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*Research Unit*

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## EDITORIAL

There are numerous historical and current debates about the nature of education and educational research, not least the extent to which education is a discipline or a field of study, whether it is multi- or cross-disciplinary, whether educational research can be ‘pure’, applied, or professional in nature, and so forth. While our work within this journal is certainly not immune to such debates, our general direction as editors has been one of expansive inclusivity – we tend towards a broad church and accept what our contributors deem to be relevant and important to their educational lives. Within our editorial duties we sometimes see education in its broadest sense as a complex art form, an enormous mosaic that assembles a mix of elements which, when seen together, allow for a picture of both thoughtful overarching contemplations and ‘close-to-practice’ problem-solving. One of the joys of developing and sharing a journal of education is valuing the ways in which writers turn tacit values and expectations into explicit form, embed practice in theory, relate practice to principle, test evidence against argument, and wrestle implications and improvements from the intricacies of implementation. This is certainly the case in this current edition which is a testament to the range of educational research underway seeking to better understand contemporary educational realities to inform current and future educational practices, curricula, reforms, policies, and directions through a research and evidenced based approach comprising various research designs and theoretical orientations.

Balbir Ahir’s research project takes us into the classroom from the vantage point of Primary school educators currently implementing STEM education in the UK. This small-scale qualitative study is timely given the UK government’s national move to better understand how to successfully integrate STEM across the primary curriculum and the related challenges of unavailable resources, educators’ lack of teaching preparedness, and available professional development. Using Lee Shulman’s model of ‘Pedagogical Reasoning and Action’ (1987) as the theoretical framework underpinning this study, Ahir, a university tutor, the class teacher (Lily) and a commercial adviser (George) used a commercial resource called ‘Discovery: STEM Connect’ to elicit and examine educators’ understandings and insights of STEM within primary education. The findings revealed the ways in which a resource such as the “Discovery: STEM Connect”, can assist educators in implementing the content and pedagogical knowledge required for a STEM-focused curriculum. We found this study speaks to the importance of including educators in the planning and strategising of teaching practices, not only at school/classroom level, but nationally for the successful implementation of STEM learning at Primary levels.

Alan Edmiston’s qualitative study also takes us into the classroom at Secondary level in which Year 9 (13 years old) students talk about science in small groups through the CASE (Cognitive Acceleration through Science Education) project which champions peer-peer collaboration and dialogue among students in the classroom. Drawing on the theoretical work of Vygotsky, which argues that students have an intuitive grasp of the relevant work, and Piaget’s articulation that higher order thinking can be described by formal reasoning patterns, Edmiston elaborates on these existing arguments by integrating the use of dialogue to support students’ thinking and cognitive development with classroom Science lessons. Through authentic classroom interactions managed by experienced practitioners, two episodes of classroom interactions among a group of students discussing the reasons for the difference in the weight of aluminum

and lead blocks of the same size are presented. What is captured through the peer-peer dialogue is students' shift from intuitive/spontaneous thinking of the question to scientific thinking. Bhabha's notion of the third space is used to further explore the meeting between the spaces of the world of the child and the subject which motivates students to talk and engage. The study provided a window to see the ways in which children share, speculate, and develop new ideas through peer-peer dialogue in their learning process.

Student assessment is integral to the teaching and learning nexus. Domingos Simão, Nilza Costa, Betina Lopes, and Simão Agostinho also engage with Grade 9 students and explored their conceptions and understandings of learning assessment. The discipline of 'Labour Education' which serves to develop students' professional and social competencies for employability and overall socio-economic development of the country was specifically selected amidst the curriculum revisions (2018-2027) in Angola. The premised rationale for the study was embedded in the belief that understanding students' perspectives on assessment will better inform the innovative improvements required for assessment practices and curriculum management. The data gathered from questionnaires (n=692) from four public schools revealed two prominent understandings namely, that assessment informs teachers if/what learning has taken place, and secondly, in relation to exam preparation. Differences between students' conceptions of learning assessment in the four schools (rural and urban) were noted. Other than environmental factors, an explanation/s for the differing conceptions are of interest to the research team to delve into.

Aruna Ankiah-Gangadeen and Yesha Mahadeo-Doorgakant take us into the online classroom teaching experiences of upper secondary English teachers in Mauritius during the onset of Covid-19. Data elicitation from a combination of visual and written media (Graphic Interchange Format - GIF) inclusive of participants' write-up were used to capture teachers' online teaching experiences. While some educators (n=3) indicated an overall positive experience with online teaching, the vast majority of educators, and their students, struggled (professionally and personally) with adapting and adjusting to the online teaching process. The authors argue for the need to make online curriculum resources available in ensuring the effective delivery of online teaching and learning. In our view as editors, the findings speak heavily to teachers' perseverance and agency in ensuring learning takes place irrespective of the circumstances time and space present.

Hemant Chitto, Prabha Ramseook-Munhurrin, Vinaye Armoogum and Mohammad S. Sunhaloo also focus on online teaching during the onset of Covid-19, however, from the perspectives of University students at undergraduate and postgraduate levels in Mauritius. The team was interested with understanding students' online learning experiences given that the University's standard method of teaching has historically been face-to-face. Through the use of a GoogleForm questionnaire, students' responses (n=1,001) indicated that a combination of both online and face-to-face student-centric synchronous teaching was the preferred modality of teaching due to the balance in learning flexibility, autonomy, and student community it offers. The results of this study will assist in the development of blended instructional design and planning, pedagogy, digital resources, and an institutional online teaching/learning policy alongside the wider scholarship of online teaching and learning to further support undergraduate and postgraduate University students' learning experiences.

As a practitioner and researcher, Asgar Halim Rajput's paper also focuses on supporting students in higher education, more specifically UK Muslim students through a Muslim chaplaincy curriculum that is Muslim-centric that engages with the lived experiences, needs, and problems of UK Muslims in institutions. The current Muslim chaplaincy courses, curricula, and training are Imam centred focusing primarily on spiritual development rather than the required counselling skills to address the social and mental health issues and required supports. Rajput argues for the development of a problem-centred Muslim chaplaincy curriculum that focuses on the lived experiences and needs of the UK Muslim community in British public sector institutions.

All research articles within this edition aim at addressing and ameliorating various issues and realities within education in different parts of the world. As editors, we are pleased with the range of innovative research, and invite progressive research across disciplines that pose critical educational questions to advance knowledge, ideas, and our contemporary understandings.

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## Using ‘Off the Shelf Ideas’ to Plan and Design a Unit of Work in STEM

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### ABSTRACT

Primary and Early Years settings have had insufficient access to resources and professional development to integrate STEM education as part of a curriculum program. This small-scale action research case study aimed to explore practitioners’ understanding of ‘STEM education’ and involved myself as the researcher and the university tutor, the class teacher (Lily) and a commercial adviser (George). Interviews, document analysis, questionnaires and group discussions were used to examine the transformation required to modify a commercial STEM resource (Discovery: STEM Connect) into a curriculum plan that addressed real-world issues grounded in the Sustainable Development Goals. Lee Shulman’s ‘Model of Pedagogical Reasoning and Action was used as a theoretical framework’ to reflect on the curriculum plan. The findings showed that a commercially prepared plan provided a valuable scaffold enabling practitioners to consider the content and pedagogical knowledge required for a STEM-focused curriculum.

**Key Words:** STEM education; pedagogical reasoning and action; subject knowledge; curriculum design; inquiry based

### INTRODUCTION

This paper aims to examine the position of STEM within primary education and explores practitioners’ understanding of ‘STEM education’. A commercially available resource, called Discovery: STEM Connect, was used to elicit practitioners’ understanding and inform the analysis for this study. The acronym STEM is usually applied to describe professional practices in the areas of Science, Technology, Engineering and Mathematics that come together as a collective discipline (Comptroller and Audit General, 2018; Bell, 2016). In this paper I will debate the definition and perception of STEM education and how practitioners apply this knowledge when designing STEM learning for primary school children. I will delve deeper into the interdisciplinary nature of teaching STEM and examine the role of the Sustainable Development Goals (SDG) as a mechanism that is able to connect the four subjects. I will consider some barriers that primary practitioners encounter when embedding STEM education in primary school settings. I utilised Lee Shulman’s model of ‘Pedagogical Reasoning and Action’ (1987) as a framework for my action research study. I will describe the process, as outlined in Shulman’s model and how the stages within the process were used during the research.

Developments and progress in ‘STEM education’ have been influenced by a range of factors which include the economy, politics and globalisation. Since the early 2000s, various government reports have elicited growing concerns about the supply of STEM skills in the workforce (Roberts, 2002; HM Government, 2017). The declined interest in some STEM subjects, such as mathematics and science in education, have shown to have a direct correlation to the STEM skill shortage (DFES, 2004; DFE, 2010). Over time, this has generated the widely held belief that one of the UK’s key economic problems is a shortage of highly qualified scientists, technologists, engineers, and mathematicians to ‘compete in an era of globalisation’ for which science and innovation systems are central (Sainsbury, 2007, p.3; Bell, 2016; Morgan, Kirby, & Stamenkovi, 2016). Although there has been much debate on the extent and accuracy of the STEM skills shortage (Comptroller and Audit General, 2018; Williams, 2011; McGarr & Lynch, 2015; Smith & White, 2015), the government has responded with a range of initiatives and policies aimed at raising young people’s participation in the STEM subjects such as improving teaching and learning in STEM related areas and widening access to under-represented groups (DFE, 2010; Morgan et al., 2016).

The aim of this paper is not to debate the potential STEM crisis; the above offers some explanation of why STEM has filtered in the education system at all levels, and not just in Higher Education. It is the filtration of STEM in primary education that has driven the interest of this paper. Blackley and Howell (2015) discuss how the rise of ‘STEM education’ did not result in any meaningful changes to teaching practices or student outcomes because of the absence of educators from the planning and strategising of the approach. They associated two reasons for the lack of success of STEM in education; curriculum structure and preparation of teachers. Although some research studies have explored teacher perceptions and aspects of STEM, such as engineering in UK schools (Bell, 2016; Clarke & Andrews, 2010), there is limited understanding of how to successfully integrate STEM education into primary settings and how best to nurture the profile of STEM across the primary curriculum, which is an issue that remains a national priority for the government (Smith, 2017; ACME, 2011).

## What is STEM?

Barriers to understanding STEM begin with the awareness that there is no universal definition of what should be counted as STEM, in the workplace or education. (Comptroller and Audit General, 2018). Although the acronym is easily understood, the essence of STEM and how it translates in a classroom or learning situation is a challenging concept to comprehend. Williams (2011) attributes this uncertainty to a lack of clarity behind the rationale and logic of combining the four disciplinary subjects (Wong, Dillon, & King, 2016). The Report by the Comptroller and Auditor General (2018) found there to be a variety of perspectives on understanding STEM from recognising it as separate, distinct subjects to a combination of some or all four subjects. The Report further discusses the complexity of STEM and an overlapping group of subject areas that can be defined in several ways depending on the criteria used. As the STEM agenda has primarily been one of the vocational and economic goals, the unstable and inconsistent definition of STEM has permeated into education (Blackley & Howell, 2015; Bilton & Watts, 2020).

Further challenges to understanding STEM in education is the alignment of STEM to the subjects in the National Curriculum (NC). Examples include defining the term ‘Technology’ and understanding how to interpret ‘Engineering’ which does not exist as a subject in the NC. What emerged, as a result, was an enhanced focus on mostly science-based topics with some mathematics and an unfamiliarity of the critical role that ‘engineering’ and technology have in developing design and problem-solving skills and innovative ways of learning across the disciplines (Blackely & Howell, 2015, p.104; McDonald, 2016). Williams (2011) summarises the ambiguities surrounding the amalgamation of STEM as being driven by economic and vocational goals and built on a political ideology that sees education as a servant to the economy. Research has shown that the mere definition and idea of STEM is confusing and perplexing even to those who use it (Bell, 2016). Despite this, the discourse of STEM is found widely in education, and the problems faced by teachers is that they are trying to integrate STEM for which an educational rationale is absent and hinders a collaborative approach (Williams, 2011).

Given the ambivalence around the concept of STEM, recent research studies have attempted to offer an elucidation of the acronym. Hernandez et al. (2014) characterised an ‘authentic STEM education’ as one that developed conceptual knowledge of the ‘inter-related nature of science and mathematics’ to allow for an understanding of engineering and technology (cited in McDonald, 2016, p. 531). Balka (2011) offers a similar explanation describing STEM literacy as, ‘the ability to identify, apply and integrate concepts from science, technology, engineering and mathematics to understand complex problems and to innovate to solve them’ (p. 7 cited in McDonald, 2016). The STEM Task Force Report also included the importance of the application of knowledge and skills learned in two or more STEM disciplines to real-world problems as a means to deepen understanding (Torlakson, 2014). The above interpretations of STEM vary in intensity of the integration of the four subjects. For teachers, the challenge is to comprehend a model of STEM and consider how it may appear when enacted in the classroom. I will refer to the interdisciplinary nature of the STEM subjects later in this paper. However, it is worth noting that teaching STEM requires a curriculum structure that positions itself away from the teaching of individual subjects.

### **Practitioners’ Understanding of STEM in Education**

One of the recommendations that emerged from the review of STEM interventions, based on research evidence carried out by Rosicka (2016) indicated the importance of professional development within the STEM disciplines. This point is further supported by other research and studies that identify the significance of education for teachers on STEM-related issues to include developing subject knowledge, support networks and resources to enable the learning and teaching of a STEM-focused curriculum (Bell, 2016; Blackley & Howell, 2015; Clarke & Andrews, 2010; Nadelson & Seifert, 2017). What has transpired across the studies is that knowledge and academic background in the STEM subjects is strongly linked to the capacity to teach these subjects with confidence and passion. An example of how to raise the profile of STEM in education can be taken from the Australian government which has introduced various efforts to ensure schools are supported by specialist teachers in STEM disciplines and that senior management teams are educated to be leaders in STEM. The model of support for teachers of STEM, provided by the Australian government, prioritise teacher professional

development programmes in science, technology, and mathematics, which are considered to be essential to the knowledge teachers require for STEM education (Prinsley & Johnston, 2015).

