppliers of the department. This enables the teachers to offer their expertise to school A and some of its competitors at the same time. School A’s EE portfolio includes courses in data sciences, design thinking, blockchain, management consulting, project management,

digital marketing, business strategy, management finance and entrepreneurship, to name a few. Some of the courses are offered in partnership with industry leading brands including IBM, Amazon, Tableau, Salesforce and Google. Prices range from £850 to £5200 per course. The school's core team includes two directors and delegate support staff. All other support functions including recruitment, sales, HR, payroll, quality assurance, IT infrastructure, career services, disability services, campus facilities and marketing are handled by large, specialised, independent departments that report directly to the Senior Management Team (SMT) of School A's parent company.

***School A's current admissions criteria for Executive Education Courses***

All of the EE courses offered by School A are in line with the UK's RQF level 7, which implies that the generic entry criteria comprise of an undergraduate degree in any discipline. Those who do not have a degree can apply via their "mature entry route" evaluation pathway. Delegates who apply via this route need to produce evidence including a detailed CV and an employer's letter to demonstrate that they have the ability to study at postgraduate level (usually with at least 5 years of relevant work experience).

In addition, they need to write a personal statement to demonstrate their motivation to study a specific EE course, and how the course relates to his/her current job and future aspirations. This personal statement is academically evaluated against the learning outcomes of the course being applied for.

As 100% of School A's EE courses are taught in English, the entry criteria includes "Proof of English" where each applicant is required to demonstrate English language proficiency at Common European Framework of Reference for Languages (CEFR) B2. There are various options to fulfil this criteria. This includes a current IELTS (5.5),

Cambridge (B2) test report, evidence of a degree that was studied in English, passport from a majority English speaking country as outlined at <https://www.gov.uk/tier-4-general-visa/knowledge-of-english> . Those who do not have any of these documents may be able to gain entry by providing an employer's letter, confirming the applicant's ability to read, write, speak and understand effectively in English. Others may opt for an online English test that is administered by one of School A's associate colleges.

Project aim:

To evaluate how the widening participation agenda is incorporated in to School A's admissions criteria, focussing on admitting delegates on to executive education courses.

Project objectives:

- To analyse stages of the admissions process and evaluate alternative pathways available to non-graduates to meet the criteria for admission
- To evaluate the effectiveness of choices offered as proof of English for applicants of short courses
- To compare and analyse qualifications and demographic data of summer 2019 applicants
- To make recommendations on improving accessibility and widening participation on executive courses while ensuring quality and compliance criteria is maintained

***Proposed Research Methods***

Based on distinct advantages, a series of semi-structured interviews with senior members of the sales, admissions and school management has been planned, with a secondary data collection method using anonymised recruitment data for summer 2019 cohort where the researcher intends to identify patterns, themes and different viewpoints. Quantitative data will be analysed using Microsoft Excel while Qualitative

data will be analysed using Nvivo.

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# **Developing a Framework for Students' Error Analysis**

Ozdemir Tiflis

*Education 2019 summer*

This qualitative descriptive study develops a framework for error analysis to identify the types of errors students make in answering mathematical problems. For this purpose, the existing error analysis models in mathematics education researches were examined, and a new framework is proposed to eliminate the deficiencies of other models. The types of errors identified include decoding, understanding, mathematisation, processing skills, and encoding. It is suggested that the results of this study can be used to understand of the nature of errors in the teaching and learning of this mathematical topic and in developing teaching approaches to eliminate the difficulties experienced by the students.

Keywords: error analysis; students' error; mathematics

## **Introduction**

Mathematics is an abstract system of ideas and relations developed as a process of sequential abstraction and generalisation (Heinze, 2005). One of the most striking aspects of mathematics is that it contains many large and small ideas, all mentality connected to each other by a specific logical hierarchy (Heinze, 2005; Swadener and Soedjadi, 1988). Therefore, to understand and make sense of mathematics, these networks need to be structured in the same hierarchical system in our minds. Breakdown in the relationships established by these networks may cause errors in learning mathematics (Swadener and Soedjadi, 1988).

Olivier (1989) defines errors as wrong answers that appear in students' work. They can appear to be well-organised in nature in that they are applied regularly under the same circumstances. Therefore, even if errors are objectively unreasonable and wrong, from the student's perspective, they may make sense (Olivier, 1989).

Errors play a crucial role in learning mathematics because they provide significant benefits to the students and teachers in the learning process. For example, many studies on students' errors found that errors help educators to design effective teaching environments (Olivier,1989; Brodie, 2014). Because errors provide information about students' opinions, with the help of errors, the students are able to recognise and eliminate the incompatibility between prior knowledge and new knowledge and thus, students reach accurate information (Olivier,1989).

In mathematics education research, studies on students' errors in learning mathematics are not new. For more than a century, there has been a growing interest on students' errors in mathematics, and research in this area is ongoing (Brodie, 2014). Although the first studies on students' errors started in the early 1900s (Newman, 1977), after the 1980s, comprehensive studies have attempted to identify and classify students' errors.

Researcher	Newman (1977)	Orton (1983)	Colgan (1991)	Eisenhart (1993)	Legutko (2008)
<b>Types of Errors</b>	<ul style="list-style-type: none"> <li>- Reading</li> <li>- Comprehension</li> <li>- Transformation</li> <li>- Process Skills</li> <li>- Encoding</li> </ul>	<ul style="list-style-type: none"> <li>- Structural</li> <li>- Arbitrary</li> <li>- Executive</li> </ul>	<ul style="list-style-type: none"> <li>- No answer</li> <li>- Misuse of data</li> <li>- Language error</li> <li>- Logic error</li> <li>- Distorted definition, theorem</li> <li>- Incomplete solution</li> <li>- Technical error</li> <li>- Lack of knowledge</li> </ul>	<ul style="list-style-type: none"> <li>- Procedural</li> <li>- Conceptual</li> </ul>	<ul style="list-style-type: none"> <li>- Mathematical</li> <li>- Didactical</li> </ul>

Table 1: Error Analysis Models

As can be seen in Table 1, many researchers have made different classifications by considering student errors from different perspectives. However, it is seen that there is no detailed information about student errors in the categorisation. In this study, the aim is to create a comprehensive framework by focusing on the students' errors and evaluating the possible errors made by the students in learning mathematics.

### ***Theoretical explanations of students' errors in mathematics***

Theoretical explanations for students' errors have been described mainly from a



constructivist perspective. Before constructivism, errors were seen negatively as digressions, a result of confusion, and as undesired events that had to be avoided at all times (Gagatsis & Kyriakides, 2000). From the constructivist perspective, errors emphasise the centrality of students' conceptual structures and how these structures are used in learning new mathematical knowledge. While students encounter new situations, they use their prior knowledge or experiences to make sense of the new situations. The fundamental cognitive argument is that when working with previously acquired knowledge to understand new situations, students' prior knowledge becomes inadequate for explaining new phenomena and solving new problems, and consequently, errors occur (Smith, Disessa and Roschelle, 1993).

### **Methodology**

In this study, document analysis was adopted, which is a qualitative research method, and has been used for the systematic examination of studies related to student error analysis models developed within mathematics education research. As the data collection tools, written and electronic documents such as books, articles and journals in the literature were evaluated as realistic and holistic.

### **Data Analysis and Discussion**

For the purpose of this study, previous studies conducted within mathematics education research were evaluated. Within these evaluations, the students' errors were identified, and the types of errors were determined. Detected types of errors were classified based on the Newman error analysis model. Unlike Newman's model, the new adapted model developed in this study, provides more detailed information about student errors. Decoding errors can occur because students are unable to read the terms, units, visuals or vocabulary in the question. Understanding errors can be characterised by a lack of understanding of the context of the problem. Mathematisation errors are observed when

students are unable to select appropriate strategies, unable to use proper approaches or strategies or make mistakes in using what is known about the question. Errors involving processing skills occur when the student can choose the correct operation with the rules, procedures, or the appropriate algorithm in solving the problem but make errors in the process. Encoding errors occur when the students finish solving the problem but misinterpret how they solved it or are unable to solve it using different methods than what is requested from the question. The second step of the study is to interpret the errors made by the students.

Error Analysis Model Steps	Key Questions
<b>Decoding</b>	<ul style="list-style-type: none"> <li>•Does the student read the question correctly?</li> <li>•Does the student read the units and symbols correctly?</li> </ul>
<b>Understanding</b>	<ul style="list-style-type: none"> <li>•Does the student understand the context of the question?</li> <li>•Does the student understand what information is given and what is requested from them?</li> <li>•Does the student express the question mathematically?</li> </ul>
<b>Mathematization</b>	<ul style="list-style-type: none"> <li>•Does the student choose the appropriate method and procedure to solve the question?</li> <li>•Does the student develop a mathematical interpretation of the question?</li> <li>•Does the student choose a suitable method or algorithm to solve the question?</li> </ul>
<b>Processing Skills</b>	<ul style="list-style-type: none"> <li>•Does the student apply the procedure correctly to solve the question?</li> <li>•Does the student make mistakes in the implementation of mathematical operations?</li> </ul>
<b>Encoding</b>	<ul style="list-style-type: none"> <li>•Does the student interpret and confirm the mathematical solution correctly?</li> <li>•Does the student express the process and process correctly?</li> </ul>

Table 2: Error Analysis Model Steps

This five-stage framework is created to get more and deeper information from students' solutions (Table 2). Thus, when the students' errors are examined, this framework can be used to reveal what the error is and which stage of the framework it is related to. The last step of the study consists of the students' probable errors encountered in learning mathematics.