However, having specialist teachers in STEM disciplines is not enough. One of the most significant educational challenges for STEM education is that very few guidelines and models exist for teachers to follow on how to teach STEM in an ‘integrated’ manner in their classrooms. Research carried out by Boe et al. (2014) indicate that the four discipline areas are often taught in a disjointed manner, failing to integrate STEM in a unified way. What emerged from their study was that teachers required a greater understanding of how the four disciplines come together to form STEM when planning and teaching. This was further supported in a study carried out by Roehrig et al. (2012) who found that when individual teachers planned for STEM, the content areas depended on the primary subject area of the teacher. Having a depth of knowledge in one subject was not enough to design a STEM curriculum as it often led to rudimentary links and connections to other disciplines where subject knowledge was not as secure. Bell (2016) adds to the argument by stating that a STEM-focused curriculum required a change in the pedagogical approach with a focus on ‘learning to do something with the knowledge acquired’ to foster greater connections with ‘21st Century’ learning skills and investigate authentic, real-world problems (McDonalds, 2016).

### **Interdisciplinary Nature of STEM for Learning and the Sustainable Development Goals**

The definitions of STEM, as shared above, and the nature of how STEM can be taught, advocate for the learning and teaching to be an interdisciplinary approach to curriculum planning and teaching. An interdisciplinary approach to the curriculum considers the integration of subjects that generate an understanding of themes and ideas. This includes connections between different disciplines and their relationship to the real-world. Students learning this way can apply knowledge gained in one discipline to another as a way to deepen the learning experience and as such, encourage creativity, meta-cognition and contextualises learning to real-world issues. A study on ‘The Nature of Problem Solving’ commissioned by OECD (2017; see Csapo & Funke, 2017), outlined the importance of problem-solving, improving complex thinking and analytical skills as being essential to learning at every stage of development. Learning factual knowledge and the ability to apply, analyse and create new knowledge go hand in hand (Csapo & Funke, 2017). Roehrig et al. (2012) further argue the point that in the real world, problems are not separated into isolated disciplines. In an increasingly ever-changing global society, an integration of multiple STEM concepts and skills are required to solve problems. The artificial separation of subjects can limit learning as well as alienate learners from real-world issues, whereas an interdisciplinary approach to the curriculum provides more meaningful learning experiences.

To fully engage and promote student engagement and progress in STEM, teacher subject knowledge and teaching practices require a shift from traditional, teacher-centred methods of teaching towards strategies that emphasise and encourage greater active student-centred approaches. Previous studies that have explored aspects of STEM education report the importance of an inquiry-based approach to learning and teaching (Bell, 2016; Roehrig et al., 2012; Rosicka, 2016). Such an approach advocates practices that enable students to engage with

‘higher-order thinking skills and engagement with real-world problems through developing students’ ability to ‘ask questions; design investigations, solve problems, interpret data and evidence, form explanations and arguments and communicate findings’ (McDonald, 2016, p.538).

The positioning of the SDGs, as set by the United Nations (UN), offer a route that instigates the adoption of an interdisciplinary approach, as required with STEM, and address real-world problems. Sustainable development has been defined as development that, meets the needs of the present without compromising the ability of future generations to meet their own needs’ (WCED, 1987, p.43). The UN acknowledged the 17 SDGs in 2015 intending to end poverty, protect the planet, ensure sustainable consumption, innovation, peace and justice. The fourth SDG specifically focused on promoting quality education as a means of advancing sustainable development placing education at the heart of the strategy.

Annan-Diab and Molinari (2017) discuss the importance of how ‘interdisciplinarity’ (p. 4) increases our knowledge of understanding complex real-world problems and provide solutions that integrate expert knowledge from different disciplines. The authors further argue that adopting an interdisciplinary model when addressing the SDGs can enable a ‘cognitive advancement’ which would explain a phenomenon, solve a problem, create a product or raise new questions (p. 5). The limitations and barriers, however, to instigating an inquiry and problem-based approach include an education assessment model that discourages teachers from trying new ideas and holding teachers accountable for minimum grades in standardised tests. The narrowing of a curriculum due to a focus on a few measurable outcomes has had some negative consequences on the ‘quality of education’ and the teaching of subjects that ‘mirror test-related content’ (Ofsted, 2019, p. 5). Insufficient time to develop an integrated curriculum and teachers having a limited knowledge base to know how to demonstrate interconnectedness between subjects further hinders progress for the teaching of STEM in primary school settings.

### **A Theoretical Framework for Action-Based Research**

Action research in education is undertaken by practitioners to improve their practices. It involves a spiral of self-contained cycles of planning, action, evaluation, and reflection, and based on the gathered evidence, changes in practice are implemented (Koshy, 2009). The fundamental aim of action research is to improve by exploring and theorising practice to generate knowledge (McAteer, 2013). The process often involves a series of linked enquiries with teachers formulating questions arising directly from their classroom experiences at each stage in the process (Baumfield et al., 2013).

The use of action research owes much to the work of Lawrence Stenhouse, whose idea of ‘the teacher as a researcher’ involved the practitioner engaged in a systematic study of the work with other practitioners and the testing of ideas through classroom research (Elliot, 2015, p. 4). Stenhouse’s theory of education placed the teacher as being central to education, giving greater value to teacher professionalism, autonomy, and development (Skilbeck, 1983). He suggested that the work of teachers should be researched by teachers themselves as well as being supported and guided by professional researchers who would also choose the focus for



the research (McAteer, 2013). The kind of knowledge that was of interest to Stenhouse was ‘pedagogical knowledge in the form of structures, concepts, processes and procedures teachers needed in order to fulfil their educative role’ (Skilbeck, 1983, p. 12). In the context of the work carried out by Stenhouse on curriculum development, he believed research contributed to the development of knowledge through systematic and ‘self-critical’ enquiry. Although several models for action research have been put forward, I decided not to use a particular model too rigidly. Instead, I applied Lee Shulman’s theoretical framework of ‘pedagogical reasoning and action’ as an evaluative and reflective tool (Shulman, 1987, p.15). Given that this study primarily sets out to explore the development of knowledge that emerged from the use of a commercial STEM resource, employing a theoretical framework that was focused on enhancing pedagogical knowledge seemed most appropriate.

Shulman (1987) describes pedagogical knowledge as a transformation of the content and subject knowledge required for teaching. The act of transformation involves the representation of knowledge to meet the needs of pupils. He summarised the practice that encouraged teachers to reason about their teaching and use their knowledge base to provide adequate grounded premises for choices and actions. He makes particular reference to how teachers use ‘ethical, empirical, theoretical or practical principles’ to support pedagogical reasoning (p.13).

The cycle of pedagogical reasoning begins with the act of comprehension and a critical understanding of the subject matter and how it connects to other subjects and ideas. Within this practice is a clear idea of the educational purpose(s) of what is to be taught and learned. This often involves interpretation of a text, for example, plans, a scheme of work or a curriculum programme of study. The comprehension of the content and purpose is only a pre-requisite to transforming the knowledge to forms that are ‘pedagogically powerful’ and adaptive to meet the needs of the pupils’ (Shulman, 1987, p.15).

Once the subject matter has been understood, ideas are then transformed and prepared for the comprehension of others, which Shulman (1987) refers to as the ‘act of pedagogical reasoning’. This process of transformation involves a critical examination and interpretation of the materials concerning the teachers’ subject knowledge. He refers to this process as moving from a personal comprehension to preparing for the comprehension of others which requires adaptation and tailoring the materials to meet the needs of the learners. Shulman (1987) identified the characteristics required for adapting and tailoring the materials which include identifying misconceptions and contextualising the materials so that it considers language, culture, and motivation of the learners. The transformation of content and subject knowledge is represented as approaches or strategies for teaching, which requires the teacher to use their pedagogical reasoning to inform how the teaching instruction will take place.

During the activity of instruction, the teaching involves observable performances of various teaching acts which are bound up with comprehension and transformation of understanding, as is the process of evaluation. The review of teaching and learning through reflection exposes new comprehension of the subject matter. Shulman (1987) states that although the processes in the model are presented in sequence they can occur in any order and some stages may not occur at all or are given less recognition during certain acts of teaching. For this study, greater consideration was allocated to the processes of comprehension, transformation, reflection, and new comprehension.

## METHODOLOGY

This action research presents a small case study that was carried out to critically evaluate a resource produced by Discovery: STEM Connect for use with children aged 8-9 years old. The main aim of the study was to improve practitioner knowledge and practice of integrating STEM across the curriculum. Yin (2014) describes a case study as an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context. As an action research case study, based on Lee Shulman's (1987) 'pedagogical reasoning and action' framework, systematic and critical analysis was carried out to understand practitioner thinking, reflect and evaluate, then to introduce change and assess the new situation (Bassey, 1999). Action research is often considered to be emancipatory as it aims to improve practitioners' understanding and professional development (Zuber-Skerritt, 2005).

An interpretive approach was used to provide holistic descriptions and explanations for the phenomenon that focused on understanding and evaluating the contributions and the interdisciplinary approach of the four disciplines – Science, Technology, Engineering and Mathematics - as presented in a commercial STEM resource. The multidisciplinary nature of STEM was critically evaluated at three stages during the research: at the start, partway through the teaching of the project and at the end of the project as a final evaluation. Each examination brought about a transformation to the plans and participants' thinking which identified some key features to consider when planning for a STEM-focused curriculum. The findings were cross-referenced and validated with interviews with the two participants. To improve practitioner Pedagogical Content Knowledge (PCK) and to better understand the connection to the SDG, teaching and resources were evaluated and used to refine plans. Shulman's (1987) model of 'Pedagogical Reasoning and Action' was used with a particular emphasis placed on the use of the processes of comprehension, transformation, evaluation and reflection, and any subject knowledge issues that emerged from planning and teaching a STEM-based curriculum were observed for further action.

The participants in this collaborative study consisted of the year 4 class teacher (Lily), myself, a university researcher, a mathematics tutor on the Initial Teacher Education programme and a representative from the commercial company who presented the STEM resource (George). All participants were considered equal in the research process and were involved at every stage. The communication that emerged during the study was 'symmetrical communication' whereby all communication shared by participants was on equal terms (Zuber-Skerritt, 2005). The school where the study was carried out caters for children from the ages of three to nine, many of which are from Military of Defence (MoD) service families. The school's approach to the curriculum considers STEM to be the cornerstone for learning where real-life implications through STEM teaching can be applied to everyday life. Lily took the lead on the science in the school and had an interest in developing subject knowledge in STEM and therefore expressed her interest in this research. George and I both have over 20 years of experience in primary education and teacher education. I have led on the teaching of primary mathematics in various capacities for 25 years and led this study. George has 20 years of experience in the use of information technology. Each participant had a vested interest in participating in the action research project; therefore, their commitment was voluntary and wholehearted.

The methodology employed in the study followed the qualitative research paradigm in which the researcher is part of the community under investigation. The research was conducted over a ten-week period, during which data were gathered at various intervals. Data was obtained from multiple documents. To include the notes of analysis at different stages of the planning process, I kept a journal of events, and notes from a staff meeting that explored the concept of STEM with all teaching staff. Three informal observations of the teaching of STEM lessons were carried out by myself, George and Lily. The purpose of the observations was to identify issues and themes for group discussions. The themes for group discussions were semi-structured to allow for ideas to be addressed that emerged and were presented through the observations. These discussions were digitally recorded and supported by participant notes on the planning document. Themes from the group discussion were used to develop and trial interview schedules that were carried out with Lily and George. Qualitative data from the two digitally recorded interviews and group discussions were analysed using codes to categorise and identify key themes and patterns. The transcripts were analysed for relational links and themes across the participants and to the group discussions. Findings from documentations were scrutinised for their closeness of fit with the recorded data and used as a form of triangulation. A questionnaire involving six teachers was also used to provide an overall consensus on views and opinions on STEM education which further informed the planning process. The findings are organised around the areas of investigation. All participants have been given pseudonyms to ensure anonymity, and the Discovery: STEM Connect resource used for this study was titled ‘Invertebrate Hotel’, a question based around SDG 15 ‘how do you protect local terrestrial ecosystems and biodiversity?’ was posed.

## RESULTS

### Findings and Analysis 1: Interdisciplinary Approach Across the Four Subjects

The analysis of the planning documents and records of the group discussions outlined the contributions and interdisciplinary nature of the four subjects as understood by each participant. The key finding indicated some unfamiliarity between knowing what the letters stood for in STEM and how to enact STEM in the classroom. The abbreviated letters ‘STEM’ was understood by all participants in the context of what each letter represented. However, the implementation and enactment of STEM that was interdisciplinary across teaching were more complicated to comprehend. This required depth of subject knowledge and the contributions made by all four subjects and knowledge of curriculum design and planning for interdisciplinary teaching (Bell, 2016). Teachers grappled with enacting an integrated STEM curriculum and stepping away from individual subject teaching correlates with the findings presented by Blackley and Howell (2015).

The contributions of each disciplinary area were further impacted by how the three participants interpreted and viewed the plans. Lily interpreted the resource as it was presented and gave little consideration to the affiliation and knowledge across the four disciplinary subjects. Lily believed the resource to be a quality STEM plan because “...it linked design and challenge with science”. During the first group discussion and reflections, it was noticeable that the commercial resource emphasised the role of design and technology (D&T) as a catalyst to drive

the STEM agenda. Scientific understanding and application of the NC topic ‘Living Things’ was required to design the product, in this case, an invertebrate hotel (DFE, 2014). Similarly, Lily also understood the STEM plan as ‘product-focused’ that involved an engineering design project as the culminating activity to a science unit.

Curriculum design was recognised by George and myself as being central to developing an interdisciplinary approach across the four subjects. The process of aligning the STEM resource to the NC highlighted several gaps (see Table 1). In order to promote an interdisciplinary approach, a model for STEM planning that centralised engineering or D&T was required to manage the connections to the other subjects (Blackley & Howell, 2015).

**Table 1: Integration of STEM Subjects in a Curriculum Plan**

Sequence of lessons ( <i>themes</i> )	Initial plan: Interdisciplinary links to STEM subjects	Final plan: Interdisciplinary links to STEM subjects
The challenge: The invertebrate investigation	Science - Understand the importance of invertebrates; common threats and food chain.	Science ( <i>See the previous column</i> ) Technology - Demonstrate creativity; Communicate and collaborate; Conduct research and use information. Mathematics: Use and interpret data in science.
The design: what do invertebrate hotels look like?	Science - know the habitats of different invertebrates. D&T - use scientific knowledge to research criteria for an invertebrate hotel; Communicate design and share justification.	Science - ( <i>See the previous column</i> ) D&T - ( <i>See the previous column</i> ) Mathematics - use measures and understanding of area and perimeter of rectilinear shapes; engage in mathematics to solve real problems. Technology - Conduct research and use information in the context of science inquiry.

Create the design	D&T - use a range of tools and equipment accurately; select from a wide range of materials and components for their functional properties to meet the design criteria. Science - know the habitats of different invertebrates.	Science - ( <i>See the previous column</i> ) D&T - ( <i>See the previous column</i> ) Mathematics - use measures and understanding of area and perimeter of rectilinear shapes; engage in mathematics to solve real problems.
Evaluation and conclusion of the design	D&T - reflect in the design and build of the invertebrate hotel Science - recognise that environments can change and this can sometimes pose danger to living things.	Science - ( <i>See the previous column</i> ) D&T - ( <i>See the previous column</i> ) Technology - Demonstrate creativity; Communicate and collaborate; use technology effectively and productively.

The lack of guidance and expert knowledge on how to plan and teach STEM can easily mislead teachers to view STEM as a D&T project with no or limited integration of knowledge across the four discipline areas as it did in this incident. The transformation required from understanding the resource to the planning and teaching stage involved a depth of subject knowledge to be cognisant of the contributions made by the four disciplinary subjects.

The structure of subject matter, depth of knowledge and the principles of how that understanding is communicated is identified by Shulman (1987) as ‘scholarship in content disciplines’ (p. 8) which is one of the four major sources for the teaching knowledge base. The process of going back and forth to review literature and empirical research in this area of learning supported the design of the curriculum that connected the four subject areas as well as other aspects of learning. George commented on the ‘possible deskilling of teachers in knowing how to design their curriculum ... and therefore, not having the confidence or comprehension to take ... the STEM resources and do something powerful with them’. My observations are in alignment with George, and the planning task of designing a STEM curriculum highlighted two main key learnings. Firstly, the importance of the subject knowledge required across the four disciplinary subjects to be integrated to STEM in a unified way. Secondly, the value of STEM scholarship and literature as a discipline to have a deeper conceptual understanding of what constitutes as ‘good’ STEM education.

The lack of professional development and support for primary practitioners to integrate STEM learning within a primary curriculum was highlighted by all three participants. Lily indicated that as a school they built on ideas they may have found on the internet and expanded on them, but they were not aware of resources or units of work that made links across the four disciplinary subjects or to the NC. The analysis from the questionnaires sent to the staff indicated a similar



picture. Although teachers valued STEM education, they were unsure of how to develop a STEM idea over a sequence of lessons that linked all four subjects as well as the broader curriculum and needed some guidance on how to do this competently.

## **Findings and Analysis 2: Pedagogical Approach**

All three project participants believed that an inquiry-based approach to learning and teaching was most effective in communicating the STEM agenda. All three practitioners agreed to the inclusion of the following skills - collaboration, creativity, communication, and critical thinking on the plan. Incorporating these skills in every lesson further informed the instructional repertoire, structure, and organisation of learning during lessons.

All participants understood that an inquiry-based approach to learning promoted a student-centred pedagogy and as result informed how children were organised for learning. Groupwork was particularly effective as it encouraged children to develop skills of collaboration and communication. For example, during each STEM session ‘...the problem and challenge was designed to motivate children to think about the issue. Organising children in groups worked as they are learning with each other and from each other’ [Lily].

All three participants identified the skills of creativity and critical thinking as being less successfully reinforced during learning; this was due to how closely the plan was followed to deliver the content. The inquiry-based instruction was ‘structured’ in that students were provided with a hands-on problem to solve as well as the procedure and materials to solve it. Lily found the ‘resource offered a useful scaffold for teachers to follow’. However, the structured nature in which the lessons were organised hindered creativity and critical thinking at times as children were led to a particular solution. This supports Shulman’s (1987) view that teacher comprehension is even more critical for the inquiry-based classroom than it is for the didactic alternative. George commented that

a less confident teacher may not bring in some of the higher-level learning or critical thinking for students to naturally apply all the science, maths and technology they would need to create and make a project. We saw that that first lesson kind of gave it away and because it gave too much information it took the power from the children to be problem solvers, instead they were told what they were doing which is a little wrong with the whole concept of what STEM is.

All three participants agreed that the pedagogical approach to inquiry-based learning needed to be a mixture of ‘guided inquiry’, in some incidences, with the teacher providing materials to solve the problem to investigate and allow students to devise their procedure, and an ‘open inquiry’ where students formulate their question to investigate. George and I emphasised the use of key question-stems framed around Bloom’s taxonomy of learning to support critical thinking and to promote a more open inquiry approach to teaching and learning.

I emphasised how the design cycle and product-focused agenda promoted by the STEM resource overtook the learning and experiences for the students, ‘the purpose and reason for the STEM

project got a little lost after the first lesson...the meaning of the project and how it connected to real-world issues became a little fuzzy'. George and I felt the need to return to the SDG 15 at various stages of the learning process to further children's creativity and critical thinking. I suggested 'the SDG should be central to the learning and lead the whole unit. The SDG encouraged learning in a real-life context and considered local as well as wider global issues that are important. They also empower young people to think about global issues.' George and I saw how the SDG was purposeful and could be applied to encourage students to consider the challenge in the context of social, ethical, economic and environmental perspectives. The involvement of local external experts who work in the field of conservation would have been another useful contribution to contextualise the learning to real-life issues for investigation.

One of the outcomes of this study identified professional development for Lily. The study made Lily aware that some areas of her practice required further education and professional development. Reflections on pedagogical subject knowledge that emerged were considered further with other teachers across the school, an example being reviewing the role of technology and how it was used across the curriculum. My discussions on the application of mathematics in this project coincided with the research the headteacher was doing, which identified a similar outcome which will be discussed in the next section.

### **Findings and Analysis 3: Pedagogical Content Knowledge (PCK)**

STEM Pedagogical Content Knowledge (PCK) was a dominant theme that emerged from all data collected. The significance of PCK has been mentioned in previous the findings, however, I want to discuss the contribution of PCK in the context of input offered by the three participants and the resource. All three participants found the resource to be a practical and '...a good scaffold...' [George] to support PCK in STEM. Lily spoke about the 'structure of how STEM was presented and the supporting activities that were convenient and purposeful'. The area of the curriculum that Lily and I found most challenging was aligning technology to the NC. This was because the NC does not have technology as a subject; instead, it refers to Computing. Lily referred to linking the technology as being 'tricky' in the context that 'we teach science and maths, but we don't teach technology'. She felt she lacked the knowledge and skills to fully embed technology as part of the STEM plan. I also found the Computing programmes of study in the NC restrictive to how technology could be used in the context of STEM. George and I emphasised how a teacher who was insecure in the STEM knowledge base may not necessarily make the links across the four disciplines. 'It does raise some subject knowledge issues...it is a different way to teach, which is not about compartmentalised subjects, and that's not easy to do' [George]. I also spoke about some missed opportunities to bring in the maths and technology during the teaching.

The contribution of mathematics as understood by the different participants was an interesting observation. The resource had very little reference to the contributions made by mathematics. I felt the connections to mathematics was simplistic and rudimentary. What was lacking was the application of the subject through the teaching of science and D&T. Various opportunities were lost where the application of mathematics could have been used to reason the scientific knowledge and D&T process.

The collaboration of the three participants was an interesting amalgamation as each viewed STEM differently. All three participants valued the contributions offered by each. Lily spoke about ‘sharing ideas and drawing upon everyone’s subject expertise’. George mentioned the usefulness of the literature that helped drive this research as well as the expertise shared by each participant. Each participant was able to comprehend and transform a subject of STEM and make connections to other areas because they had a ‘deeper’ understanding of the subject matter.

## DISCUSSION AND CONCLUSIONS

‘Thus, we arrive at a new beginning’ (Shulman, 1987, p. 15). This small-scale action research study offers valuable insight into how STEM is understood by different practitioners and how that knowledge is used to inform curriculum development for STEM education. Although a national definition and understanding of STEM education might be difficult to achieve, I would argue that each school needs to have a clear understanding by what they define as STEM education as enacted in their schools through curriculum planning. To enable teachers to do this, resources and investment in teacher education is vital. I argue that a lack of professional development in the four disciplinary subjects and knowledge of knowing how to connect the subjects in an interdisciplinary manner limits teachers’ potential to create STEM education in their classrooms. This is supported by others in the field, for example, Bilton and Watts (2020).

Much of the funding and professional development in education is orientated towards support for Higher Education institutes and Secondary Schools to increase the number of students pursuing STEM subjects, and to ensure students were well-prepared and suitably qualified to engage in STEM careers (Ejiwale, 2013; McDonald, 2016). Many of these initiatives are based in secondary education to aid entry into Higher Education courses, however, research has identified that a greater STEM focus should be in the earlier years of schooling. For example, Hudson et al. (2015) argue that competencies to active engagement in STEM require an extended period of time and that STEM education should begin in the Early Years and primary education as primary schools have an essential role in providing a supportive teaching and learning environment cultivating the skills and competencies required for active STEM engagement necessary for the post-compulsory years of schooling and beyond. I argue that teacher professional development for early year teachers in the areas of STEM is crucial for a comprehensive and critical understanding of the subject matter related to STEM and how it connects to other subjects and ideas.

The relationship and contributions of each subject discipline within STEM, as understood by practitioners, impacted on how it was planned for and enacted in the classroom. I draw upon the work of Lawrence Stenhouse, a pioneer of the idea of curriculum development as the basis of in-service professional education (Fordham, 2016). He was interested in how teachers designed curricular that improved pedagogy rather than teachers working out how to deliver a curriculum. The experiences of Lily and George in teaching STEM was to deliver a curriculum plan. Although this research began with a pre-planned curricular resource, through

collaborative practitioner-research, the curriculum evolved. It enhanced the understanding of ‘interdisciplinary’ between the STEM subjects (Annan-Diab & Molinarib, 2017, p. 4) and widened the knowledge to encompass the ethical and philosophical aspect of the impact of STEM in society as well as increase knowledge in understanding complex real-world problems in relation to the SDG. The commercial plan provided a structure and scaffold that was valuable for the teacher as a starting point, and from this, Lily was able to ‘transform’ learning for her class and her situation.

The action research was based upon a commercially available resource called STEM Connect produced by Discovery Education. This formed the basis for the work in the teacher’s (Lily’s) classroom. The collaboration of the different practitioners within the planning process changed thinking on the idea of STEM to initiate a product-focused model. It also changed pedagogical practices on how STEM was taught in the classroom. The ‘hidden’ aspects of technology and mathematics in this resource could easily have been missed without the input from subject specialists. I would argue for partnerships between schools and education departments in higher education to facilitate learning communities that support innovation and change in education. I would also argue that commercial education agents work alongside higher education to ensure that products are based on sound research and embedded in the theory of learning and teaching before they are marketed to teachers.

As interest in STEM education grows in Primary and Early Years settings so too will the marketisation of products for teachers to deliver in the classroom. With the misalignment of STEM with the NC and the challenges of defining STEM, further research in this area of learning and teaching is highly recommended. It is to be noted that this is a small-scale case study, however, the findings from this case study facilitated a further cycle of action research that involved the whole school. This one example was used as a model to develop curriculum planning across the school with other teachers. The other important factor that would enhance this study would be to explore responses and feedback from students.

There is a recognition that teachers researching their own practice can generate unique ‘insider knowledge’ that provides valuable new insights and conceptualisations of educational processes and practices (Burke & Kirton, 2006). This study can be used as an exemplar by other schools as a starting point when considering implementing STEM education. Expanding this research to consider different approaches to STEM curriculum design would be valuable and that ‘insider knowledge’ of comprehension and transformation of pedagogical knowledge will further the understanding of STEM education in primary school settings.

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## CASE (Cognitive Acceleration Through Science Education) and the Third Space

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### ABSTRACT

This paper outlines a very personal doctoral research project involving the categorisation of children's small group talk in secondary science. Set within the context of the CASE (Cognitive Acceleration through Science Education) project the study draws upon a range of ideas concerning classroom dialogue in an attempt to illustrate and map the movement of spontaneous to scientific thinking in Vygotskian terms. This paper introduces the ideas that are being used to show how Bhabha's notion of the third space is being developed into a working model to explore small group talk triggered by a Piagetian cognitive conflict in CASE lessons. Two episodes of talk are used to illustrate the talk codes that are still in development for this purpose, these also serve to exemplify the nature of the talk that is taking place within CASE lessons.

**Key Words:** Cognition; classroom discussion; third space; Vygotsky

### INTRODUCTION

Little did I know that my involvement in a science project called CASE would lead me to using the very same lessons as the basis of my doctoral research three decades later. CASE stands for *Cognitive Acceleration through Science Education* and comprises a sequence of 30 intervention lessons to be used in science at the start of secondary education. CASE is a reasoning programme written by Philip Adey, Michael Shayer and Carolyn Yates, and published under the title 'Thinking Science' (2001). The lessons use Piagetian schema as vehicles to expose pupils to high levels of thought, termed formal operational thinking in Piagetian terms. The lessons complement standard instructional activities and are used some four or five times a term for two years. The interesting aspect of CASE was that it began as a research project at King's College, London and was accompanied with many published reports highlighting the impact of the lessons on pupil attainment (Adey, 2005; Shayer, 2002). In addition to the evidence provided by the authors, others found similar impacts from using CASE in different contexts (Oliver, et al., 2012; McCormack, 2009).