<b>Decoding Errors</b>	Difficulty in language fluency when reading the question
	Inability to read the symbols in the question
	Inability to read the units in the question
	Misreading the visual elements given in the context (Table, Diagram, Chart, figure, etc.)
	Does not read over the question (in detail)

Understanding Errors	Make mistakes in understanding mathematical statements in the question
	Make mistakes in understanding symbols in the question
	Make mistakes in understanding units in the question
	Make mistakes in understanding visual elements given in the context (Table, Diagram, Chart, figure, etc.)
	Inability to distinguish between relevant and irrelevant information and inability to identify what is known and asked of the question
Mathematization Errors	Inability to correctly transform the problem into an appropriate mathematical statement
	Inability to correctly transform the visual elements into an appropriate mathematical statement
	Inability to correctly transform the question into visual elements
	Inability to correctly transform the given formula into the question
	Inability to correctly transform the given mathematical statement into the question
	Inability to determine appropriate strategies or procedures to be used in the question
Processing Errors	Ignoring some of the data during the question-solving process in the question
	Inability to perform the sequence of arithmetic operations correctly to obtain the correct answer during the solving the question
	Makes a calculation mistake in the question
	Inability to perform the whole arithmetic operations correctly to obtain the correct answer during the solving process
	Inability to convert units in solving the question
Encoding Errors	Inability to write the conclusion of the answer to the question
	Inability to validate or interpret the mathematical solution for the original problem
	Inability to interpret the mathematical solution for the question in terms of the real context
	Inability to solve the question by using another strategy

Table 3: The students` errors

In this step, when examining the solutions of the students, it enables to see the students` errors and the frequency of these errors easily. Thus, students can have in-depth information about their errors.

## Conclusion

Error analysis, although a complicated process, is a necessity because it can be used to create new and effective learning opportunities for students if used appropriately in mathematics instruction. The errors analysis will also allow teachers to understand how their students learn mathematics. The absence of a framework of knowledge to inform error analysis could render mathematics programs for both teachers and students less

effective. This study has shown that it is possible to use this error analysis model to determine the students' errors when learning mathematics. The results can be used actively to improve current teaching approaches or develop new teaching approaches which draw attention to students' errors.

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## Oral presentation Abstracts

### **Refika ARABACI: KS3 pupils' perceptions and understanding of cultural, national, and global identities and their relationships with citizenship education**

Keywords: Citizenship education, KS3 students, England, identities, belongingness

*This research aims to explore how Key Stage 3 (KS3) pupils perceive and understand their cultural, national and global identities and what are their relationships to citizenship education (CE) in the English secondary school system. Furthermore, the research will try to find out how these identities inform their perception of citizenship. The conceptual framework informing the use of cultural, national and global identities and their relationship with citizenship will be discussed. The reviewed literature implicates that identities are vital for CE. Identities play a crucial role in the feeling of belonging which has a greater effect on participation in the communities at all levels, from local to global. Thus, this research seeks to answer the following research questions:*

*(1) How do secondary school students perceive and understand cultural, national and global identities? (Are there any distinctions between their cultural and national identities? What is the relationship between these identities and feeling of belonging?) (2) What is the role of schooling in promoting these identities? (3) What are the implications for citizenship education? These research questions aim to identify how these identities are being perceived by secondary school age pupils and how they build their understanding of citizenship. To look into the above-mentioned research questions, qualitative research methods will be applied. The interview data will be gathered from in-depth, semi-structured interviews with KS3 students and teachers at three different types of secondary schools within the same area: Academy, Community School, and Grammar school. Overall, this study will contribute to CE in theory and practice. So that, suggestions could be made with regards to CE purposes considering KS3 students' identities and the role of schooling.*

### **Naseem Butt: Secondary Science Teachers as Curriculum Developers: a case study of three schools in London**

Keywords: Science teachers, curriculum development, teacher agency

*England is one of several countries to have implemented a revised national curriculum in recent years to highlight 21st century educational priorities. Teachers in maintained schools have been mandated to follow the curriculum guidelines since 2015 for key stage 3. The purpose of this study is to use an empirical approach to investigate how English secondary science teachers are experiencing their work of curriculum development, including daily lesson design and more broadly, curriculum mapping within the context of mandated change. In the wake of new forms of curricular policy in many parts of the world, teachers are increasingly required to act as agents of change. And yet, teacher agency is under-theorised and often misconstrued in the educational change literature, wherein agency and change are seen as synonymous and positive. This study addresses the issue of teacher agency in the context of an empirical study of curriculum development in schooling. Drawing upon the existing literature, I outline an ecological view of agency. These insights frame the analysis of a set of empirical data, derived from a research project about curriculum development in three maintained schools in London, each operating in a different context. I argue that the extent to which science teachers are able to achieve agency varies from context to context based upon certain environmental conditions of possibility and constraint. Moreover, an important factor in this lies in the beliefs, values and attributes that science teachers mobilise in relation to particular situations.*

### **Hsiao-Ting Chang: The Impact of Photovoice on the Self-efficacy of College Students Presenting with Autism**

Keywords: Autism, Visual Methods, College students with Autism, Photovoice

*The research aims to explore the effectiveness of approaching Photovoice method to enhance autistic college students' self-efficacy. Low self-esteem is frequently seen on young adults with autism, and it has been proven that there is a link between the social difficulties presenting on autistic groups and detrimental or delayed development of self-awareness on autistic individuals. Previous studies had revealed the fact that visual teaching methods are useful to teach social behaviours and develop positive self-efficacy for autistic students. This research is a mix-method design. Perceived social self-efficacy scale (PSSE) will be utilised as the before and afterward assessment tool for the changes of social confidence of participants during the progress of photovoice (photo-sharing) group discussions. In order to manifest the goals of political commitment and social reform, the researcher may invite the leaders of school / community to take apart in the final photo exhibition.*

### **Sichen Chen: An Investigation into how Chinese undergraduates' learning experiences influence their attitudes, values, and beliefs about English learning**

Keywords: Learning Experiences, English Language learning

*Since the growing expectation and concern about the quality of English language education in China, especially in Chinese Higher Education (CHE). To improve and optimise English Language Education in CHE, a large number of studies have been conducted to explore Chinese students' attitudes, values, and beliefs about English as a Foreign Language (EFL) learning how to determine the optimal conditions for them to learn English. (e.g. Peng, 2011; Chew, 2013; Zhong, 2015). Among these studies, individual differences, classroom affordances, and government policies are found to be the factors that influence Chinese EFL students' attitudes, values, and beliefs. However, learning experiences, including formal and informal learning experiences, which have been identified as a main determinant influence students' attitudes, values, and beliefs in other countries (e.g., Kolb, 2014; 2009; Yang and Kim, 2011) but are surprisingly fewer in the Chinese context. Therefore, this project seeks to fill the gap, attempting to get an 'inside picture' (Jin and Cortazzi, 2011, p.53) of Chinese university students studying English by analysing how their learning experiences influence students' beliefs, values, and attitudes toward EFL learning. To explore how Chinese undergraduates' learning experiences influence their attitudes, values, and beliefs about EFL learning to develop recommendations to support Chinese educators, teachers, and parents understand what other factors might influence students' achievement in English study. In the case of this study, it emphasises the shifting ground of the relationship between students' experiences and their attitudes, values, and beliefs as the inquiry phenomenon in field context to name a new phenomenon in a research context. This phenomenological research will be conducted through a narrative research method. The semi-structured individual interview is designed to collect data, and narrative inductive analysis method will be applied afterwards.*

### **Annie Chohan: Focused training for teachers in FE and HE**

Keywords: Training, motivation, creativity, passion, support

*It is my passion for Accounting and interest in young people that have sustained me both as a teacher and recently as an Accounting Assessor for Apprenticeship programs. I feel that my teaching has become more exam focused and I lack creativity, this was also a concern of many other teachers, I met recently at a seminar. We are compelled to adopt an 'exam factory' approach, which has reduced the teaching of the subject to the most necessary elements. I feel I need to reconnect to my subject to rekindle passion and creativity. I am still thinking of ways how this could be done. I wonder if it would have been beneficial if the content of the Teacher Training course, I did at the university had included elements of how to teach*

*my own subject. Each academic year is harder than the last and learner motivation increasingly reducing. Recently was a new addition to the Accounting team, a member who completed her Diploma in Education DET, she tells me that although the program has equipped her with all class management tools and how to be a reflective practitioner, she finds difficult making Accounting an interesting subject for her teenage class. After years of experience in teaching Accounting courses I find myself in the same boat as her. This investigation is to answer a burning question I had for a long time, how teachers could be supported to teach their subject. To carry out this research I will be conducting surveys and interviews. Participants would be from across various disciplines within the FE sector. Through this research I intend to find out how best practice can be shared amongst subject experts. The aim of the investigation is to find some answers or at least some relevant questions in the right direction.*

#### **Shane De Fonseca: Widening participation in Executive Education**

**Keywords:** executive education, equal opportunities, glass ceiling, widening participation  
*Widening participation is an extensively discussed and implemented area within school, higher, further and vocational education sectors. It is intended to break the glass ceiling which prevents certain sectors of society from accessing various stages in education. These sectors may include those who belong to BAME backgrounds, those without formal educational qualifications, those who are not native English language speakers and mature students. However, it is evident that the same issue is not discussed in such depth by either educators or policymakers when it comes to executive education. Usually accessed by industry practitioners who are either at C level or upper-intermediate level within their profession, the primary objective of executive education is to enable such working professionals to gain vital core competencies that equip them with specific skills (eg: data science, emerging technologies, design thinking). Such skills enable them to move to more lucrative jobs or to access higher positions within their current employment. Executive education courses are usually extensive (and expensive) non-assessed masterclasses or short courses with a duration of between 1-5 days. The application process can be as simple as making a payment or as complex as filling out a University application where they may be requested to provide evidence of proof of English language competency and evidence of having a degree. By means of interviews and desk research, this investigation expects to evaluate the admissions processes of school A's executive education department, focussing on the different mechanisms that exist to encourage disadvantaged sectors to gain access to executive education, enabling them to climb to the top of their respective careers – breaking the glass ceiling.*

#### **Joe Hanley: An exploratory study examining the perceptions of social work students of those qualifying through alternative pathways**

**Keywords:** Social Work, Higher Education, Fast Track, Perceptions, Exploratory  
*The social work qualifying education landscape has always been in a state of flux; however, in recent years these changes have accelerated, creating a confusing landscape that experienced educators and professionals struggle to navigate, not to mention students. Nowhere is this rapid change more notable than in the propagation of new entry routes into the profession, where students can now qualify through a range of options, including fast track routes like Step up to Social Work, Think Ahead and Frontline. These new programmes receive substantial government and political support, in terms of both resources and endorsements, at a time when support for traditional programmes is weaning. Furthermore, these programmes tend to use rhetoric to implies that the students who choose their particular route are superior to those in traditional programmes. This exploratory study proposes to gain an understanding of the impact that these changes have had on how social work students perceive themselves. A brief and anonymous questionnaire will be sent to multiple university and fast track programmes to distribute to their students, with questions related to their experiences and perception of their own route, as well as their perceptions and experiences of other routes into the profession. Participants who complete the*

questionnaire will be given the option to provide their email address to be contacted to be part of a focus group; however, this will be collected separate from the questionnaire to ensure anonymity is maintained in the survey stage of the study.