Personally, I enjoyed the lessons and found the children in my CASE lessons, aged 11 and 12, were better able to talk and reason than my older students. More than this, my CASE classes always felt more social, more discursive and students seemed to enjoy science more than in my

non-CASE groups. My career progressed and I worked with other professionals to help them use and apply the CASE lessons within their own schools. At that time in the UK, the 90's, it was very common for schools to participate in projects out of personal interest rather than government directive. Seven years after my first exposure to CASE, I left my school to work as an advisory teacher helping others to use it, and its sister project in mathematics called CAME. Projects of this type, now termed *Let's Think*, have always remained popular among schools and researchers (see <http://www.letsthink.org.uk> for further details of this work).

A range of circumstances led to me to embark on a study of CASE, one of which was to engage in a deeper exploration of talk and the development of Vygotskian psychology within these lessons. During the latter part of the last century, it was rare to hear his name mentioned, but now his work is commonly referenced and is widely accepted as providing helpful insights into cognitive development, among members of the teaching profession. Michael Shayer (2001), the main author of the CASE project, indicated they only had an intuitive grasp of the relevant work of Vygotsky and how this pointed the way towards the importance of peer-peer collaboration as an essential component of cognitive development. My research seeks to elaborate on this in relation to the CASE project while at the same time bringing it more in line with the way teachers now understand dialogue to support thinking and cognitive development in the classroom (Mercer, 2000).

Although this research involves a specific intervention project it is embedded in, and cannot stand alone from, authentic classroom interactions as managed by experienced practitioners. CASE is based upon specific theoretical claims about teaching and learning which reflect my own commitment to understanding the complex relationships between theory and practice and the ecology of the secondary classroom. My view is that this work will both contribute to, and enrich, the theoretical foundation of learning and teaching that reach beyond KS 3 science. In particular, I am seeking to use the outcomes of this work to provide concrete guidance for those who wish to scaffold and promote small group discussion in their classrooms, whether that be in science, mathematics, or indeed any other subject.

## THEORETICAL UNDERPINNING

In the original CASE project, the work of Piaget and Vygotsky formed the basis of a theoretical platform upon which the authors claim to have been able to develop a mechanism to improve students' thinking. There are three essential ingredients to their mechanism namely:

- an understanding that higher order thinking can be described by the reasoning patterns of formal operations as described by Piaget;
- that the development of formal operational thinking occurs in response to a combination of variables including student's maturation, environment and history of development; and
- an acknowledgement that a key factor in cognitive development is social mediation as described by Vygotsky.



During my early exposure to CASE training, the rules of behaviours termed social mediation, were not explored fully or made explicit in the way Mercer (2000) does but, rather, the ideas of Vygotsky and Piaget were used to provide teachers with a theoretical framework for the social construction that should be taking place in their classrooms. Social construction was described as taking place within the ‘construction zone’ (Adey, 1994) and involved, ‘dialogue and action which leads to the construction of a reasoning pattern’ and that ‘each pupil has the opportunity to build up, bit by bit, the reasoning patterns which will do more powerful work of thinking for them’ (pp. 66–67). It was a desire to examine the verbal manifestation of this ‘construction’ within my classroom that led me towards a study of both the roots and branches of the ideas underpinning CASE. It is for this reason that I am limiting this paper to a discussion based upon of the ideas of Lev Vygotsky.

Alexander (2000, 2005) affirms the importance of talk inside the classroom and describes teaching that seeks to develop it as ‘dialogic teaching’. From his point of view this involves the promotion of student participation in class conversations, in an influential and consistent way, which will then facilitate the attainment of better learning (Mercer, 2008). Similarly, Paris, Byrnes, and Paris (2001) declared that the educational importance of mental discourse resides not only in the understanding of others’ beliefs, but also in the promotion of self-regulated learning in students. In this sense, if teachers elaborate a discourse that contains a high level of mental content, they are more likely to promote the formation of students who are much more capable of understanding their own and others’ opinions (Olson & Astington, 1993).

This perspective is underpinned by sociocultural psychology (Vygotsky, 1978) which proposes that language has three main functions, namely as a cognitive tool that children use to process knowledge, as a cultural or social tool that allows us to share knowledge and, finally, as a pedagogical tool that allows a person to be another’s cultural guide (Mercer, 2000). For this reason, Fernández, Wegerif, Mercer, and Rojas-Drummond (2002) stated that learning to think is essentially induction into a social practice that involves the internalisation of ‘language as a tool for thinking’. Indeed it is the ideas of Wegerif (2005) and his exploration of the link between talk and thinking that have been instrumental in enabling me to develop my own perspective on talk for further detail on this and my analysis of CASE lessons.

One of the key terms used to describe the specifics of CASE lessons is the term ‘bridging’, which signifies when the ideas raised in the lesson are applied and explored in new or related contexts. As a teacher this was something that resonated and recall when pupils would come up with their own ideas or share their thinking prompted by the lessons. This aspect connects with the work of Moll et al. (1993) who, in an attempt to support teachers to facilitate their pupils in moving towards scientific conceptual understanding, suggests that children carry ‘funds of knowledge’ with them into the classroom. ‘Funds’ refer to the knowledge and skills, both historically accumulated and culturally developed, that pupils naturally acquire as part of their life experiences. The problem many pupils face once they join the school community is that much of the knowledge upon which they are assessed comes from does not acknowledge the wealth of life experience they bring to any situation. Moll (1993) is clear that teachers should ‘incorporate social, economic and productive activities into their classrooms’ to support the movement from spontaneous to scientific understanding. The classroom is a complex environment where talk and thinking go hand in hand as part of the collective and social experience (Moll, 2000; Serret, 2004).

It is therefore important for teachers who work in such a ‘talk rich’ interface between the ‘emergent schooled concepts and everyday concepts’ to mobilise the knowledge pupils bring with them. Moll (1990) claims that such a view is useful in mediating instruction, and classrooms can be transformed by mobilising such funds of knowledge. Gutierrez (1999) highlights this using the term ‘counter-script’ to denote the patterns of talk that are constructed by pupils as rich zones of collaborative learning in any classroom. Gutierrez (1999) associates the overlap or intersection of pupil and teacher scripts with the potential for pupils to develop understanding, thus providing a ‘window of opportunity’ that enables connections and accommodation to take place. In her eyes, such an overlap should be viewed as a learning zone that can be promoted by practices that bridges home and school learning and therefore harness the power of the funds of knowledge that pupils bring with them. It is this mix of the two that, for her, increases the possibility that pupils will participate, and that real dialogue will occur. Gutierrez (1999) associates this overlap, or intersection, of the pupil and teacher scripts with the potential for the development of understanding and terms this the ‘third-space’. It is the mix of the two, or the difference between them, that increases the likelihood that pupils will engage and participate, and that meaningful dialogue and learning will occur. Linking very strongly to CASE, and the pedagogical strategies employed in the lessons, Gutierrez (1999) provides some very specific advice on how to engineer classrooms cultures of this type. To her, it is the resulting discussions that act to scaffold the inclusion of pupil experiences and ideas within the narrative of the lesson. This process needs to be explicit in the signposts used by the teacher to facilitate pupils making connections between themselves, their ideas and the world of science. This is done by skilfully weaving their whispered and giggled questions together with the academic language and discourse. These words described my own view of the conversations I regularly heard in CASE lessons and so further fuelled my desire to investigate the small group conversations taking place at such times. To this end I am using the notion of the third space as a helpful working construct to frame and then explore what is happening during small group talk in CASE lessons.

Maniotes (2005) explores the ‘third-space’, and the ideas of Gutierrez (1999) in particular, in her doctoral thesis. Working in literacy she denotes interactions in the third space as mergers and suggests that during such times the boundaries between the world of the child and the subject meet. When this meeting takes place, echoing Bhabha (2004), she states that translation and transformation are possible. From the outset she does highlight the ‘elephant in the room’, which is when trying to observe and collect examples of the third-space, ‘the painful fact remains that they are rarely seen’ and that the limited number of examples do not offer an opportunity to truly describe nor quantify it. In the context of literacy, she suggests that a carefully selected series of texts might be a good place to look for evidence of the third space because they have the potential to reflect students’ lives and can therefore serve to effectively draw all children into the process of learning. From working with a single class of pupils, she is able to find evidence of conversations that are indicative of the third space and that fit her criteria of mergers. A merger is a way of capturing the collision between the cultural world of the students and their teachers, and she found three types of ‘third-space’ conversation and labelled these: ‘intellectual enquiry’, ‘deep reading’ and ‘social empathy’. These three categories of talk provided me with a fruitful baseline to explore the concept of the third space through the small group talk that takes place in CASE lessons, termed construction zone activity by Shayer (2001). This research is using the notion of the third space (merger) to categorise small group talk in CASE lessons

when pupils are both engaged and motivated to talk in ways that I have found regularly involves personal sharing, speculation and new ideas.

## METHODOLOGY

My study site is a secondary school for children aged 11 to 16 in the North of England which comprises some 900 pupils drawn from a deprived socio-economic catchment. This particular school was chosen for geographical reasons and because I have a historical relationship with the science department, having already supported the Head of Science in a previous role. The school was considering incorporating CASE into their curricular provision and came to me for help. When asked to host my research they felt that both their pupils and teachers would benefit from a relationship of this type, one where an outside consultant was both modelling CASE teaching and carrying out research at the same time. The group chosen were a sample of convenience i.e. those selected must actually be relied upon to talk during the lessons and to be recorded doing so. The children selected were those who their teacher felt would be able to share their ideas and thinking – not a random sample but an opportunistic one. The actual selection process was carried out during a sample observation by me and under the guidance of the class teacher (an experienced practitioner) so those involved did not feel under undue pressure to respond. The criteria for inclusion were based upon their teachers' knowledge of the pupils and safeguarding regulations. The sample group included an equal gender split and involved pupils who were confident enough to talk, and willing to take part in the research. School guidelines regarding safeguarding were followed at all times and did not involve pupils the school deemed unfit to participate. All pupils were invited to participate, and the final decision was always left to the teacher in charge of the class. All pupils took part voluntarily and the aims of the research was explained to them prior to any teaching of CASE taking place.

As none of their teachers in this school had any real experience of CASE and given the complexities involved in engineering discussions of the type mentioned in the previous section, it was decided that I would do all of the CASE teaching. With the help of the department, a Year 9 (13-year-olds) class was identified as a suitable group for the research. They were a class who would be willing to talk and would agree to being captured on video. The class were also chosen because their teacher had been identified as the person who would be leading on CASE and felt that having me teach her class would be a good opportunity. I spent two lessons with the group to become familiar with them and to gain their trust and permission to teach and to video them. This time enabled me, in conjunction with the class teacher, to select two groups of four pupils who would not mind their conversations being recorded and transcribed. Although 'unrepresentative' it was a necessary decision due to the fact there was a need to generate real conversations for analysis. Two small Go-Pro cameras were used to film both groups throughout the whole of the lessons taught. The class experienced CASE regularly, about once every three weeks with each lesson being transcribed within two weeks of the teaching.

### **The Third Space Talk Codes**

Using Maniotes (2005) categories of merger, Guitierrez's (1999) notion of counterscript and Wegerif's (2005) category of playful talk, five codes were developed for use in transcript analysis. Although still very much a work in progress the codes are an attempt to categorise the types of talk that take place and emerge as children work on a cognitively challenging problem. The five third space talk codes I am using are:

- I – intellectual enquiry and construction,
- E – empathy and personal sharing,
- R – surprise or reflection,
- P – playful,
- A – pupil agenda.

Table 1 provides a description of the specifics of the individual codes and their distinctive features. This is still very much a work in progress and at this stage it is based upon the work of the three authors above and my own knowledge of CASE. The validification process will result in much better descriptions of each talk code that are shared in such a way that they can be easily used by any classroom teacher. In developing the codes, I was looking to try and capture those moments of talk when children open up, discuss, reflect, ponder or share their thinking and inner thought life when their talk or response signifies a personal connection has been made or a deeper level of processing and thinking is taking place. This can happen when they struggle with the challenge the teacher wants them to engage with or with the resulting conflicting ideas of their peers. I was looking for evidence of this in the words used and the conversations taking place. Usually this is verbal but it could also be a gesture that signifies thinking. During such times, pupils may puzzle, laugh, sing or play with language. They can bounce ideas off each other, share personal misconceptions, views and beliefs and challenge one another. Such talk has degrees of relatedness or separation to, or from, the desired object/focus of thinking, so there is quite a large area of overlap between this type of talk and when it shifts to becoming unrelated chat. Such engagement could result from a connection made to or a recognition of their own thoughts and views. Pupils may share and volunteer some knowledge or ideas, they could even ask questions, ponder or reflect upon something going on in their lives individually or collectively. Most often it is seen as pupils working together to solve a problem where the answer needs to be constructed by the pupils themselves.