#### **Tooran Issapour: Iranian Women and the English Language**

Keywords: Iranian women, English acculturation, immigrant

*Being an immigrant from Iran myself, being a woman, and having been through the experience of dealing with making a new life here and integrating with British culture, has made me think about the importance of language in this process, for immigrants generally, but especially for Iranians, especially for Iranian women of my generation, and especially the English language. I thought that it would be a very rich and interesting subject for my PhD thesis, and so it has proved to be. So far, I have written and read about the background of the women who arrived in Britain after the 1979 Revolution, the reasons for and effects of that revolution, and the reasons for them having to leave Iran and spread out to many parts of the world. I have written and read about the process of acculturation, how it can be measured in a qualitative way, the connection between language and culture, the experiences of Iranian women immigrants in various parts of the world, and about how Iranian feminism has grown in the diaspora and even within Iran itself. I have shown that all of this is relevant to the life stories of the women I plan to interview and about how important learning English has been to them. My next job is to ask for help from Iranian women of my generation who live in the UK, in the form of their participation in my study by being interviewed by me about their lives.*

#### **Maninder Jalaf: How can engagement with artefacts nurture creativity in young children in early years settings?**

Keywords: Early years, creativity, play, engagement, nurture and role of teacher

*Objects and materials have been part of the educational philosophy of numerous thinkers and considered a fundamental aspect in active and proactive teaching, where the construction of knowledge becomes an element that is in turn, part of the more general development of knowledge; one dimension being creativity and creative thinking. By investigating the specificity of each object presented, a range of possible explorations can be discovered, which refer to materials, colours, uses, thoughts, stories, people and relationships. They are pieces of the world, which enter the classroom and offer new stimuli to children. The term creativity is indeed problematic. Perceptions of creativity vary according to individual experiences and personal interpretation of what being creative means and what it involves. The significance of exploration, curiosity and experimenting with ideas in developing and sustaining creative thinking for children, are all situational in the contextual setting in which the term is deployed. Equally contested is the assessment of measuring creativity in educational settings. This study will be situated in a primary school, reception class, working with five-year-old children. They will be presented with range of abstract objects, from which they will collaboratively form a story or a series of stories. They will then be offered a range of medium to depict their stories. The children will then be offered the opportunity to talk about and explain their paintings, writing or drawings, to gauge a richer understanding of their use of the objects they used. Qualitative research methods of observation, semi-structured interviews and storytelling through pictures will be employed to explore their social interactions, sharing of ideas and creativity through the use of objects. In seeking to make sense of the findings in a contextual situation, the interpretative paradigm will be used in trying to analyse and interpret the data collected.*

#### **Balbir Kaur: How do teachers 'making sense' of subject and pedagogical practices when planning a STEM based curriculum in a primary school?**

Keywords: STEM; Curriculum design; Ofsted; primary education



*Over the past two decades, governments, education departments and employers have invested significant sums of money and dedicated initiatives to raise the profile of Science, Technology, Engineering and Mathematics (STEM) education in the UK (Hoyle, Reiss and Tough, 2011). However, as is the case with other countries, England faces the challenge of declined interest in the uptake of STEM subjects at secondary and Higher Education. The 'Report of the STEM Review' (DELNI, 2011) identifies this decline starting in primary education which continues through to secondary and post-secondary education, the impact of which is reduced enrolment in subjects particular to STEM. Reasons provided include children developing negative attitudes and disengagement with the study of science and mathematics and a lack of teacher knowledge, skills and confidence to plan and deliver STEM-related programs. This proposed study is an exploration of the journey undertaken by a first school in developing a school-based curriculum with a focus on intent and implementation of STEM education across the school. It explores the complexities of amalgamating different subject disciplines, as present in STEM, and considers how best to successfully integrating these into a school led curriculum programme. The study offers reflective accounts from the researcher, a year 4 class teacher, the head teacher and a representative from a commercial company on the process of curriculum design, subject and pedagogical knowledge required by teaching and evaluating a pre-planned unit of STEM. The study draws upon key principles of curriculum design as suggested by Ofsted and considers how best to cultivate STEM literacies across the primary curriculum.*

#### **Asma Lebbakhar: Intercultural education in UK secondary schools**

Keywords: intercultural education diversity ethnicity immigration

*The UK has received immigrants for centuries; however, the 21st century Britain is more diverse than at any point in its history. This brought the issue of ethnic and cultural diversity to the political scene and discussions about diversity were taking place. The requirement for intercultural awareness in education has been long raised by researchers and the intercultural term was mentioned more than a decade ago. Education influences considerably the development and the outline of a society; therefore, the school has a crucial role in supporting our multicultural society and contributes a great deal in the development of students' intercultural skills, attitudes, values and knowledge. Intercultural education can be taught within the curriculum: the scheme of learning of a particular subject but it must not be limited to it. It has to be implemented in a learning environment as a whole: teaching and learning, students' interaction, school life, extracurricular program and decision-making. The objective of intercultural education is to learn and experience the language, histories and cultures of minority groups present in the school. The aim of this study is to undertake an inquiry to investigate the provision of intercultural education in secondary schools in England. This inquiry will explore how professionals understand intercultural education. Then, it will look at teachers' awareness of the social context they work in and examine the key components of intercultural education. Finally, it will explore how intercultural education in secondary schools promotes the understanding of different people and cultures including its teaching.*

#### **Sophia (Yujuan) Luo: An investigation of university students' perceptions and acceptance of mobile technology use in learning English as a second language in China**

Keywords: Mobile learning, students' perception and acceptance

*Due to the tremendous development of mobile technologies, mobile-assisted language learning has increasingly become an emergent research area. English is taught as a key subject in the national curriculum from primary education until the second year of university in China. The proficiency of English has great value at an individual and a societal level. Moving beyond the 'mobile age' and 'digital native' rhetoric, the purpose of this present study is to investigate university students' attitudes and perceptions toward mobile technology use in and toward second language learning in higher education. Moreover, the study also aims to investigate if cultural factors affect these attitudes. The study is conducted in a Chinese comprehensive university in China, using a quantitative research design. To access students'*

*perceptions of mobile technology use, I have employed Venkatesh, Morris, Davis and Davis's Unified Theory of Acceptance and Use of Technology and Hofstede's cultural dimensions to investigate the contextually mediated perceptions and acceptance of language learning in the mobile age. The findings illustrate the general trend of undergraduates' perceptions of mobile-assisted English language learning in China, as well as specific attributes that may affect their contextually mediated perceptions from cultural perspectives. This pilot study concludes by suggesting ways or approaches maximise the learning potential of mobile technologies for language learning in China.*

**Pauline Nevin: The impact of creating time for professional dialogue (through coaching) after the NQT year, on teacher agency, confidence and well-being**

Keywords: coaching, teacher agency, professional dialogue

*All teachers in England have an NQT year, supported by their school and mentor. This support usually takes the form of weekly mentor meetings to discuss targets linked to teaching standards and well-being. Lesson observations and monitoring during this period are designed to be formative, an opportunity to unpick pedagogy and improve knowledge, skills and understanding for both teachers and pupils. Since the dismantling of LEAs, Teaching School Alliances and Multi Academy Trusts are also producing extensive programs to support NQTs. After the NQT year, mentor meetings and the formative element of monitoring support are removed and development generally takes the form of whole school CPDL, requested external courses and summative monitoring. When do teachers have the opportunity to discuss, unpick, investigate and try out particular elements of their practice which they would like to take further; or have the opportunity for two-way feedback? After the NQT year, development can be top-down, under the guise of self-directed; further negatively impacting teacher agency. Research by the NCSL has demonstrated that teacher coaching in schools, where used effectively, works to maximum effect (Lofthouse, R., Leat, D., Towler, C. 2010). Flip the System (2017) calls for teachers to be at the centre of their own development to flip accountability measures to be teacher led development. Hattie and Clark (2019), state that coaching is imperative to supporting visible learning in the classroom. My research will build on previous research by investigating self-directed improvement via coaching on teacher agency, confidence and well-being.*

*Aim: To investigate the impact of creating time for professional dialogue on teachers, post NQT year, in a non-directive manner. To investigate if this has a positive impact on teacher agency, confidence and well-being. Methodology: Evaluative research, Case Study. Data collection tools: Interviews and questionnaires.*

**Colin Pereira: Does online social collaborative learning enhance the student experience in programmes delivered through transnational education partnerships**

Keywords: Social and Collaborative Learning, Student Experience, Online, Transnational Education

*The days of limiting learning by having the presence of a physical instructor and a learner is history. The internet has changed that significantly, more so with the rapid growth of the mobile revolution Today, we live in an era where we want learning to be anytime anywhere and on any device. Whilst there has been much sing song about how the potential of social and collaborative learning enhances and contributes to the learning experience, there has been little empirical evidence on the impact of how social and collaborative learning enhances the student's learning journey. Whilst we believe that we learn best when we learn from each other, the purpose of this study is to see the effectiveness of social and collaborative learning within and outside a learning management system The purpose of this qualitative study was to explore the social and collaborative communication perspectives and experiences of postgraduate students in an online programme. Primary data involve qualitative research via the use of face to face interviews, focus groups of various stakeholders. Secondary data collected involve analysing actual online and social collaborative experiences of learners via actual postings and interaction from LMS used to facilitate Online learning. The results of this study will provide empirical data on the effectiveness of social and collaborative learning for online programmes and its*

implications on how we should design programmes to enhance the students learning experience through the usage of social and collaborative learning. By understanding student preferences and experiences, this study will contribute to a knowledge base for effective planning and implementation of successful online learning.

**Ibrahim Sayid: The perception and experience of the Restorative Centre (RC or internal exclusion unit) on student's behaviour**

Keywords: Restorative Centre (RC), Teaching and Learning Responsibilities (TLR), Personalised Contextualised Study (PCS)

*Disruptive behaviour in schools is not a new problem, but it is a multifaceted problem. The issue has been in the public domain for many years now. The insurmountable question schools, researchers and government reviews try to address is; do sanctions like internal exclusions change student's behaviour? Taylor's Report (1977) concluded that "exclusion provides a breathing space to allow schools to function while the pupil is transformed" (pg. 187) and a recent report by Edward Timpson(2019) recommends that exclusion from schools should not mean exclusions from education his report cites two examples of effective practice in managing internal exclusions, the use of a system of choice, chance and consequence and the use of role-play to modify students' behaviour .The PCS examines the experience and perception of the RC on student's behaviour and most importantly what could be done to improve students' experience in the Restorative Centre. The type of discipline deployed by schools is different and this has led to many researchers questioning their use and effectiveness in harnessing good behaviour and decreasing delinquency in schools. Schools are meant to be places where students are nurtured and taught how to behave but unfortunately they can also be a dark and isolated place for some. Some Schools according to Docking (1980) see disruptive and challenging pupils as hindering and preventing progress of other students and making teaching and learning difficult. As a result, schools have established internal exclusion units like the RC where students are isolated from main stream teaching. The data was collected from interviews with 5 students, the RC manager, the Assistant Head Teacher in charge of behaviour and a teacher with no TLR. The other source of data was questionnaires given to 5 students and 3 members of staff.*

**Mehmet Akif Senturk: Does Recognition Make a Difference?**

Keywords: Recognition, Multiculturalism, Diversity, Social Cohesion, Neighbours

*In the past, with invading, conquering, trading, and more recently studying, working and travelling cause mass human migration. Technologic development also made the world like a small village. Countries are becoming increasingly pluralistic and multicultural/multi-ethnic/multi-religious and otherwise diverse societies. Each time we describe each other with a different nickname. Such as Muslim neighbour, Vegan Friend, Gay College, Black bus driver, Pakistani taxi driver, vegetarian brother, atheist sister, and so on. According to the Office for National Statistic (2017), Immigration to the UK has doubled from 1992 to 2017. This increase in diversity had been a hot topic in North America, Europe and Australasia (Bloemraad and Wright, 2014). Although some studies show that immigration and ethnic diversity decreased social unity, trust and linked with lower friendship (Putnam, 2007), it cannot be said that increasing diversity lead social conflict because Canada and New Zealand can be given as a positive example of decrease of discrimination and increase of positive attitude towards other ethnic groups (Berry and Ward, 2016). So, what they are doing differently than other countries who failed to do so. They are recognising/identifying people who come from other country or other differences as citizens rather than an immigrant or others. Ward et al., (2018) claimed that German, France and the United Kingdom had failed to threat multiculturalism, on the other hand, Canada and Mauritius where multiculturalism deemed as a political success. Therefore, it can be said that if we recognise people around us, such as neighbours, as neighbours*

rather than Muslim/Black/Indian/White/Vegan neighbours, diverse societies may not erode Social cohesion and discrimination of minorities may decrease.

#### **M. ZIKRA TANRIVERDI GOKCELI: How do teachers see their responsibilities in relation to moral education?**

Keywords: Moral education, teaching values and virtues, teachers' views

*Moral education has been an official requirement at English schools since the 1988 Education Act. Starting from Spiritual, Moral, Social and Cultural education (SMSC) at 1988, it is followed by Personal, social and health education (PSHE) and citizenship education after the 2000s, Fundamental British Values (FBV) in 2014, and character education after 2015. Also, Department for Education (DfE) declared the Teachers' Standards in 2011 which sets the expectations of the school teachers including their responsibility to develop "the positive attitudes, values and behaviours which are expected of pupils". Furthermore, there are some expectations of "personal and professional conduct" that includes teaching and showing pupils dignity; mutual respect for and tolerance of the rights, faiths and beliefs of others; well-being; and not undermining the FBV. However, not all subject areas are suitable for all the moral education requirements stated above though every teacher apart from their subject area has the responsibility to contribute pupils' moral development. Although there are some studies showing the role of Religious education (RE) and citizenship education (CE) for the moral development of pupils, there is a lack of research on the role of other subject areas. Therefore, this research aims to explore the teachers' views about their responsibility in terms of moral education (including teaching values and virtues) from different subject areas. To investigate teachers' perspectives on the issue, first, an online survey will be conducted to gather a general understanding of what subject areas can contribute to what learning areas of moral education. Afterwards, to gain more in-depth knowledge about teachers' practices and experiences, semi-structured interviews will be applied with some of the survey participants from a variety of subject areas.*

#### **Ozdemir Tiflis: Developing a new model for students' error analysis**

Keywords: Students' error; mathematics education; Newman error analysis model

*Difficulty in mathematics can be defined as the difficulties experienced by students in concepts, operations, symbols or formulas during their education. It is possible to talk about the different reasons why students have difficulty while learning mathematics. For example, when looking at student-based causes; inability to think abstractly, underdevelopment of the prerequisite mathematical skills, negative attitude towards mathematics, wrong theoretical knowledge or misconceptions are among the causes of difficulties in mathematics. In order to overcome the difficulties in mathematics and to provide effective mathematics education, it is necessary to determine the students' errors and the causes of these errors. Exploring the literature in mathematics education research shows that various models have been developed to support the analysis of students' errors. One of the major methods is the classification by Radatz using the cognitive model and taking into account the characteristics of mathematics. Another popular approach is the Newman Error Analysis Model, based on the mathematical problem-solving stages. They have been developed to describe students' errors but cannot make a detailed analysis of why students do not perform well in some steps of the problem-solving process. In this study, it is aimed to develop a new error analysis model based on data obtained by using the literature review, observations, interviews, diagnostic test results and other error analysis models. When this model can provide detail about the difficulties that students encounter when learning mathematics, it may be possible to design effective measures to help students and teachers. Moreover, developing an understanding about students' errors and investigating the causes of these errors can provide important benefits in developing support for mathematics teaching. Therefore, it is suggested that the results of this model can be used in developing teaching approaches to eliminate the difficulties experienced by the students in learning mathematics.*

## **Nehal Vanjani: Apprenticeships are not for everyone...or are they?**

Keywords: Apprenticeships, employers, workforce, skills, inclusion

*Around the world, apprenticeships have long been recognised as a crucial way to develop the skills wanted by employers. Apprenticeships are currently highly topical subject in the UK and remain central to the UK Government's vision to improve skills, build sustainable growth and stronger communities, and to enable individuals to succeed and progress in their careers. Apprenticeships have become increasingly more popular and successful in the last few years. For young people, new to the workforce, there are a number of positive outcomes such as work experience, improved career prospects and the avoidance of student debt, which in turn is good news for employers looking to attract and recruit fresh talent. This study is aimed to provide information on the factors that influence the decision of young people to undertake and complete an apprenticeship. Specifically, it will cover individuals' motivations for undertaking apprenticeship and their experience of the training they receive. It will also explore factors affecting training completion such as their satisfaction with the training, their perception of current level of apprenticeship pay and critically evaluates the impact it has on young people's future careers and inclusion. A qualitative approach will be used to identify motivations for choosing apprenticeship training and investigating whether apprentices perceive apprenticeships as of value to both employers and employees. A purposive sample of the population will be identified to participate in the research. To gain more in-depth knowledge, data will be collected from the identified sample using face-to-face interviews and/or questionnaire survey. The interviews will be semi-structured with pre-set questions and objectives. A thematic analysis will be used to analyse the data provided by the participants, identifying common themes that appears in the data.*

## **Jørgen van Waes: Citizenship, a school subject in daily life**

Keywords: Citizenship, Triple Qualification, The Netherlands, VET

*Until 1996 VET in The Netherlands was shaped by the future employers of its graduates and training children for a vocational career has always been its primary purpose. When Secondary Vocational Education became part of the public education structure, two more purposes were introduced for vocational colleges: lifelong learning and citizenship education. The early system focused on what Biesta terms qualification and socialisation, the present system provides room for the third of Biesta's domains, subjectification. But do students experience the freedom to develop into citizens forming the public domain? And how much room is actually provided in private-public partnerships and hybrid learning environments that form an increasing part of Dutch vocational education? After all, accepting Kant's claim that 'governments prefer immature subjects to independent citizens.' (Neiman, 2016), and seeing market rationality (Marquand, 2004) prevail in education the underlying purpose of citizenship education in VET colleges may well differ from what 'Paedagogik' and philosophy might see as its purpose. Arendt distinguishes between children and citizens, allowing education to introduce children into the world. Her divide prevents both adults to be educated and children to be treated as adults. Following Arendt's reasoning, citizenship education can be seen as socialisation. Meirieu on the other hand argues that there is a gradual progress into adulthood-citizenship. And it is the task of education to let pupils explore the unknown. (Meirieu, 2016) In this line of reasoning, citizenship education may lead to subjectification. The empirical dimension of my Professional Contextualised Study is the first step in a theoretical and political study. In it, I aim to explore how Dutch students in Senior Secondary Vocational Education appreciate citizenship education as part of their vocational education, and if they link their everyday activities, as emerging citizens, to the school subject they were taught.*

## Poster Presentation Abstracts

### **Mohamad Adning : The potential of mobile phones to improve teacher competence through teacher working groups for professional teachers In Indonesia**

Keywords : Mobile phone, teacher working group

*The purpose of this study is to propose a conceptual framework for continued professional development (CPD) using mobile phones in teacher working groups in Indonesia, especially in areas of pedagogy and professional competencies. To achieve these kinds of competencies, Indonesian teachers are recommended to improve their knowledge and skills by joining teacher working groups or “Kelompok Kerja Guru” (KKG). These are semi-formal institutions for professional educational learning that have legal status through government policy. A KKG provides workshops, training and discussions that are held each month. To enable and foster these activities across diverse communities, across urban, suburban and rural settings, KKGs use mobile phone applications (for example; WhatsApp, BBM, Line, Facebook, Twitter) to communicate and share ideas between group members. Certinkaya (2017) argues that mobile phones provide many apps with different potential features to increase social interaction, interest and motivation, academic success, student-student and student-teacher interaction, support learning ‘anytime and anywhere’, provide peer support, feedback, and allow for sharing of information in education. While little research has been carried out to investigate the impact of mobile phone apps in improving professional teacher competencies, some studies have shown that there is diversity in the capability of teachers to use mobile learning applications, principally between junior teachers and senior teachers in the profession. Even while the level of mobile phone activity between junior and senior teachers is broadly similar, younger teachers are seen to have greater facility and manoeuvrability in using their mobile devices. This disparity is seen to be an important factor in the context of the KKG working groups. The methodology of this study uses a qualitative case-study approach, working closely with members (young and old) of the KKGs to explore the benefits and drawbacks of a mobile learning approach to professional development.*