Third Space Talk Code	Description
<b>I – Intellectual enquiry</b>	<p>Pupils explore and try things out, experiment or pursue ideas and thoughts. This may include the pupils going beyond the question as they explore, develop and play with ideas. They may also share their thoughts and questions triggered by the lesson/activity. They pursue an answer because they are genuinely interested in a solution and will often come up with personal solutions that fit the evidence. They regularly speculate and suggest explanations and good ideas that seem to fit or help with the ‘answer’. They may use and apply facts they already know to help them. Pupils work together to support each other’s ideas and to develop solutions to solve the problem.</p>
<p><b>Key</b> – pupils share ideas and knowledge or experiment with resources to construct/explore/develop an answer or solution. They often collectively use the knowledge they have as part of the learning process.</p>	
<b>E – Empathy or personal sharing</b>	<p>Here the talk concerns relationships with peers or they make a personal/familial connection with the lesson and/or subject matter. They may also seek to question their peers as to aspects of their personality, character or lives. Pupils may share personal information or ideas in a way that triggers a, thoughtful, conversation. They may share some, or reveal some, fact their peers are unaware of.</p>
<p><b>Key</b> – sharing or revealing something personal, discussing an issue of concern or interest, asking questions to elicit ideas, knowledge or reaction from peers</p>	



<b>R – Surprise or reflection</b>	<p>Pupils share real surprise related to something in the lesson content. Pupils talk as they try to get a deeper insight into the problem or issue. They may re-asses their ideas about an issue as they move forward in their thinking and possibly change their minds. They may go of track to pursue such new ideas or thoughts.</p> <p>They may even share things they used to think when younger.</p> <p>They often ask questions of self and their own understanding when challenged and this is linked to questioning own understanding. They often wonder out loud and go off at tangents.</p> <p>They may stare into space and reflect and or ask questions. Often linked to statements regarding what they thought were true that may not be the case now. They may be uncertain and hesitant as they are not trying to answer the question more pausing and taking stock.</p>
<p><b>Key</b> – asking questions or reflecting in a way that highlights/illustrates their thinking. They often ask questions of themselves that indicate how they view the world.</p>	
<b>P – Playful talk</b>	<p>Creative playing around with ideas in a fun or humorous way. The sound of the word to the pupils is often a source of fun. Often ‘silly’ as they play with the idea or word. During such talk pupils may go off on a tangent and talk about something that is seemingly unrelated to the initial stimulus.</p>
<p><b>Key</b> – this type of talk is often associated with humour and fun. It is regularly linked with a change in voice tone and the use of silly voices and singing.</p>	
<b>A – Pupil agenda</b>	<p>Here the pupils take ownership of the talk and ideas. They may go off task and also invent their own names etc. Their group identity, or the individuals present, often shapes and directs their response to the stimulus.</p>
<p><b>Key</b> – linked to their control and ownership of the thinking, ideas and task progress etc. They have transformed their talk to meet their own agenda as prompted by the activity. They may be off task but they could also are shaping and changing the task based upon a personal agenda.</p>	

**Table 1: Third Space Talk Codes**

The validity of the codes was trialed and authenticated through a ‘critical friend’ observation process. Colleagues who were familiar with CASE were invited to observe two video clips, including transcripts, to check how easily they could use the codes to differentiate between the different types of talk taking place. The coded transcripts were compared between the four friends and my initial use of the codes to look for any significant differences or areas of disagreement. Two of the key points that emerged were that:

- the codes easily allow small group talk to be categorised and that five categories are enough to capture and represent the different types of talk without being too onerous or difficult to use; and
- two codes, namely I and E seemed much clearer than the others but R, P and especially A required further clarification and exemplification.

One issue is that in episodes of talk we need to account for the adolescent enthusiasm that comes with engagement within the code I. With engagement comes enjoyment and aspects of what could be called P but we do not categorise them as P. For example, a joke does not signify P as this does not indicate a movement away from their engagement in solving a task or discussing something or sharing ideas and solutions. It is more concerned with a movement away into another different type of talk rather than a single utterance or sentence from one child. There was therefore a need to revisit and update the criteria to provide greater clarity regarding each code. Clear examples of coded conversation needed to be provided to exemplify and illustrate each one and the problem areas – justifying and giving reasons why. This provided greater clarity regarding the boundaries between different talk types although there will always be shades of grey, there are key defining features which allow an episode of talk to be placed into one group or another.

### **Specific Thoughts About Type A (*Pupil Agenda Talk*)**

This code is a way to include talk that can be disruptive in nature, when the pupils go off at tangents or are simply coming to the end of a task and beginning to chat about something on their minds or of concern outside the lesson. This type of talk has been termed ‘side talk’ or counterscript. Counterscript is where the pupils subvert the normal script, or talk patterns, of the classroom. There are three issues associated with talk of this type that need to be taken into account which are as follows:

- some talk is actually related to the focus of the pupil engagement and so must be included as positive and contributing to the thinking agenda of the lesson;
- some talk is neutral and part of normal chat i.e. ‘What lesson do we have next?’; and
- some talk however is negative, in terms of the lesson focus, and can also be disruptive and therefore actively limits task completion.

Due to this I redefined A in 3 ways: +ve, neutral and -ve to differentiate between the different forms that this can take. In CASE the first form of A is termed bridging i.e. applying their thinking into a new area but it’s directed by them and is supportive of the lesson agenda. -ve A is off task talk that diverts pupils away from the lesson. Neutral A is just that – talk that has

nothing to do with the lesson at all yet that takes place when they are bored or are waiting between tasks during the natural down times that occur in any classroom.

## Two Episodes of Coded Conversations

Two episodes of classroom interaction have been chosen to illustrate the talk that is taking place in CASE lessons, how I am planning to use the codes and also to highlight some issues surrounding this form of categorisation:

- Episode 1 – in a lesson on developing models one group of pupils discuss the reasons for the difference in the weight of Aluminium and Lead blocks of the same size.
- Episode 2 – two groups of pupils respond to the same stimulus in a lesson following the one highlighted in episode 1.

The lessons in question are not from the original CASE folder but are CASE-style lessons devised by a colleague that were felt to be suitable to generate discussion resulting from a cognitive challenge among pupils of this age.

### Episode 1 – *Pupils Discussing Aluminium and Lead Blocks*

This short transcript is from the end of a lesson on the need for explanatory models in science. It begins with the pupils being asked to imagine what is inside a box (containing a string running through it, that when pulled tight would stop moving) that cannot be opened. The aim is for the pupils to explain what is happening when they are unable to see but rather are limited to the evidence they observe. The lesson ends with an activity which involves them applying a similar logic to explain why two blocks of lead and aluminium, despite being the exact same size, weigh very different amounts: 92g and 22g.

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7.26        T ‘Actually the Al is heavier than Pb....because Pb has holes in it therefore creating.....  
               J ‘Al, don’t you mean?’  
               T ‘Yes’  
               J “Air circulates into it....lighter because air does not weigh much’

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8.04        R ‘Its stainless’  
               T ‘Its obviously not’  
               T ‘Plastic’  
               R ‘Steel’

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9.08        T ‘I think Al has holes...used to cook food...and need holes to heat up quicker to get all the heat to the food’  
               Teacher ‘So you think that’s why it weighs less?’ T agrees but quietly  
               R ‘Tiny holes’

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## Discussion

Much of this excerpt is coded as I (intellectual enquiry) because the group are on task discussing why lead is so much heavier than aluminium. Two of the group members, Tony and Rob, decide that aluminium is full of little holes that allow air in. Air is not very heavy and so with more air inside that is why the aluminium weighs less. This episode illustrates Moll's (1993) idea of the fact that pupils bring 'funds of knowledge' with them that inform their thinking. This was revealed following the lesson as this group were interviewed about the thinking taking place during this episode of talk. A transcript of this interview is included below as it clearly highlights how one child shares his out of school experiences of camping. An incident with a campfire enabled him to think more deeply about the nature of the aluminium frying pan that was involved. It was this knowledge that he brought to bear to solve the conflict posed by the two different blocks of metal differing in weight.

Interviewer to Tony: You say a lot about what aluminium is used for, do you know a lot about it?

Tony: No, it's because when I went on a camp with the Scouts we accidentally, after we ate a meal, that we cooked in a pan over a fire, forgot to take it off and it melted. Then when it cooled down and hardened it had a nail as an eye, a nail as a tail and the rest was just aluminium with some holes in it.

Interviewer: How did that help you in this lesson?

Tony: The Scouts called it....

Interviewer: How did that experience of camping...why did you think that was helpful in this lesson?

Tony: Because I found out that it was aluminium and then I heard the word aluminium again I thought...I realised that it was what pans were made out of and pans usually let the heat get through them but not too much heat to be able to cook the food inside.

Joe: Yeah I have got a lot of aluminium pans in the house.

Interviewer: So Rhys, was Toby's ideas helpful?

Rob: Ehm...yes.

Interviewer: Explain why the aluminium cube was lighter than the lead cube.

- Rob: I thought in my head when I felt it...the weight. I instantly thought that one could have holes, like when Toby said about the pan to let heat through, but I said it could have like really little holes, not big ones but really small ones...to let the heat through. But in lead it's just a solid block, so that's why I thought the lead was heavier than the aluminium because the aluminium has holes in.
- Interviewer: What do you think Joe?
- Joe: I thought the aluminium had nothing in it, it was just like (hollow)... hollow but because you/he said it was full I was thinking 'How on earth is this possible?'...I was thinking what if the aluminium is lighter than the lead and the lead is more heavier...and it's like more filled up.
- Interviewer: Okay Jim what do you think of that?
- Jim: I was not thinking about this at the time, now I am thinking that on the periodic table aluminium has a smaller number than lead so I think that must be how much it weighs.
- Interviewer: That's a new idea.
- Jim: Yes, that's what I was thinking about...thinking about the periodic table...just to try and make sure that it's right.

## **Episode 2 – Two Groups Of Pupils Discussing Decorating**

The class was working on the lesson following the one used in Episode 1. The task from which this part of the transcript is taken involves them having to use their developing understanding of particle theory to create a story board to explain how we can remove wallpaper from a wall using steam or hot water. The stimulus for this is an image, used on the worksheet, of a couple starting to decorate their new home.

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- 2.14      E      L to M: Have you ever moved into a house and removed the wallpaper you don't want?  
M: No.  
L: You get a squirty thing (mimes) and squirt the walls.  
M: I have chiselled it off.  
L: That's...do every time.  
L and M: inaudible
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2.34	<p>L: I have actually managed to stay in the house I am in for 4 years.  H: I was in the same house for 8 years of my life and then we moved to Australia and then I think we have moved like 5 times...loads because of Australia...I have been to 7 different schools.  M: 3 Schools, 1 house...I am living the good life.</p>
<hr/>	
2.56	<p>AE comes near H: We are just finishing it.</p>
<hr/>	
3.06	<p>M and L: laugh about the feedback.</p>
<hr/>	
	<p>L: I don't have a pen...you hold it, I'll talk.</p>
<hr/>	
3.31	<p>L: mimes holding up the paper 'I'm holding it'.  L and M: talk like this for 20 seconds. 'I bagsy it.'.</p>
<hr/>	

## Discussion

The clips in episode 2 have been shared because they are both taken from the same point in the lesson and have been chosen to highlight how very different conversations can be triggered by the same stimulus. Group 1 look at the image and share personal information (coded E) about their lives, moving house and decorating. Group 2 sees two of the group (boys) begin to engage in silly behaviour and then to go off task. The girls in this group are on task until distracted by the boys. As they do this, see line 3, the boys begin to talk about female bra sizes because the image used is of a female showing a slight glimpse of cleavage while decorating. The two boys do then involve the girls, line 13, to ask their opinion of very large bra sizes. This talk is coded 'A' due to the fact it involved a discussion stemming from adolescent boys interest in the female anatomy yet it was clear from the tape that they were not upsetting the female members of the group and that it ends with both girls laughing.



## REFLECTION AND DISCUSSION

### Part 1 – *Reflection Upon the Terms We Use*

At this preliminary stage in the coding process, certain ideas are crystallising regarding the terms that are used to describe dialogue and its relation to cognitive development. What has emerged from this is the need to frame and align the third space with authors such as Mercer (2001) and Wegerif (2005) who have been successful in illustrating a range of categories of children's talk. My research is seeking to make the concept of the third space user friendly and more practical in its application. I feel this will be achieved primarily by viewing it through the lens of Vygotsky as this will harness its power as a descriptor of cognitive development.

In *Reason and Creativity*, Wegerif (2005) explores a category of talk he terms 'playful talk', which actually stems from his dissatisfaction with the term exploratory talk. He states that "[e]xploratory talk is linked to educationally desired outcomes yet it is not completely clear that the key mechanism is the use of language as a tool for reasoning" (p.236). He proposes that the ground rules of exploratory talk, such as asking open questions, and listening with respect, are the basis for something greater and suggests that talk of this type serves to open up, and maintain, a dialogic 'space of reflection'. Such a space, one of reflection, facilitates the emergence of creative solutions to problems. It is this space that supports the emergence of creative solutions to problems and that playful talk is actually a baseline, or foundation, from which creativity can emerge. He refers to a 'kind of resonance' in which the structure of a narrative account connects with the hearer via similar structures in events read or experienced, which can be linked to Molls (1999) 'funds of knowledge'. It is through such 'resonances' that children build on each other's ideas, with new directions for thoughts coming from the product of such a dialogue. This strongly links to the 'third-space' as described by Guitierrez (1999) who uses the term to describe a window of opportunity for the creation of something new. In what could be a, prophetic, reference to CASE she suggests that the new construction emerges out of an extended dialogue in which the participants are struggling to create shared understanding and find a solution to a shared problem. This sounds like Shayer and Adey's (2001) description of social construction and cognitive conflict, which are the key terms used to describe CASE lessons. This also aligns with the very reason Maniotes (2005) uses for looking within literacy lessons for evidence of the 'third-space'. Wegerif (2005) now thinks that the reflective use of language opens up a space between people and that it is this that allows creativity to occur. Further it is the act of creating such a 'space' of reflection between participants in which resonances between ideas, images and signs can occur. What is clear is that this 'space' needs to be engineered and created but it also depends upon relations between people and it is here where idea of third space talk begins to support the creation of a broader model of constructive talk. The third space is internal yet dependent upon, symbiotically, the interaction between teachers and pupils and pupils and their peers. Wegerif's (2005) use of the term playful talk is also helpful as it brings to mind Dehaene's (2020) description of the role of mirth in learning in which he states that "a uniquely human emotion that guides learning and a mirth reaction triggers us to revise our mental models or thinking. Important in this case because it's a contagious social response that draws attention to the unexpected piece of information. Laughter during learning seems to increase curiosity and enhance subsequent memory" (Dehaene, 2020, p.189).

## **Part 2 – Reflections Upon The Ideas That Are Emerging From Using The Codes**

The development and use of the codes to categorise small group talk is generating some very interesting discussion points. Pupils are noted to be engaged with much fun and laughter as a part of their learning conversations. The critical friend process I have used to validate my work is revealing that the codes are robust enough for their wider use to categorise pupil talk and that they reflect the real conversations pupils have and that adolescent chat is mixed and messy. This study is interested in talk that is indicative of internal cognitive change taking place and for this we turn to Vygotsky. Vygotsky's account of cognitive development pays close attention to the construction of knowledge as a social process, one that involves human interaction involving 'signs'. During conversations words, i.e. signs, are exchanged between people and understanding occurs in the resulting social interaction and not in the signs in themselves. A sign can therefore be viewed as a vehicle for carrying, transmitting and developing individual and shared meaning. Semiotics is the study of signs and symbols and semiotic mediation is the term used to describe how signs are appropriated as part of psychological development (Mercer, 2002). This focuses attention upon the role words, or signs, can play in the mental life of the learner. As Vygotsky (1978) explains "[j]ust as a mold gives shape to a substance, words can shape an activity into a structure. However, that structure may be changed or reshaped when children learn to use language in ways that allow them to go beyond previous experiences when planning future action....once children learn how to use the planning function of their language effectively, their psychological field changes radically" (p. 28). I would like to suggest that my use of the third space is allowing an exploration of the adolescent classroom in a way that focuses upon how language enables them to go beyond their current level of thinking.