### **Monia Al-Farsi: The Impact of E-Learning on Development of Students’ Skills**

Keywords: e-learning, skills , students, education, employability

*‘Learning’ is one of the most important aspects that strongly reflect the development of a society. With the presence of information technology and its development, nowadays the relationship between IT and learning has changed and is growing significantly. Therefore, the name ‘electronic-learning’ is given to the use of electronic ways to deliver better, easier and more flexible education to the students. As a researcher and an employee of one of the academic fields, I have realized that certain advantages can be highlighted by supporting and using e-learning; these advantages refer to students’ and graduates’ skills, so the aim of this study is to investigate how e-learning support and use might play a very good role in developing students’ skills to prepare them for their future employment? This study is in its early stage, and the research started with searching for and reading about topics such as e-learning skills ,education, students’ and graduates’ skills, policies and employability, and the role of education stakeholders in developing students’ work-related skills and knowledge in general and higher education institutions system in my country Oman. Most of the information I found shows how important it is to improve the skills of higher education students, because in most cases the skills of graduates do not match the expectations of employers. Thus, the higher education culture, for example in Oman, faces a huge challenge in improving the skills of its graduates, and the most important gap, as studies have explained, is the inconsistency between the higher education system and the requirements of employers. The focus of this study will be on an aspect of HEIs in Oman, I will investigate the skills of the students, and how these skills can be developed and improved using e-learning.*

**Jawaher Almutairi: The impact of introducing Lesson Study in EFL education: a case study of Saudi Arabia**

Keywords: Lesson study, research lesson, observe, collaborative learning, professional development, empowering

*In recent decades, the Kingdom of Saudi Arabia (KSA) has taken progressive steps towards increasing the women's participation not just in education but also in the country's workforce. The move has been made with an eye to preparing female graduates and professionals who can contribute to the indigenization of the country's workforce alongside male peers, and as more and more women have completed their education and entered the workforce, the impetus for greater professionalization on the part of the employees to meet the requirements of the workplace has increased. The field of teaching is no exception to this, and despite the fact that significant numbers of women are now employed in schools across KSA, literature suggests that their training is inadequate. This is a matter of concern given the close nexus between teachers' professional development and educational quality identified in research. Despite an increasing number of Saudi women entering the educational sector as teachers, personal observations as well as literature show that the training of female teachers in Saudi Arabia needs to be improved with a view to updating their professional skillset and empowering them. A participatory action research (PAR) study is proposed to inquire into whether Lesson study, with its emphasis on ongoing collaboration amongst higher education and school teachers, reflectivity and evidence-based use of the lesson as a tool for teacher development will be a more sustainable form of learning and empowerment for female Saudi teachers. A sample of female teachers at a school in KSA will be invited to participate in the PAR study, with the two-fold objective being to evaluate the efficacy of lesson study as a PD tool and to build teacher-capacity for problem-solving through PAR.*

**Sahar Alnofaie: E-Learning in the EFL Classroom: The Impact of Digital Technologies on Student-Centred Pedagogy in Saudi Arabia**

Keywords: E-learning, Student-centred, Technology, EFL, Saudi Arabia

*The proliferation of e-learning technologies, particularly within EFL education, has received a considerable amount of scholarly attention in recent years, particularly focused upon the transformative potential of e-learning strategies inside and outside of the classroom. In particular, academic research has concentrated on the implications of this broader social and cultural shift for classroom pedagogy, pointing to the ways in which digital technologies offer opportunities for greater learner autonomy and so may improve or facilitate student-centred pedagogy. However, some scholars have adopted a critical approach to the introduction of e-learning strategies in the EFL classroom, and suggested that the introduction of digital technologies without corresponding reforms to pedagogy can actually limit the effectiveness of EFL education and thereby stymie student-centred approaches. There is a need for further research in order to understand the implications of the introduction of digital technologies and e-learning strategies, particularly for classroom pedagogy. This investigation aims to explore the way in which the integration of digital technologies in the Saudi EFL classroom have impacted, if at all, on student-centred and learner-oriented pedagogies in the Kingdom of Saudi Arabia (KSA).*

**Hanan Alsidrah : The Acceptance of Blended Mobile Learning in Higher Education**

Keywords: Mobile learning, blended learning, higher education, UTAUT

*Increasing use of mobile devices leads to greater 'mobility of knowledge'. It provides an opportunity to learn at any time and any place, which make the mobile learning an important tool for blended learning. The blended mobile learning in higher education has gained attention over recent years. The research explores the acceptances of a new approach to education, using aspects of traditional education and mobile learning in the creation of a meaningful blended learning environment. Moreover, the research*

*aims to investigate the perceptions and acceptances of lecturers and students with regard to mobile blended learning at Qassim University in Saudi Arabia.*

**Shafeena Anas: Higher Education Policy 1960-2017. An analysis through the lenses of two competing ideologies in English higher education policies; social democracy and neo-liberalism**

Keywords: Higher Education Policy; ideology; policy impact, policy issues

*The study aims to provide a historical account of higher education policies since 1960 and investigate if policy changes over the decades underpin a movement from social democracy to neo-liberalism. Higher Education policies have brought about incremental rather than radical change in the HE landscape. While dominant social, economic and political needs have dictated these policies, the study seeks to establish that a clear underlying trend towards neo-liberalism underpin these policy changes. The impact of policy changes on four key areas in HE; fees and funding, research, widening participation and quality assurance are analysed along with an exploration of the key debates and issues that have arisen through policy changes. Issues such as institutional autonomy, collegiality, HE as a public good or a private good, accountability, marketization, student as a customer and managerialism in HE are reviewed through the changes in HE funding, research, widening participation and quality assurance, the study attempts to highlight that there exists a trajectory towards neo-liberalism.*

**Rich Barnard: Attitudes to science of Y6 and Y7 students (re-visited)**

Keywords: attitudes science primary secondary transition

*After both the Rose Review(2009) and Cambridge Primary Review(2010) recommended specialist teachers for upper primary students, the Department of Education(2011) made a commitment to prioritise Initial Teacher Training courses for primary science specialism. As a result, English primary teachers with science degrees rose from 3% to 8.3%, [SCORE(2010); (Royal Society of Chemistry(2015))]. Teachers are potentially the key influence on their pupils' learning. And students' major source of science education. Therefore, both primary teacher's attitudes and their 'science capital' should be explored to investigate whether these affect the attitudes of their pupils towards science. For his Masters in 2014, Barnard(2015) explored children's attitudes to science either side of the primary-secondary transition. Preliminary data analysis showed that Year 6 children taught by a subject specialist (N=114) recorded mean attitudinal scores 8-12% higher than to those taught by generalist teachers (N=55),  $p < 1\%$ . These children also chose science as their favourite subject more (+10%). These schools have now been re-visited in July 2019. Future doctoral research (2018-19) will also survey children, and their teachers, through Years 5-8. It will focus on whether the 'science capital', Archer(2015), of science specialists makes a difference to their own attitudes and affects the attitudes of children before their primary-secondary transition. This author will investigate if pupils' attitudes are linked to that of their teacher. For this, two established questionnaires will be used, from; (a) ASPIRES (for students) (b) van Aaldren-Smeets, 2012 (for teachers). This research may have implications for other subjects with up-take of post-16 students e.g. Mathematics, MFL.*

**Deborah Bell: Is Education the vehicle for social mobility that politicians claim it to be**

Keywords: Education Social Mobility Policy Makers

*Policy makers have publicly aspired to use education as a vehicle for social mobility since at least 1988. Based on the disproportionate over-representation of pupils entitled to free school meals in persistent absence data, the under-representation of lower socio-economically advantaged pupils with admissions appeals success and access to grammar schools, how is the current system really meeting those aspirations?*



### **Kellie Brown: Black child to black teacher. The educational history of black British teachers**

Keywords: Leadership, BAME, teacher recruitment

*It has been just over 70 years since the Empire Windrush arrived at Tilbury Docks in Essex and although this is not the beginning of movement from the former commonwealth countries to the UK, it does mark the increase in movement from the Caribbean, Africa and Asia. For educationalists this time also marks the beginning of the educational journey of the children who would later become teachers in the British educational system at primary, secondary and higher education. The education system had to respond to the increased racial and cultural diversity in educational institutions and understand the needs of those delivering education and those receiving it. This is an opportunity to take a closer look at how some of the national trends in education have influenced black British children who then chose to become black teachers and black leaders in education. Examples of this are low numbers of black male primary teachers and black female professors. Teacher training providers are now having to consider why it can be a challenge to recruit teachers from the underrepresented groups and how to retain teachers and for the most experienced staff to be represented in leadership posts including in universities. This study is a closer look at the experiences of one of the many ethnic groups in the UK from the beginning with a focus on the experiences of black British students to 'the end' as a teacher and the changes over the last 70 years for this group of professionals. Why are black graduates not choosing education as a profession? Why are black teachers with middle leadership experience not in headship posts and why are black British academics underrepresented in British universities?*

### **Arthur Burnham: How do Black Caribbean Boys' perceive the teaching of history in the English secondary school system.**

Keywords: Black People, Black history, History Curriculum, Black Boys

*Black People have had a presence in Britain for over five hundred years, well before the arrival of the ship Empire Windrush at Tilbury Docks in 1948, carrying Black people from the Caribbean, and their history, which is an integral part of British history, appears not to be recognised when British history is covered in schools. The English National History curriculum still appears to be very exclusive, white, Euro-centric and unrepresented of Britain diverse school population, and the material presented lacks information and does not reflect the backgrounds, lives and achievements of Black people in Britain. This research will look at the factors that has impacted on the development of the English National History curriculum for key stage 4 (GCSE1-9) from 1988 to present, and investigate with Black Caribbean Boys' in key stage 4, their perception of the teaching of History in school and consider if a case could be made for Black History to be an integral of the National History curriculum.*

### **Shelly-Anne Clarke: An evaluation of the influences contributing to the uptake of qualifications in Level 3 Business**