There are a couple of points I would like to draw the reader's attention to how this way of categorising talk is impacting how I view small group talk. Codes A (pupil agenda) and P (playful) may be another way to look at what could be seen as disruptive behaviour. Such behaviour may see a pupil labelled as 'difficult' but it is actually coming from shared engagement and identity within their group. The key point here is that pupils will talk but in CASE lessons, the talk is prompted by their engagement in the activity and the desire to voice their ideas, 'warts and all'. The observations are capturing the real talk that happens as a consequence of CASE and the twin processes of engagement and social construction that underpin such a classroom. Naturally as one might expect from a lesson that seeks to engage pupils in an appropriate challenge, code I (intellectual engagement) dominates. Further to this, it is becoming clear that such engagement and mental effort leads to the other forms of talk and that such moments can be used as indicators of a movement into the third space. Further analysis tracking the movement from one form of talk to another should reveal more about this and which forms or patterns of talk are pivotal in the development of thinking.

A key pedagogical point emerging is the importance of what I am calling talk triggers and role of teacher choice in promoting a range of talk, in line with my five categories. A trigger is something the teacher allows, says, does or a resource used that elicits an engaged response from the pupils. In one lesson a reference to my dog's health led to one of the groups discussing their own dogs with all volunteering dog stories. In the same lesson, on probability the use of an image of heavy rain prompts the following responses:

- In group 1 the rain image prompt's a fun exchange about how strong rain is to which one child states that; "We don't have strong rain like Russia!" This then leads to a discussion about their views on rain around the world.
- In group 2 the same image triggers chat regarding how they would escape from a car stuck in a flood and ends with one child saying 'There is a 1 in 100 chance I will jump out of the window'. This then later become a way to taunt another boy over his hair colour as he says; 'There is a 1 in 10 chance of being ginger.'
- The power of such triggers is becoming clear as more lessons are transcribed. In the episodes of conversation shared above two triggers are in evidence:
- The physical, and surprising difference, in weight between two different blocks of metal; and
- The use of an image to illustrate the context for the activity.

The knowledge gained from the transcription process is showing that the careful use of everyday and real-life examples by the teacher can resonate with the learners and result in task engagement which results in real and meaningful conversations. The question that arises in my mind is 'has the science classroom become a place where its occupants can talk freely about things that are important to them yet are acceptable within the context of CASE lessons?'

## CONCLUSION

To close, I would like to highlight four ideas that I am adopting to underpin my personal exploration of the CASE classroom. From a Vygotskian perspective comes Moll's (2000) notion that pupils possess 'funds of knowledge' that can be utilised within cognitive development. In CASE this has been termed spontaneous, or first space, thinking. In CASE itself the use of cognitive conflict is triggering some very rich and interesting discussions among children. It is such triggers that are generating the types of conversations I am terming 'third space' talk wherein young people build upon 'resonant constructions' based on their 'funds of knowledge' and in reaction to each other's contributions in order to develop new scientific understanding. In Piagetian terms this process is described as accommodation and results in Vygotskian terms in scientific or second space thinking.

Further coding should help to shed light upon whether this new thinking, or new funds of knowledge, is closer to the orthodox science curriculum and thinking than previous 'funds'. I have found that when challenged in an engaging way, children will talk and that this is an essential ingredient to learning. A recent move to colour coding the different categories will be used to show a rainbow of talk made of the five different categories that all stem from intellectual engagement and the need for children to articulate their thoughts as they naturally respond, share ideas and talk as part of the wonderful process that is cognitive development.

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## Learning Assessment in Angola: A Study Centred on Students' Voices

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### ABSTRACT

The discipline of Labour Education in Angola integrates the official curriculum of lower secondary school and is aimed at developing students' professional and social competences. The scarce existent educational research, and the process of a curricular revision (2018-2027) in the country justifies the need to develop knowledge about how students' assessment is being understood within this discipline. The present study describes and discusses 9th grade Labour Education students' understanding of learning assessment. Data gathering involved 9th grade students attending the discipline in four public schools from Lubango. Data was gathered through use of a validated questionnaire. Student responses of 692 questionnaires were analysed using qualitative content analysis, as well statistical analysis. The results suggest that students' conceptions about Learning Assessment (LA) are diverse and hybrid in the sense that they integrate dimensions associated with a traditional assessment perspective (1st and 2nd generation) and dimensions associated with an assessment perspective convergent with the state of the art on what concerns evaluation as a transdisciplinary field (3rd and 4th generation). Moreover, students' conceptions about LA were particularly divergent in two of the four schools, suggesting that school environments seem to influence significantly students' conceptions about LA, therefore the specificities of schools should be considered when defining and mobilising legislation about assessment.

**Key Words:** Discipline of labour education; learning assessment; lower secondary education in Angola; students' voices

### INTRODUCTION

This study is integrated in the PhD project of the 1st author, which aims to understand how student assessment is being conceptualised and implemented in the discipline of Labour Education of the 1st cycle of Secondary Education (7th to 9th grade) in Angola and proposes ways to improve this. To sustain a broad and ecological perspective, it is important to appreciate not just teacher assessment practices of students' learning, but as well as how students themselves perceive assessment and which factors influence these perceptions. In the context of Angola, where teacher-centred perspectives are still dominant (Guthrie, 2021), the central research



question to this study is: How do 9th grade Labour Education students conceptualise learning assessment? ‘Labour Education’ is a discipline with a strong focus in the articulation of the subject areas of Civil Engineering, Architecture and Physics, along with the ‘world of work’. It aims to enhance students’ employability and employment as envisaged by target 4.4. of the 4th goal of the Sustainable Development Agenda (UNESCO, 2016), and has therefore a strong social potential. In fact, in its official curricular programme (INIDE/MED, 2019), this discipline emerges ‘...in the perspective of establishing a bridge between education and work, being so socially relevant. It is an important discipline as... it enables the student to acquire technical and basic knowledge to act towards problems, making him/her an active and valuable element in the family context.... The importance of this discipline lies in the economic and social development of the country’ (p. 5).

## RESEARCH BACKGROUND

In the following section we focus specifically on the assessment of learning in Angolan schools. This is based principally on the outputs of two previous studies developed within the PhD project (Simão, Costa, Lopes and Agostinho, 2019-2020) involving documentary analysis of current national guidelines, educational legislation, and state-based orders in Angola (e.g., Decree Law 18/2020), as well as the Labour Education curriculum (INIDE/MED, 2019). It also encompasses the over decade long personal professional experience of the first author of this paper as a Labour Education teacher. According to recent papers published on educational policy in Angola (e.g., Julião, 2019), policy is depicted as a rather centralised control (top down) approach, with schools being in the main role of political application.

Student assessment is a vital element in the teaching and learning processes (Bantwini, 2020; Moreira, 2012). At the level of secondary education, learning assessment constitutes a regulating strategy for the educational process, by way of guiding individual paths in school progression. It is also a means of certifying the acquisition of specific competences (Bernardes Nobre, 2015). In recent decades, there has been a growth in research on students’ voices, exploring their opinions about educational processes (Cook-Sather, 2006; Manni & Knekta, 2000; Oldfather, 1995) as educational research is increasingly valuing students’ opinions in terms of educational practices. Acknowledging and understanding what school students think and feel about their learning and assessment processes now constitutes a fundamental instrument for informed curriculum management and innovation. Importantly, the ways in which students perceive the ‘assessment environment’ influences their investment in relation to the expected results to be achieved in their learning process (Moreira, 2012). Indeed, researching students’ concepts of assessment not only indicates what is valued in the teaching and learning process, but also gives directions for how assessment practices can be improved (Bantwini, 2020). We believe a central research aim, then, is to create space for students’ voices about learning assessment (Bourke & MacDonald, 2018). This can be seen to be very pertinent in Angola where the secondary education system is currently undergoing a process of curricular revision (2018-2027), under the responsibility of the National Institute of Research and Development in Education/INIDE (INIDE, 2018) within the Ministry of Education (Afonso, 2019). Research on the practices of Angolan teachers is still the rule (Guthrie, 2021; Soares et al., 2021) and that of students’ voice

is still relatively scarce (AUC, 2015; Breganha, et al., 2018; Chimbanlandongo, 2015). It is a timely opportunity, then, to delineate specific recommendations at institutional and political level based on educational research.

Assessment policies and practices within the secondary education system can be synthesised into six key-ideas in light of state-of-the-art discussions of assessment as a transdisciplinary field of knowledge (Barreira, 2019; Guba & Lincoln, 1989; Fernandes, 2018; Muñoz-Cuenca & Mata-Toledo, 2017; Ribeiro & Marques, 2019). Within this frame, key-ideas 1-3 are Angolan assessment principles/practices that are in accordance with the most recent conceptual position concerning assessment as a transdisciplinary field related to the field of educational assessment. Key-ideas 4-6 are those aspects associated with educational assessment present in the Angolan secondary assessment system that are linked to ‘obsolete’ visions of assessment and are therefore identified as having dissonant characteristics with the most recent conceptual ideas of assessment as a transdisciplinary field of knowledge. These six key-ideas methodologically provide the basis for the development of the questions for the students’ questionnaire.

### **Key-Idea 1:** *Assessment is More Than Just Classification and Student Selection*

At the start of the twentieth century and based on the work developed by Alfred Binet in France, student assessment was seen simply as a measure of what students were able to do at the end of a learning process. These measures were translated into a classification, that is, given a scale value. However, this perspective has been criticised by many (e.g., Ribeiro & Marques, 2019), including Angolan researchers (Afonso & Agostinho, 2019; Julião, 2019) due to its positivist and reductionist approach - that every learning outcome should/could be objectively measured. Therefore, this form of assessment is viewed as a measure of what the students learned (assessment of learning) and associated only with summative assessment. The view that assessment is more than just classification is present within the Angolan national guidelines (Simão, Costa, Lopes & Agostinho, 2019; 2020). However, elements associated to a narrower view are also present and will be discussed further on.

### **Key-Idea 2:** *Integration of Formative Assessment Strategies*

In the 1960s, Michael Scriven introduced the concept of formative assessment and its role in enhancing the learning process (*assessment for learning*). This implies its continuous use throughout the teaching and learning process, in providing on-going feedback to students by teachers (Barreira, Boavida, & Araújo, 2006; Barreira, 2019). Documentary analysis identified considerations and recommendations in Angolan policy guidelines that focus on the value of formative assessment strategies (Simão, et al., 2019; 2020).

### **Key-Idea 3:** *The Importance of Diversifying Assessment Methods and Instruments*

Given that schools are seen to contribute to students’ development in a holistic way, and not only in the acquisition of knowledge, it is also important to develop ways to assess different learning objectives, for example, assessing abilities and attitudes. The Angolan researcher Afonso (2019) advocates that the Angolan education system should develop in students what he describes as CHAVE (Portuguese initials letters for *Conhecimento*/Knowledge, *Habilidades*/Abilities,

*Atitudes/Attitudes, Valores/Values, and Ética/Ethics*) - an acronym that means, literally, the 'key' [*CHAVE*], implying the "Key for Life" [*Chave da Vida*]. However, the way to assess those different learning objectives requires an intentional diversification of assessment methods and instruments. While written tests may be more-or-less adequate to assess knowledge, the assessment of abilities and attitudes, for example, requires different approaches, such as rubrics (Stevens & Levi, 2005) to guide teacher observation grids. The importance of diversifying assessment strategies was also identified in the documentary analysis conducted by Simão, et al. (2019; 2020).

**Key-Idea 4:** *The Objective Nature of Assessment*

Despite what we say above, both the Angolan educational assessment legislation and teachers' discourse around students' assessment still shows a belief in, and attempts to make, assessment objective. The idea of assessment being an objective exercise is rooted in early perspectives of assessment as a transdisciplinary field of knowledge. However, considering that assessment, and all educational actions, are social endeavours undertaken by human beings, this positivist paradigm needs re-evaluation. In fact, more developed perspectives on assessment – for example, assessment as a negotiated process and assessment as a communication process - both aim at achieving intersubjectivity through the negotiation of the subjective statements of the actors involved in the assessment process, namely teachers and students (Muñoz-Cuenca & Mata-Toledo, 2017; Fernandes, 2018).

**Key-Idea 5:** *A General Lack of Students' Active Role in Assessment*

Following from key-idea 4, intersubjectivity should be achieved by the participation of students in the assessment process, possibly through self- and peer-assessment. This participation, which questions the power given to the evaluators (assessment as a judgment by teachers), seems absent in the Angolan educational system. Documentary analysis has not identified any reference to students as active participants in their own assessment. This omission constitutes one of the main motivations to conduct the present research, which aims to understand how students perceive assessment and which factor influence these perceptions. Through this, we contribute to raising awareness about the important role of students in the assessment of their own learning processes.

**Key-Idea 6:** *A Strong Focus on Normative Assessment as Classification*

Despite the principles highlighted in key-ideas 3,4 and 5, there still remains a very strong focus in Angola on 'assessment as classification'. That is, despite recognition of other possible assessment processes, summative assessment remains the most valued. This key-idea is clearly illustrated by the weight still given to summative assessment, achieved through examinations (60%), toward students' final mark at the end of 9th grade. The other assessment component is the MAC (*Média/Average, Avaliação/Assessment, Contínua/Continuous*), and the Angolan researcher Chimbanlandongo (2015) showed that Angolan teachers find difficulty with continuous assessment, in particular when assigning a mark to a student's MAC at the end of each school period.

## METHOD

Assessment plays a central role in students' learning. Labour Education works towards employment in life projects and in the social development of the country (AUC, 2015). With this in mind, we developed a questionnaire to gather perspectives on assessment held by Angolan students attending 9th grade Labour Education. The process followed a specific validation strategy in accordance with Lopes, Pedrosa-de-Jesus and Watts (2016). First, in order to enhance theory-based validation, extensive literature reviews were conducted on:

- (i) students' conceptions of learning assessment, bringing together international and national authors (the research outputs are published partially in (Simão, et al., 2019; 2020), and synthesised in the research background of the present article).
- (ii) methodological considerations relating to data gathering through questionnaires (for example: Hill, 1998; Dalfovo et al., 2008; Ampudia de Haro, et al., 2016). We focused in particular on recommendations for combining open and closed responses in order to enrich data analysis. We also noted methodological recommendations for the application of data gathering instruments in Angolan contexts, mindful of context-based validation. We therefore analysed and used studies that developed questionnaires which were applied to Angolan students of a similar age (Chimbanlandongo, 2015; Breganha, 2019).

Using the Lopes, Pedrosa and Watts (2016) model for validation processes, we piloted a version of the questionnaire with 76 students in order to enhance response validity. These students attended a school not included in the sampling procedures. Based on these students' responses, the basic structure was retained but improvements were made in terms of the wording of the questions. The final version of the questionnaire was applied to four state schools from the Angolan municipality of Lubango attended by 1713 students. A total of 692 valid questionnaires were gathered. Besides socio-demographic characterisations, the questionnaire included six statements on assessment (Table 2) in which students were asked to position themselves using a five-item Likert scale (1 – Totally agree [*Concordo Totalmente*]; 2 – Partially agree [*Concordo parcialmente*]; 3 – I do not agree or disagree [*Não concordo/nem discordo*]; 4 – Partially Disagree [*Discordo Parcialmente*]; 5 – Totally Disagree [*Discordo Totalmente*]. Finally, the questionnaire also included one open question: "If you have any other idea about what assessing students' learning means please give us your suggestion."

**Table 1: Assessment of Learning, Six Statements Used in the Questionnaire**

Statement 1	Assessing is, above all, the teacher knowing if the student has assimilated the contents of the discipline [ <i>Avaliar é sobretudo o professor saber se o aluno assimilou os conteúdos da disciplina</i> ].
Statement 2	Assessing is mainly to classify, that is, the teacher assigns a grade to the student [ <i>Avaliar é sobretudo classificar, isto é, o professor atribui uma nota ao aluno</i> ].

Statement 3	Assessment should focus on what is taught in class [ <i>A avaliação deve incidir no que se ensina nas aulas</i> ].
Statement 4	Assessing is a continuous process [ <i>Avaliar é um processo contínuo</i> ].
Statement 5	Assessment should make students learn [ <i>A avaliação deve fazer com que os alunos aprendam</i> ].
Statement 6	Assessing implies that the teacher informs the student about the criteria used in the process [ <i>Avaliar implica que o professor informe os alunos sobre os critérios utilizados na mesma</i> ].

The selection of the four schools was based on the following criteria:

- (i) they are considered reference schools due to their long-established history; and
- (ii) they are schools in different geographical locations, so that two are located in an urban area: School A - *Escola n° 57 1° de Dezembro* and School B – *Escola 27 de Março*) and two in a peri-urban area; School C – *Escola n° 67 Mandume* and School D - *Escola n° 1773 - IESA*). This was considered as an important variable under study, since educational research in developing countries - including Angola - points to a higher number of educational difficulties in rural contexts (Guthrie, 2021).

All 40 classes of the four schools were involved in the study. In each class 20 questionnaires were distributed randomly to those students available to respond. The average number of students per class in Angola is 35-40 students (MEA, 2014). The questionnaire was distributed on paper and with the help of the coordinators of the Labour Education discipline in each of the participating schools. The first author of the paper explained to each of the four coordinators how to apply the questionnaire and which instructions s/he should give to students. The procedure was exemplified with at least one class per coordinator (four, one per involved school). Special care was taken in explaining how to answer the questionnaire – given the recommendations of researchers who have previously gathered data in Angolan school contexts (for example, Breganha, et al., 2018). These highlighted students' difficulty in understanding how to answer a Likert scale and to freely express their opinion in open-response questions.

As previously mentioned from the distributed questionnaires 692 valid questionnaire sheets were recovered. Table 2 indicates the number of questionnaires obtained per school as well as the number of classes involved.

**Table 2 – Number of Valid Questionnaires Obtained per School and Class**

<b>Geographic location</b>	<b>School</b>	<b>Number of involved classes</b>	<b>Number of valid questionnaires</b>
Urban	A 57 “1º de Dezembro”	22 classes	253
	B 27 de Março	7 classes	211
Rural	C Nº 67 “Mandume”	18 classes	131
	D Nº 1773 – IESA	4 classes	97
	Total		692

Each questionnaire was coded with the indication of the school and the number of the student's reply (e.g., School x, Ry). Open answers were transcribed individually to a database and subjected to content analysis according to Bardin's (2019) approach. A total of 54 answers were obtained, meaning that less than 8% of the students gave an open answer, reinforcing the idea that students find difficulty in reporting their opinions, as reported by others (Breganha, Lopes, & Costa, 2018; Lopes; Costa, & Matias, 2016). From these 54 answers, only 2 were rejected on the basis of difficulty in interpreting meaning. The content analysis led to the creation of four main categories of students' suggestion about their meanings for assessment of learning:

Category 1 (C1) –	Purposes of assessment, this category includes all the answers that explain/focus on the reasons/motivations of assessing (why assess learning?)
Category 2 (C2) –	Object of assessment, includes all answers that explicated the object of assessment (assessing what type of learning?)
Category 3 (C3) –	Moments of assessment, includes all answers that make explicit the moments when assessment is undertaken (assessing learning when?)
Category 4 (C4) –	Instruments/Mean of assessment. This category includes all answers that mention type(s) of assessment resources/practices or strategies (assessing learning how?).

It is important to highlight that the majority of answers entailed aspects of more than one category. Therefore, extracts of many answers were considered in more than one category. Closed answers, were manually inserted into an SPSS database (version 25) and submitted to descriptive statistical analysis. The combination of these analytical procedures (qualitative and quantitative perspectives) identified some key-aspects leading to the need for undertaking inferential statistical analysis considering a relational perspective between the six statements in each school. A more detailed explanation will be given in the following results section.



## RESULTS AND DISCUSSION

This section is divided in three parts:

- Part I: Socio-demographic characterisation of the students' sample allowing readers to get closer access to the Angolan school context
- Part II: Characterisation and discussion of the students' conceptions about assessment of learning
- Part III: Exploration of school environments possibly effecting students' conceptions of learning assessment.

### Part I: *Sociodemographic Characterisation of the Students' Sample*

Table 3 summarises the characterisation of the 692 9th grade students in all four schools and shows age, gender, type of teaching and history of school failure for each school.

**Table 3 – Students' Sociodemographic Characterisation**

		All	A	B	C	D
School(s)		N= 692	(urban) n'= 253	(urban) n''=131	(rural) n'''= 211	(rural) n''''= 97
Age		M= 16,1	M= 16,0	M= 15,8	M= 16,4	M= 15,9
		SD = 2,5	SD=3,36	SD=1,08	SD=2,17	SD=1,37
		Min= 14	Min =14	Min =14	Min =14	Min=14
		Max= 51	Max = 51	Max=18	Max=33	Max=18
Gender	Feminine	325 (47,0%)	126 (49,8%)	60 (45,8%)	98 (46,6%)	41 (42,3%)
	Masculine	360 (52,0%)	(49,0%)	(54,2%)	(51,7%)	(57,7%)
	Regular	630 (91,0%)	230 (91,3%)	130 (99,2%)	172 (81,5%)	97 (100%)
Type of teaching	At night	49 (7,1%)	20 (7,9%)	Not applicable	17 (13,7%)	Not applicable
Students who failed in previous classes (7 <sup>th</sup> and 8 <sup>th</sup> grade)		279 (40,32%)	155 (61,2%)	49 (37,4%)	96 (45,5%)	36 (37,1%)
Students who failed in 9 <sup>th</sup> grade		144 (20,8%)	49 (19,4%)	32 (15,2%)	45 (34,4%)	18 (18,6%)

The mean age of students in all four schools is 16.1 years, with a standard deviation (SD) of 2.5 years. The youngest students are 14 years old and the oldest 51 years old. The Basic Law of Angolan Education and Teaching (Law 17/16 of October) maintains that the appropriate age for attending 9<sup>th</sup> grade is 14 years. Ages above this may indicate previous failures. Indeed 144 (20.8%) of the sample students indicated their previous failures at 9<sup>th</sup> grade. Moreover, the number of students with experience of failure in 7<sup>th</sup> and/or 8<sup>th</sup> grade is even higher (279, 40.32 %). The school with the highest percentage of failures at 9<sup>th</sup> grade was rural School C (34.45%), adding confirming to international evidence (Guthrie, 2021; Soares et al., 2021) on difficulties experienced in rural zones. The school with lower percentage of failures is urban School B (15.2%).

Considering all four schools together, 52.0% of respondents were boys and 47.0% girls, figures very much in accordance with MEA (2014) and recent data related to the gender development index (GDI) of Angola (UNDP, 2020). The school with a bigger gender gap was rural School D, with 15.4 % more boys than girls. This, again, accords with the tendency of bigger gender gaps in rural areas of Angola (Guthrie, 2021).

In terms of teaching, 91.0 % of the students surveyed attended regular teaching (during the day). Only 7.1% of the students attended night school. Schools A and C offered night teaching and the % of students in this type of teaching was highest at rural School C (13.7%). Offering night teaching for this discipline is an exceptional measure of the Angolan Government and might be interpreted as a responsive measure considering bigger difficulties in rural zones. According to the Basic Law of Education (Decree Law n°17/16 de 7 de Outubro) the conclusion of the 1st cycle of secondary education (9<sup>th</sup> grade) is compulsory. Whenever required, the government has to create the conditions to include students that did not finish this cycle, since they are considered to be citizens with literal and functional illiteracy, offering ‘night teaching’ is one example of a social inclusion measure. Within this aspect we highlight school A which has one student of 51 years.

## **Part II: *Students’ Conception about Assessment of Learning***

In this subsection we map students’ conception about assessment based on our analysis of quantitative and qualitative data. Quantitative data is based on students’ mean positioning on the 5-item Likert scale against the six statements about assessment of learning. Each statement represents a conception about assessment rooted in a particular perspective of assessment in alignment with the six key ideas presented in the section above. Here, all four schools are taken together, and then complemented with a more detailed, school specific perspectives. The section concludes with a discussion of the emergent characterisation in the light of the six key-ideas.

### *(a) Overall Perspective (All Four Schools Together)*

Table 4 indicates the mean and standard deviation (SD) of the 692 students for each sentence. The most popular responses were statement number 1 (M=1.50; DP=1.1) and number 5 (M=1.49; DP=0.99). From this we argue for a collective ‘hybrid’ student conception, in the sense that it integrates ideas associated with a traditional assessment perspective and ideas associated with

a more current assessment perspective. Therefore, it seems that students have a strong focus on the conception of assessment as verification of the assimilation of content by discipline, which may be rooted in Angolan teachers' current practice (Alfredo and Tortella, 2012, 2013; Chimbanlandongo, 2015). However, students also bring in the idea as assessment as a promoter of learning. We infer, then, that the hybrid nature of the concept of continuous assessment in Angolan regulations, previously identified through documentary analysis and discussed in more detail in Simão, et al. 2019; 2020. is also reflected in these students' conceptions of learning assessment.

Statements with less support were number 2 ( $M=1.96$ ;  $SD=1.51$ ) and number 6 ( $M=2.81$ ;  $DP=1.71$ ). Again, the lack of a well-defined and mature conceptions of learning assessment emerges from these results and is probably associated with the lack of knowledge about assessment criteria. From the professional experience of the first author in this paper, as a teacher in Labour Education at 9th grade, it can be inferred that there is seldom openness on the part of the teacher to let students know and participate in the process of defining the assessment criteria that will/are being used to assess their learning experience, which is in alignment with key idea 5 described earlier.

**Table 4 – Students' Positioning Considering Six Statements about Assessment of Learning**

Statements (listed by ascending order of M)	All 4 schools	
	M	SD
5 – Assessment should make students learn.	1.49	0.99
1– Assessing is, above all, the teacher knowing if the student has assimilated the contents of the discipline.	1.50	1.1
3 – The assessment should focus on what is taught in class.	1.51	1.15
4 – Assessing is a continuous process.	1.53	1.15
2 – Assessing is mainly to classify, that is, the teacher assigns a grade to the student.	1.96	1.51
6 – Assessing implies that the teacher informs the student about the criteria used in the process.	2.81	1.71

We undertook content analysis of students' answers to the open question and generated four categories and 11 subcategories. Table 5 shows the distribution of the coded answers per category and subcategory considering the gathered answers in all four schools.

It became evident that, in comparing the four major categories, Category 1 (coded answers = 41) and Category 2 (coded answers = 36) predominate, indicating that students are more focused on the purposes of learning assessment and on the object of learning assessment. Moments (Category 3) and Instruments of Assessment (Category 4) are less present, which in turn reinforces the suggestion that students are not familiar with assessment criteria and strategies, possibly because they are not actively involved in this process by teachers.

**Table 5 – Categories and Subcategories of the Coded Students' Answers Considering "Assessment of Learning"**

		Number of responses
C1 Assessing Why?	C1.1. Classifying and measuring	7
	C1.2. Verifying if students learned what was taught	25
	C1.3. Contributing towards students' learning	9
	Sub-total	41
C2 Assessing What?	C2.1 Knowledge	16
	C2.2. Capacities	10
	C2.3 Attitudes	10
	Sub-total	36
C3 Assessing When?	C3.1 At the end of the teaching process	1
	C3.2 During/along the teaching and learning process	7
	Sub-total	8
C4 Assessing How?	C4.1 Final Exams	1
	C4.2. Tests/mini tests	1
	C4.3 Other (observation)	1
	Sub-total	3
	Total	88

Focusing on the more frequent subcategories within each category, the following patterns emerge:

Category 1: Why assess? (assessment purpose): C1.2 was the most populated subcategory, with 25 coded answers, supporting the idea that the purpose of assessment is ‘verifying if students learned what was taught’. Illustrative examples are: “Assessing is verifying at what point the student has learned the content” [‘Avaliar é verificar até que ponto o aluno aprendeu os conteúdos’ (R1, School A)]; “Assessing is determine if the student assimilated the contents of the lesson taught” [‘Avaliar é constatar se o aluno assimilou o conteúdo da matéria dada’ (School D, R16)].