Keywords: Academic subjects, Vocational qualifications, BTEC Level 3

*Nelson Mandela considered it to be "...the weapon that can change the world." A sound education has always held respect and prestige in all societies for generations - but what really is considered a sound education? Historically, selected schools, ill-informed parents and business communities have also implied that qualifications held for academic GCSEs, A 'level subjects and subsequently university qualifications only, provide evidence of this; that vocational qualifications are not the preferred route to sound education-recognition and employment in high-paying jobs. This study explores and evaluate influences contributing to the uptake of vocational qualifications, with a specific focus on Level 3 (L3) BTEC Business at Key Stage 5 (KS5). It will follow a qualitative approach, collecting data for analysis and interpretation, navigating through the minds of parents and students through exploitation of focus groups, questionnaires and interviews, to identify the influences behind choosing the qualification. Existing data for the student-*

*sample, detailing academic achievements at the end of KS4, will also be obtained to identify any emergent patterns across individual subject successes. An additional sample group: school practitioners and senior management involved with curriculum devise, collation of subject groupings and overall leadership, will also be interviewed to establish their views on L3 vocational qualifications and reasons behind some decisions made. Insight into matters and influences surrounding this specific vocational provision, will help formulate recommendations that could promote the view of BTEC L3 Business as a qualification, subject to the same rigor as its counterpart and a highly credible achievement within its own right. Dissected and analysed results could also determine how to better target a range of students with differing abilities applying to the Sixth Form, as well as how to establish a framework for an effective and balanced subject groupings, to offer students entering the Sixth-Form.*

#### **Alan Edmiston: Categorising children's talk in KS 3 Science**

Keywords: Vygotsky, construction, third space, dialogue, funds of knowledge

*The Cognitive Acceleration through Science Education (CASE) approach was published as Thinking Science (Adey, Shayer & Yates, 1995) and includes a series of 30 intervention lessons to be used at the start of secondary schooling. Improvements in pupil attainment were attributed to the CASE approach in the original study (Adey & Shayer, 1990) and also more recently (Oliver & Venville, 2016). Shayer (1999) posits some assumptions for effective intervention using this approach, two of which are: 1. That the teachers are skilled in the CASE pedagogy and have experience of teaching formal reasoning in science and 2. The pupils have the opportunity to witness formal reasoning by their peers (Shayer, 1999). This small-scale qualitative study explores this assumptions in a one year science intervention CASE programme in two schools in the north of England. The goal of this ongoing study is to explore Shayer's ideas surrounding small group talk in the 'construction zone' where the witness the thoughts and ideas of their peers. Findings show that teachers' and pupils' voice surveys indicate increased levels of engagement among students who are exposed to CASE. In order to explore this in more depth, this research videoed small group talk in two schools where the children received around thirteen CASE lessons across one academic year. The preliminary categorisation of talk, and pupil interviews, seems to be highlighting that in CASE learners may be using their own ideas and experiences to support their thinking as they overcome the cognitive challenged embedded within each lesson. In Vygotskian terms the learners are accessing their funds of knowledge and as a consequence are developing science agency. The implications for the role of the teacher in this process are also emerging.*

#### **Hebatalla Elhelbawi: Arabic Language Teachers' Beliefs & Attitudes on Communicative Language Teaching in U.K**

Keywords: Arabic teachers, attitudes, communicative approach

*This study aims to investigate Arabic language teachers' beliefs and attitudes towards The Communicative Language Teaching (CLT) approach in the field of teaching Arabic as a foreign language at U.K schools, Universities and language centres to ground a theoretical foundation for a specific model of the CLT approach that is suitable for teaching Arabic language as a foreign language. There has been a dramatic increase in the need to learn Arabic due to the importance of the Arab world politically and economically (Versteegh 2006, Palmer, 2008). This increase in the number of Arabic learners, both adults and children, has played a role in shifting the motivations behind the need to learn Arabic to being more for communicative purposes, which has had an impact on all aspects of teaching and learning Arabic as a foreign language (Wahba 2006). Arabic is described as one of the relatively difficult languages based on the amount of time required to attain a certain level of proficiency (Omaggio 2006). It takes Arabic learners long time to reach a communicative competence similar to educated native speakers of Arabic, the thing that affects the goals and make it "complex" (Ryding 2006). This complexity relate to pedagogical factors more than lexical factors as Arabic language is easier than other languages that are reputed to be easy*

languages(Steven2006). Arabic teachers are still using grammar translation methods, that came out of favour since the 1960s(Deniz Gokcora and Everim Eveyik-Aydin)(British council report,2016), and some experienced Arabic teachers even think that the communicative approach has its roots in languages other than Arabic and might not necessarily be successful when applied to teaching Arabic(Deniz Gokcora and Everim Eveyik-Aydin).The purpose of this research is to answer previous calls to try and search new approaches to teaching Arabic(Aramouni2011).

**Ann Dale-Emberton: How do social workers engage with CPD to sustain and develop their practice and professional identity?**

Keywords: CPD; Statutory Requirements; Narrative Interviews

*Continuing Professional Development (CPD) for social workers, like other professions follows initial education. Since the 1960s, there has been sustained political support for continual learning and development (Beddoe, 2009) to cope with changing societies and globalisation. Definitions of CPD are used interchangeably with 'lifelong learning, learning society and learning organisation' (Halton, Powell and Scanlon, 2015). Madden and Mitchell (1993: 12) see CPD as 'the maintenance and enhancement of the knowledge, expertise and competence of professionals throughout their careers', highlighting this as a planned task, focusing 'on the needs of the professional but also employer and society'. Until 2001, CPD for social workers was voluntary, but with the establishment of the General Social Care Council (GSCC) CPD became a statutory requirement in order to maintain registration to practise. CPD is now presented as both an entitlement and a requirement. The Literature review traces the history and development of social work, the shifts and changes in social work education and training and government influences. Research indicates that there are some positive effects of CPD from the perspective of the social worker but this tends to be self-report, with little evaluation of its impact on service delivery. Overall, there is a dearth of primary research in this area (Kitzinger, 1994, Pearce, Swift and Figgett, 2015). The analysis of the work by Foucault (1977) Mills (1959) and Freire (1970) and the connection to contemporary social work provides the theoretical underpinning of this work. The research sits within the interpretive paradigm. The potential methods for the research are policy analysis, focus group discussions with practitioners at different stages of their careers (Anderson and Arsenaault, 1998) and semi-structured narrative interviews to enable us to understand social workers' experiences of CPD.*

**Catrin Evans: How children use manipulatives to solve problems in maths: A classroom-based case study**

Keywords: Mastery, problem solving, manipulatives, young children, perspectives

*Why? How do you know? Prove it. These are the fundamental questions embedded within 'teaching for mastery', an approach which helps learners develop a deep, long-term understanding of mathematical concepts. The NCETM believes that children's chances of success are enhanced if they develop deep and lasting understanding of such ideas (NCETM, 2019). Mastery can be developed through problem solving activities. Such tasks promote thinking, make the learner ask questions of their understanding and give opportunities for them to apply their maths knowledge, using trial and error to reach a justifiable conclusion. Manipulatives (concrete items) facilitate this by giving children a practical and tangible way in which to explain their answers. In summary, mastery highlights that maths is more than just numbers. The study aims to explore young children's approach to problem solving, discovering young children's perspectives on using manipulatives to solve mathematical problems. It will give an insight and provide rich data into how children interact with and use maths manipulatives in an everyday classroom setting and it is hoped that this small-scale study could then, potentially, form the basis of wider research into the effectiveness of resources in the mathematics classroom.*

### **Lewis Fogarty: Leading Pedagogy in Early Years?**

Keywords: Pedagogy Leadership Purpose Early Years

*In the UK there are concrete frameworks for all Early Years (EY) settings to follow. However, there is a vast range of theories, strategies and tools used to lead children to learn. In other words, there are many different pedagogies being utilized. Although there is no clear leader in the field and research suggests that there is no clear benefit to following just one approach. My research, which is in its early stages, will explore this complexity that is part of the multifarious EY landscape. From nursery schools and classes and across the PVI sector, standing in an EY provision can look very different in terms of staffing, funding and of course pedagogy. In order to understand what leading pedagogy in EY entails, I need to first understand why we are, where we are, both pedagogical, politically and practically, and make some sense of these complexities. With greater understanding of this, I plan to speak with a range of stakeholders across the sector, to understand the inhibitors and contributors to effective pedagogy in EY. From this research, I hope to respond to these research questions: 1. What is the range of pedagogical approaches implemented across the EY sector and what are the sources of influence?*

*2. How can leaders of pedagogy in EY settings ensure implementation meets expectations and leads children to learn? In other words, everyone in education has something in common – they want the best for the children they teach. With this in mind, every organisation sets out to provide educational opportunities, through a certain pedagogy whether it's conscious or otherwise. But, does expectation meet reality for the children? Or does it fall short due to political and practical complexities ubiquitous in EY, or other shortcomings? If so, what are leaders going to do about it?*

### **Ruth Hill: Dystopian fiction: a window for viewing educational policy and practice**

Keywords: dystopia, fiction, education

*David Carr (1995) suggested that student teachers 'may stand to gain far more from a sympathetic reading of Dickens, Orwell and Lawrence in relation to their understanding of education than they are likely to get from studying Skinner, Bruner or Bloom's taxonomy'. Peter Roberts (2012) argues that 'fictional works provide, directly or indirectly, a window for viewing the embodiment and enactment of reason and unreason in educational policy and practice'. This research will specifically focus on the genre of dystopian fiction. The research will first seek to identify the conventions of dystopian fiction before considering key dystopian works from the past century, including Orwell's 1984, Huxley's Brave New World and Bradbury's Fahrenheit 451. The dystopian fiction will act as a lens through which to facilitate searching questions of education.*

### **Najwa Iggoute: The history of teacher retention**

Keywords: retention shortage teacher recruitment

Teacher retention remains one of the most challenging issues in education.

*Despite some attempts by the government to make the profession more appealing, such as tax free bursaries for shortage subjects, golden helloes, Chartered Teacher bursary, a growing number of teachers are leaving the profession within the first five years. In London alone, four out of ten classroom teachers resign within five years of joining.*

*A survey by the National Education Union (NEU) has indicated that 81% of teachers have considered leaving the profession within the previous twelve months. With pupil numbers rising and the government's prediction for school pupil numbers to increase by 19.4% between 2017 and 2025, there is definitely a growing demand for school places. However, the deterioration in retention rates is a considerable cause for concern and could potentially lead to schools either increasing class sizes further, delivering certain subjects by non-specialists or only offering core subjects. These steps have already been implemented by some schools in the country to help alleviate the growing problem of retention. There are several factors that are known to be principal drivers, such as workload, changes in school funding, pay and rising living*

*costs. This poster presentation will explore these factors historically as well as other factors that may have contributed to this grave issue, including the social, political and economic changes.*

**Mariam Khokar: The search for meaning in maths mastery: Attempting to take a mastery approach to mathematics teaching with Service children.**

Keywords: mathematics, mastery, service children, Far East

*In 2016 then Schools Minister, Nick Gibb, announced that the Far Eastern mastery approach to mathematics was set to become the essential pedagogical approach in primary schools across England. High performances in international league tables were cited as the need and basis for implementing and adopting South Asian practices. However, to date there has not been an official policy or Department for Education directive requiring the explicit and sole use of maths mastery. Instead, over £41 million of government funding has been provided to support a maths mastery approach across 8,000 primary schools in England. As such, it is easy to see the intersection between government policy, practice guidance and school enactment of maths mastery. With this comes a variety of misrepresentations of maths mastery and greatly deviated practices, with growing emphasis on school context. This paper suggests that the unique context of a school (its culture, pupils, parents and staff etc.) invariably act as a determiner of successful outcomes. This is however in direct conflict with the uniformed and centralised composition of policy guidance and practice.*

**Julie Matton: High Expectations - Primary Mathematics Teaching**

Keywords: Teacher Expectations Primary Mathematics

*The Mathematics programmes of study: key stages 1 and 2, published in September 2013 includes the expectation that the majority of pupils will move through the programme of study at the same pace while allowing for teacher judgement regarding pupils' readiness to progress. The large amount of literature available to support teachers of primary mathematics will often stress the importance for the teacher to have high expectations of all pupils. The power of teacher expectations is emphasised with various examples cited of how children's ongoing attitudes to mathematics learning is shaped by the teaching received during their primary education. The exact nature of the high expectations is subject to interpretation with authors advocating the merits of individual pupil, group work and classroom collective activity high expectations. There is also discussion surrounding influences on teacher expectations including the perception of the ability level of the group being taught and the teachers' own learning experiences. Research into teacher expectations has found a variety of inaccuracies in expectation level, ranging from very high to underestimating potential achievement. Literature about teacher expectations proposes that having equally high expectations for all pupils is morally wrong and pedagogically unsuccessful. Additional considerations include that children are also influenced by the expectations of family members towards mathematics learning. This research will take the form of a case study exploring the influences on individual teachers' expectations of their pupils' mathematical learning and how these are portrayed to pupils. This research will also investigate expectations placed on pupils from outside the school learning environment that affects pupils' attitudes and approaches to learning mathematics. Data will be collected by observing mathematics lessons and asking teachers, pupils and parents to complete questionnaires and take part in semi-structured interviews.*

**Jackie McBride: History of Nurse education: Full Circle ?**

Keywords: Nurse, Education, History, Graduate

*The broader context of this historical enquiry is centred on the history of nurse education and the development of nursing as a profession; prior to and since the inception of the National Health Service (NHS) 1948. In reviewing the history of nurse education, it is vital to review social, economic and policy*

*drivers that have shaped the development of health services and workforce in meeting the changing needs of society, (NHS England 2019). This poster presentation will focus on the more recent changes to the provision of nurse education. Specifically, the move from school hospital-based education system to Higher Education institutes alongside the introduction of Project 2000, (United Kingdom Central Council UKCC 1986); moving education away from the work place and control from service managers, (NMC 2010). In 2010 Nursing became a graduate only qualification with professional registration, (NMC 2010). The duality of this qualification continues to present significant challenges with perceptions of the public regarding the role of the nurse and the need for this to be a graduate programme, despite being highlighted within the 2010 Frontline Care Report (PMC 2010). The comprehensive spending review, (DH 2016) removed the bursary from nursing students replacing them with loans and tuition fees, from 2017. That same year new Degree-apprenticeship routes into nursing were announced by the government, (DH 2016): reminiscent of the 1980s model of NHS employment, (Bentley 1985). The provision of a future nursing workforce, fit for purpose, responsive to the needs of the population of the 21st century continues to be debated; within higher Education, NHS and across the UK, (White 2018). Questions continue to be raised about the high standards of academic requirements for Nursing with pressure to consider how to make Nursing more accessible for students who are deemed less academic.*

#### **Khalil Muhammadi : Educational Development Plan – Pakistan & Afghanistan**

**Keywords:** Reviewing the education systems in the neighbouring states of Pakistan and Afghanistan lead to a set of different outcomes

*Reviewing the education systems in the neighbouring states of Pakistan and Afghanistan lead to a set of different outcomes that can be viewed in terms of the interventions that are being developed within. This poster assesses a number of the issues that are found in both societies in terms of facilities, quality provisions, enrolment, literacy, and gender equalities, and finds that there is a stark difference in the types and quality of education that exists in both these two countries. One potential reason can be found in the recognition that education can be used for*

*nation building. This poster has found that this particular issue is a causal factor for the seeming ongoing failure of a recognition of education as a tool for improving society, for meeting the Millennium Development Goals, and for helping to ensure gender and sex equality in both states. Yet, with the percentage of children who have access to education in both states are increasing, and when there is a real outcome in terms of the numbers of children that are both enrolling and completing their education, the actual systems in place in terms of teacher training and facilities is yet to be developed to accommodate further improvements. Overall, it would appear that education is not viewed as a social or economic benefit across these two societies and that participation in education is still a life choice that is determined not by ability but of the willingness of the 'system' to cater for both sexes for a prolonged period of time. This latter issue is now given increased relevance in Afghanistan when compared to Pakistan, but it is fair to say that much of that difference is down to the influence of Western intervention, and it is this that genuinely separates practices and outcomes.*

#### **Abdirazak Osman : NEW Vocationalism: Unification of Hand/Mind Activities**

**Keywords:** Vocationalism, Hand/Mind Divide, Plato, Africa

*The history of Vocational Education and Training (VET) is coloured with the unfortunate dichotomy of hand - mind activities by categorising all forms of knowledge as either vocational or academic. This separation originates from Plato's ideal state educational policy as he is the first educational philosopher who matched young peoples' intelligence to academic/theoretical route for future state leaders, or vocational/practical training for the state's auxiliaries (Carr, 2003). This ancient educational philosophy influenced innumerable modern educational philosophers and policy makers, most notably the tripartite education model of British 1944 Education Act. In this paper, vocational education refers to the*

*preparation of young people with knowledge and skill that make them competent in specific occupation. This knowledge can have both intrinsic and instrumental values, contrary to the critics' narrow depiction of VET as merely hand/eye training, which lacks cognitive content. African VET projects have experienced similar challenges, which is the focus of this historical paper. The new African nations of the 1960s had attempted to formulate modern education curriculum that integrates intellectual and industrial forms of knowledge necessary for economic development, while departing from the dichotomic colonial education policies (Bacchus, 1986). Although African VET commentators focus on the cost and the contribution of VET enterprise, the categorisation of education as vocational or academic, practical or theoretical is always a subterranean current operating beneath the economic discourse that had dominated global VET for the past five decades. This historical paper will revisit these debates which have become the foundation of subsequent VET scholarship, and informed the emergence of two VET conceptions; where commentators are either VET proponents (Balogh, 1962; Dumont, 1966) who essentialise the acquisition of specialised skills and trades, or opponents (Foster, 1965; Bacchus, 1979, 1986) who argue that all education is vocational.*

### **Ioannis (Yiannis) Paschalis: Finding a remedy for illusions of linearity through TPACK**

**Keywords:** Mathematics geometry educational technology Geogebra

*Students tend to apply linear thinking in order to solve geometrical problems with faster pace. Focused more on students' difficulties in discriminating proportional relationships from nonproportional ones (De Bock et al., 1998; Modestou & Gagatsis, 2007; Van Dooren, De Bock, Janssens & Verschaffel, 2008) and understanding additive and multiplicative relationships (Fernandez, Llinares, Van Dooren, De Bock & Verschaffel, 2010; Misailadou & Williams, 2003; Van Dooren, De Bock & Verschaffel, 2010). Illusions of linearity have been troubling mathematics educators the last twenty years. Even though it has been heavily researched no one found a remedy for this misconception so far.*

*The literature review showed that students mostly have trouble when working with the area and volume of reduced and enlarged shapes in such a way that "most students from grade 5 to grade 8 erroneously believe that if the sides of a figure are doubled to produce a similar figure, the area and volume also will be doubled" (National Council of Teachers of Mathematics [NCTM], 1989, pp. 114–115). Technological pedagogical content knowledge (TPACK) has emerged as a framework to describe teachers' knowledge for the integration of information and communications technology (ICT). It was extended from Shulman's (1986) effort to articulate teachers' unique professional knowledge. The present research will examine the idea that proper ICT teaching through dynamic geometry teaching will be a remedy for this phenomenon. Teachers with professional knowledge of the content, pedagogy and technology will be teaching geometry through GeoGebra. The results of the study will point out the abilities of the teacher even though many other factors may have occurred. The possible outcome of this project would be a remedy for the illusions of linearity through the use of DGS and new methods of teaching geometry in mixed abilities student groups*

### **Elenor Paul: The Bitter Truth about Religious Education**

**Keywords:** Religious Education, SACRE, reform

*Religious Education is a compulsory school subject required to be taught in English state schools from Early Years until Key Stage 4 (ages 4-16). Unlike every other curriculum subject whereby the requirements are agreed and made statute in the National Curriculum, the content of RE is agreed by the local council. The purpose of the Standard Advisory Council on Religious Education is to advise schools on issues relating to RE and collective worship. They are also responsible for producing a syllabus which stipulates the curriculum content. SACRE is made up from representatives in the following four categories: council officers, members from teaching unions, the Church of England and all other religious groups. Indicative research shows that the arrangement for RE is in need of urgent reform. The quality and provision of SACREs varies widely throughout England. SACREs do not receive adequate funding to carry out support*

or to monitor RE. They consist of unelected volunteers charged with providing provision for RE and yet members are largely unaware of the importance of their role. Additionally teachers are unclear about the legal position of RE and the role of SACRE. RE lacks clarity and cohesion which has a detrimental effect on the quality of teaching thereby reducing its effectiveness in producing religiously literate pupils. The aim of this research is to investigate the journey of RE, to celebrate its successes and to learn from its mistakes before offering a practical and visionary solution which would benefit both teachers and students. I will argue that, in line with other curriculum subjects, there should be a national entitlement to RE which is coherent and well-structured and which provides students with the knowledge and skills required to live productively and harmoniously in the 21st century.

**Mohamed Sannoh: Develop sustainable education, leakage-free innovative examination and student assessment systems for primary schools and secondary schools in Sierra Leone**

Keywords: Leakage-Free, Secondary/Primary schools

*My previous research on education in Sierra Leone which documented my MA (Education) dissertation at Plymouth Marjon University in Plymouth in 2017 investigated the existing problems facing the secondary schools in the provincial areas, especially the suburbs' of Sierra Leone and my Educational Research Visit to Africa (The Sierra Leone Chapter), awaiting publication. This research which basically covered forty-three (43) secondary schools in the North, South and Eastern provinces under the strains of research findings, jointly arrived at conclusions and made brief recommendations for the urgent changes required to bring the education system of this country into the twenty-first century. These conclusions were made to base on the recommendations on the prevailing circumstances of the facts; that since Sierra Leone gained independence from Britain in 1961, the education system has degenerated and it urgently needs a reformation for the purpose of developing and supporting future human resources and economic success. This has brought me on a research trip for a Doctor of Education at Brunel University London to: "DEVELOP SUSTAINABLE EDUCATION, LEAKAGE-FREE INNOVATIVE EXAMINATION AND STUDENT ASSESSMENT SYSTEMS FOR PRIMARY SCHOOLS AND SECONDARY SCHOOLS IN SIERRA LEONE"*

**Pauline Sithole: Comparing welfare and safeguarding policies in two educational contexts**

Keywords: Safeguarding, welfare and wellbeing in schools

*The following study will aim to look at welfare, safeguarding and well-being in two early years and primary educational contexts. The first will be in a school here in London, England and the second in Harare, Zimbabwe. Although it is expected under international conventions and local law that the provision of education and creation of policies to safeguard the welfare and well-being of children in such geographies be paramount to ensure effective teaching and learning the body of work comparing policies and practices between various types of institutions globally is often outdated or merely policy and not practice related. This often leaves practitioners in schools unable to deal with safeguarding issues as they arise resulting in an urgent need for research that continuously contributes towards assisting schools in dealing with contemporary safeguarding issues in an efficient and appropriate manner. This study will aim to add to research on safeguarding, welfare and well-being in schools relevant to our time. It will aim to do this by investigating these issues by addressing a number of key areas. The first will examine the cultural practices in both contexts and discuss current safeguarding issues that occur as a result. Secondly an investigation into the protected characteristics in both these educational contexts and the laws that govern and inform school policy will be carried out. Additionally key safeguarding concerns in both contexts will be identified by examining school policy and related documents. From there a mixed method approach will be employed to discover recurring safeguarding issues therefore leading to an evaluation of procedures and practices used to mitigate them. Finally findings will hopefully reveal best practice with regards to safeguarding in both contexts and provide schools and educational practitioners with current or near current information to assist them in their work.*



**Darryl Slack: The role of mixed reality virtual field trips in veterinary science classes to support experiential and inquiry based learning**

Keywords: Virtual-Reality, Experiential, Inquiry, EdTech, Veterinary Science

*Virtual reality has become widespread in different industries, lending itself to architectural design, film-making, bespoke training, health and safety, broadcasting and football coverage. Using this technology for adaptive curriculum design and new teaching and learning practices will allow the next generation of learners to enhance their skills for current and future roles in industry. With the success of the 'street view' application of Google Maps, allowing for places to be explored in a new way without leaving the room, educators have seen the benefit of preparing class materials using this tool to enhance a point of view or take the students on an adventure before an actual field trip. The research is to explore the effectiveness of different virtual field trips within 360-degree photospheres (via a virtual tour) and 360-degree video presentations. The supplements are to prepare and illustrate methods and practices in a farm for 'pre-trip' work and discussion to hopefully enable greater immersion and to reduce the sudden shock of being on a real farm for the first time. Another aspect of this research is to prepare students for virtual "exams" to reduce the stress and anxiety of exams. This research will also benefit animals on the locations and can prevent disease spreading and cross-contamination that can happen on real field trips to a working farm. The aim is to create suitable immersive supplements / experiences to support new approaches for experiential and inquiry based learning for Veterinary Students in Higher Education.*

**Bhavisha Soma: High-Stakes Assessment? The stories of children, parents and teachers**

Keywords: high-stakes assessment, datafication, children, stories

*English schools are currently abuzz with talk of the new Education Inspection Framework from Ofsted, published in May 2019. This government document claims to encourage a broad and balanced curriculum by way of expecting a full range of subjects to be taught with depth, allowing for both knowledge and skills progression. Schools throughout the country are working on what this progression will look like and how it will be measured through assessment. My interest lies in assessment in English primary schools and my work begins by exploring how the concept of assessment has developed over time. It tracks the journey to where I believe we are today – a system of high-stakes assessment leading to the datafication of children at all costs. Within this system, the curriculum has narrowed so much that children are simply being trained to pass tests, primarily in English and Maths, at the expense of other subjects and learning outcomes. Much of the existing literature in this area offers a bleak and cynical view of educational assessment and its impact on schools and children. A lot of the literature to date has centred on research with children in the secondary school age range and above. It is, therefore, my hope to offer a primary school perspective on this significant issue. My aim is to explore the stories of children, parents and teachers in relation to assessment in English primary schools. Children will keep a journal of their feelings to show if these change during periods of assessment. Questionnaires will then be used, followed by conferencing with children and semi-structured interviews with parents and teachers. Through this research I hope to reveal the thoughts and feelings of those who find themselves within the relentless data driven world of high-stakes assessment.*

**Lucy Spence : An investigation into whether Lego Therapy can have an effect on the social communication of boys and girls with ASD**

Keywords: Autism Lego Therapy Social Communication

*Recent studies show that boys and girls with ASD struggle with social communication. Vygotsky believed that social interaction and communication are key factors that support and enable our ability to learn. "Social interaction is a fundamental aspect of successful cognitive and intellectual growth." (Pritchard, Wollard, 2010). The 'National Autistic Society' statistics show that 1 girl for every 4 boys are known to*

have ASD. This may partly be because of the way girls present their traits. Girls with Autism are believed to be more sociable and therefore considered not to struggle with social communication. (Autism UK, 2018) From my understanding both boys and girls struggle with social communication, but in very different ways. The purpose of this study is to investigate whether 'Lego Therapy' can benefit both boys and girls. Encouraging peer interaction through weekly 'Lego Therapy' interventions the benefits of these interventions have been observed inside and outside the classroom to deem its success. Two same sex pairs from a Year 4 class took part in the intervention. The participants were a boy with suspected ASD who is SEN monitored and also has support for speech and language, a boy who is neurotypical, a girl with suspected ASD who is also SEN monitored and a girl who is neurotypical. In pairs the children were each given a role, they could be a 'builder' or an 'architect'. In each session they built something different. The intervention focused on turn taking and how well the children communicated with each other. Information about the participants was collected through questionnaires from their class teachers and teaching assistants before and after the intervention. I hope this study will encourage Educators that 'Lego Therapy' can help both girls and boys with ASD not only with social communication but also successful inclusion within the classroom.

#### **Rotimi Taiwo : Education and Cultural Nationalism: the Case of Yorubaland, 1861- 1950**

Keywords: Education, cultural nationalism, Missionaries, Liberated Africans , colonial authorities  
*Education was responsible for producing the first educated elite known as 'Liberated Africans' (Sierra Leone immigrants) in Yorubaland (Western Nigeria) in the late nineteenth century. This educated elite was responsible for establishing education in Yorubaland in which the missionary societies later supported the initiative. At some point, the 'Liberated Africans' fought the British colonials through cultural nationalism. There have been misunderstandings about the connection between education and cultural nationalism. Rousseau (1775/1996) argued that education is supposed to be the function of the state and that the state should be responsible for moulding the children. But in the context of Yorubaland, it was not the case. While Herder (1784-1791/1969) contends that education should be the means of transmitting cultural heritage from one generation to the next so that the historical consciousness of the people can be maintained. Which has been supported by Durkheim (1933) in which he argued that education is a means of transmitting culture through social integration. However, there was a gap in literature; the British colonials administer Yorubaland from two perspectives; the Crown Colony; and the Protectorate. It is against this backdrop that this dissertation is situated, and to understand the British colonial policy of administering Yorubaland, and how it structures education and cultural nationalism. It focuses on the education that was instituted by the 'Liberated Africans' and the cultural nationalism being propagated, and how the colonial policy influenced it. This dissertation aims to examine the relationship between education and cultural nationalism. This dissertation is grounded in archival research; which involves going through colonial documents. Critical discourse analysis will be used to analyse the documents. The findings from the archival documents will be able to shed more light into how British colonial policy may have structured education and cultural nationalism in Yorubaland.*

#### **Patricia Tiwalade-Soyemi: From Statements of Special Educational Needs to Education Health and Care Plans What Has Changed?**

Keywords: Statements EHCP SEN Change Law

*The debate about Special Educational Needs (SEN) provision is ongoing. Currently the number of children with Education, Health and Care Plans (EHCP) in need of special school places far outstrips the availability (Staufenberg, 2019). In a bid to clarify the process of obtaining provision the Government introduced the Children and Families Act in 2014. This law provided for greater support to vulnerable children and young people (National Archives, 2014). It presented a new system for supporting children and young people with SEN. The new law phased out Statements*

*of SEN and learning difficulty assessments (LDAs) replacing them with EHCPs. A 3-year period was given for all existing Statements to be converted to EHCP's. The idea was that EHCPs would provide support from the education, Health and social Services. In theory that sounds like a good idea. However, it was unclear how it would work in practice. The new SEN regime placed more responsibility on maintained schools to identify and meet the needs of registered children with SEN. They must use their 'best endeavours to secure special educational provision' for their pupils (National Archives, 2014; Part 3. 66). Some of the responsibility for provision shifted from the Local Authority to schools, with schools taking on more of a financial obligation. Therefore, a means of getting more funding to support the needs of SEN children is to apply for an EHCP. The Warnock Report produced in the late 1970s, laid the foundation for the production of Statements of SEN. However, that committee far underestimated the number of children who would need statements. The poster highlights the comparative similarities and differences between Statements and EHCPs. It charts the reasons behind the change, and asks the question... What has changed?*