Category 2: Assess what? (the objects of assessment): The most frequent subcategory, with 16 coded answers, was subcategory C2.1., where the object of assessment was ‘knowledge of theoretical contents’. One illustrative example of coded answer is the following: “Assessing is mainly knowing if the student assimilated the contents of the discipline” [‘Avaliar é sobretudo saber se o aluno assimilou os conteúdos das disciplinas’ (School B, R15 and R16)]. The idea that capacities and attitudes should also be assessed are less present.

Category 3: Assess when? (moments of assessment): The most populated subcategory was C3.2., with reference to several moments of assessment (“Assessing is a continuous process that allows the student to learn” [‘Avaliar é um processo contínuo que permite o aluno aprender’ (School A, R29)]). This indicates that there is some (small) recognition that assessment might not only take place at the end of a learning process.

Category 4: Assessing how? (instruments/means of assessment): *Interestingly, this category is the least populated. The idea of a final exam came up in School B “Assessing is preparing the student for the final exam” [‘Avaliar é preparar o aluno para a prova’ (R47)]. It was also in School B that the possibility of observation as an assessment method was mentioned. The idea of written tests/mini tests was raised in School C: “Assessing is the realisation of small tests that should be done continuously by the students with the objective of determining the learning level of the students” [‘Avaliar é a realização de pequenos testes que devem ser feitos continuamente pelos alunos com objetivo de constatar o grau de aprendizagem dos alunos’ (R28)].*

#### (b) The Schools

Table 6 positions the six statements about assessment of learning in each school. Per school the statement with higher agreement (this is lower Mean) is highlighted with + and the statement with lower agreement (this is higher Mean) is highlighted with -. Taking an overall view (Table 4), the following issues emerged:

- In School A, B and D, statement 6 is the one on which students agreed least
- In school A and D, statement 5 is the one on which students agreed most
- School C (rural) stands out in the fact that statement 6 is the statement in which students agreed most, the one where the other three schools agreed least.

**Table 6 – Students’ Positioning Considering Six Statements about Assessment of Learning in each School**

Statements	School A (urban)		School B (urban)		School C (rural)		School D (rural)	
	M	SD	M	SD	M	SD	M	SD
1– Assessing is, above all, the teacher knowing if the student has assimilated the contents of the discipline.	1.5	1.1	1.50	1.0	1.4	0.9	1.7	1.3
	0	1	+	5	0	8	2-	2
2 – Assessing is mainly to classify, that is, the teacher assigns a grade to the student.	1.8	1.3	2.17	1.5	2.1	1.7	1.6	1.4
	8	3		4	0-	2	9	6
3 – The assessment should focus on what is taught in class.	1.5	1.1	1.68	1.3	1.3	1.0	1.3	1.1
	8	6		2	9	2	7	0
4 – Assessing is a continuous process.	1.5	1.1	1.57	1.2	1.4	1.1	1.4	1.0
	9	2		8	7	5	0	0
5 – Assessment should make students learn.	1.4	.99	1.69	1.0	1.4	1.0	1.3	.91
	8+			3	3	0	6-	
6 – Assessing implies that the teacher informs the student about the criteria used in the process.	2.7	1.5	2.95	1.7	1.4	0.9	1.7	1.3
	5 -	8	-	2	0+	8	2 -	2

Table 7 details the list of students’ coded answers on ‘Assessment of Learning’ in each school. The two categories C1 and C2 have higher numbers of coded answers (above 30). Summarising and combining both qualitative and numerical outcomes, the following key ideas emerge:

- (i) In accordance with international literature (Guthrie, 2021; Soares et al., 2021), it does seem that rural schools are different to urban schools in terms of conceptions about learning assessment;
- (ii) There is a general lack of knowledge about assessment criteria and diverse types of assessment strategies by students, which might be a consequence of the non-involvement of students in the planning and application of assessment strategies of their learning paths.



**Table 7 – Categories and Subcategories of the Coded Students’ Answers Considering “Assessment of Learning” in Each School**

		School			
		A (urban)	B (urban)	C (urban)	D (urban)
C1 Assessing Why?	C1.1. Classifying and measuring: “Assessing is testing capacities [Avaliar é testar as capacidades do aluno, a fim de medir o grau de assimilação do aluno” (School A, R5)]	4	1	1	1
	C1.2. Verifying if students learned what was taught: “Assessing is verifying until what point the student learned the content [Avaliar é verificar até que ponto o aluno aprendeu os conteúdos” (School A, R1)]	8	5	5	7
	C1.3. Contributing towards students’ learning [3rd generation of assessment] “Assessing is an ongoing process that allows the student to learn [Avaliar é um processo contínuo que permite o aluno a aprender” (School A, R2)]	1	6	1	1
	Sub total	13	12	7	9
C2 Assessing What?	C2.1 knowledge “Assessing is mainly knowing if the student assimilated the contents of the discipline [Avaliar é sobretudo saber se o aluno assimilou os conteúdos das disciplinas]” (school B, R15 and R16).	4	5	1	6
	C2.2. capacities (“Assessing is testing students’ capacity/ [Avaliar é testar as capacidades dos alunos]” (R4, R5, R7, R9, R4).	6	3	0	1
	C2.3.10 Atitudes “Assessing is teaching the student to be more responsible with the contents [Avaliar é ensinar o aluno a ser mais responsável com a matéria]” (school B, R37.2);	3	3	3	1
	Sub total	13	11	4	8

C3  
Assessing  
When?

C3.1 at the end of the teaching process “Assessment is when the teacher after teaching the basis to the students expects the student to create [Avaliar é quando o professor depois de dar as bases ao aluno, espera que o aluno seja capaz de criar]” (school A, R31).	1	0	0	0
C3.2 during/along the teaching and learning process (“Assessing is a continuous process that allows the student to learn [Avaliar é um processo contínuo que permite o aluno aprender]” (school A, R29).	2	1	4	0
Sub total	3	1	4	0

C4  
Assessing  
How?

C4.1 Final Exams “Assessing is preparing the student for the final exam [Avaliar é preparar o aluno para a prova]” (school B, R47).	0	1	0	0
C4.2. tests/mini tests Assessing is the realisation of small tests that should be done continuously by the students with the objective of determining the learning level of ths students [Avaliar é a realização de pequenos testes que devem ser feitos continuamente pelos alunos com objetivo de constatar o grau de aprendizagem dos alunos”]	0	0	1	0
C.4.3. Other (observation) “Assessment also serves to observe the student’s learning ability and find out to what extent the teacher explains the subject well or not [Avaliação serve também para observar a capacidade de aprendizagem do aluno e descobrir até que ponto o professor explica bem ou não a matéria”] (school B, R13)	0	1	0	0
Sub total	0	2	1	0

Total of undertaken codifications	29	26	16	17
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### Part III: *Global School Climates: Relationships between Students' Conceptions about Learning Assessment in the Four Schools*

Given the mix of qualitative and numerical data so far, we decided to explore the effect of 'global school climate' (Shiner, 1999; MacNeil, Prater, & Bush, 2009) in the schools in relationship between the six survey statements. The concept of school climate refers to the 'global environment' in the schools, which defines the conditions that are present in a learning setting. The 'melting pot' of these conditions shapes learning and development (Moolman et al., 2020) and includes 'student-teacher relationships' which are, as we have previously explored, shaped by assessment.

We performed network analysis with 'school' as a covariate, assuming that each school has its own specific 'climate'. In terms of network analysis, the observed variables are nodes and the estimated relations between variables will be referred to as 'edges'. The nodes are positioned using the Fruchterman-Reingold algorithm (Fruchterman and Reingold, 1991) which organises the network based on the strength of the connections between nodes. Extended Bayesian Information Criterion Graphical Least Absolute Shrinkage and Selection Operator (EBIC glasso) were used as a regularised estimation method. Graphical results of this analysis can be found in Figure 1. The summary of networks with the number of nodes, number of non-zero edges and network sparsity are in Table 8.

Figure 1 - EBIC Glasso Networks with Conceptions as Nodes and School (A, B, C, D) as a Covariate.

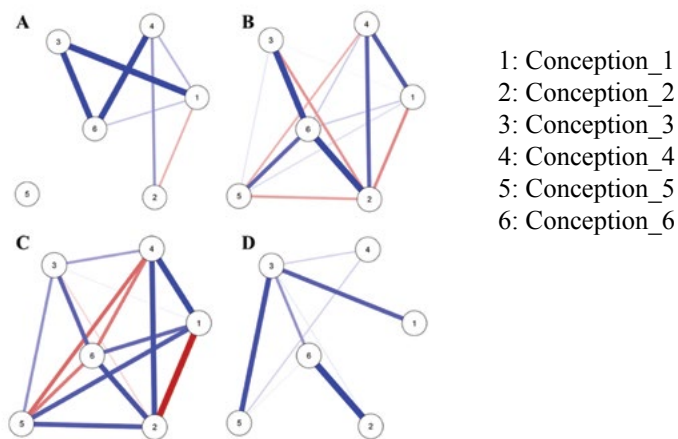


Table 8 – Summary of Network Statistics

School Network	Number of nodes	Number of non-zero edges	Sparsity
A	6	7 / 15	0,533
B	6	14 / 15	0,067
C	6	15 / 15	0,000
D	6	8 / 15	0,467

By analysing Figure 1, we can see that schools A (urban) and C (rural) are the most distant with respect to the pattern of relationships between variables (edges). In fact, School C has 100% edges, and School A has less than 50% Edges. Interestingly, School A has a node (Conception – statement 5 “Assessment should make students learn [*A avaliação deve fazer com que os alunos aprendam*].) that has no relation to any of the other conceptions/statements. This reinforces, again, the importance of attending to differences among rural and urban schools (Guthrie, 2021: Soares et al., 2021).

## CONCLUSIONS

Students learning assessment is seen as playing an important role in education, not only in the sense that it allows us to understand what is valued in the teaching and learning process, but also because it may promote learning. In Angola, which is currently implementing curricular revision and where educational research is still scarce, research focused on assessment appears particularly relevant. The discipline of Education Labour, which integrates the Angolan official curriculum in lower education (from 7<sup>th</sup> to 9<sup>th</sup> grade) and aims at developing both knowledge and social skills towards employment, is a rich scenario to develop research, given its contributions to attaining Sustainable Development goals. However, it is also important to point out that even though we focus on one school programme only, the gathered student opinions are likely to be much wider in other programmes too. Further research, namely by replicating this research strategy in other disciplines would support the emergence of a broader and more solid scenario.

From the results with the questionnaire, we can say that students’ learning assessment conceptions are hybrid in the sense that they include ideas both in accordance with - and against - up-to-date assessment perspectives, namely that assessment can promote learning. The predominant perspective is that the purpose of assessment is principally to provide teachers with information about how students assimilate the contents of the discipline. The results also show that there are differences between students’ conceptions in the four schools, suggesting the relevance of the ‘global school environment’. However, this study does not allow to say how or why this variable affects students’ voices and, therefore, we will pursue further research in this direction, namely by conducting case studies in two of these schools (one rural and one urban).

Moreover, despite the changes taking place in Angolan education - for example, in enhancing the role of formative assessment - there are still dimensions that need more attention. This might be in terms of students’ participation in the assessment process and its subjective nature. Therefore, these aspects need further understanding to better sustain actions to improve teachers’ competencies in assessment, and also to propose changes in the national regulations.

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## English Teachers' Experiences of Online Teaching During COVID-19: Pedagogical Disruption or an Opportunity for Pedagogical Renewal?

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### ABSTRACT

The COVID-19 pandemic brought about a paradigm shift in the way teaching and learning have traditionally been conceptualised due to the enforced shift to online teaching. Since pedagogy is deemed to be crucial for effective curriculum implementation, this paper is based on a study of English teachers' experiences of online teaching at upper secondary level with a view to understanding the implications for teacher education and curriculum development. Thirteen participants were chosen based on convenience sampling. The research methods comprised a combination of visual and written media, namely a Graphic Interchange Format (GIF) that reflected the teachers' experiences of online teaching, accompanied with a write-up justifying the choice of GIF. This led to the generation of data that was analysed through a multimodal discourse analytical approach. The study revealed that only three of the participants successfully made the shift to online teaching. It foregrounded the emotional disarray of the rest who had to grapple with the novelty of the tool and manage students within a foreign virtual space. This was exacerbated by the inability and unwillingness of most learners to adopt this new mode of learning. The findings thus bring out the need for Teacher Education Programmes to better empower teachers with strategies for online teaching and the management of students, as well as the necessity of making online curriculum resources available to ease teaching and learning.

**Key Words:** Covid-19 pandemic; online teaching; pedagogical disruption

### INTRODUCTION

Pedagogy is key to effective curriculum implementation, which is at the core of every educational system. As such, when COVID-19 hit the island of Mauritius in 2020, schools were closed, and educational policy makers decided upon the shift to online teaching. The prevailing uncertainty in the face of the pandemic and the prospective impact of a prolonged closure on schooling were understandably a major cause for concern for stakeholders. Online teaching provided the possibility to salvage the school calendar and bring a sense of normality in a world that had suddenly turned dystopian. In Mauritius, schools were closed from 19 March to 30 June 2020, and the decision regarding online teaching was enforced by the Ministry of Education and Human Resources, Tertiary Education and Scientific Research three weeks after closure. The decision was implemented amidst the clamour of the teachers' unions that called for boycott and resistance from teachers who felt unprepared.

This paper is based on a study conducted during confinement to obtain insight into English teachers' experiences of online teaching at upper secondary level. While the adoption of online

teaching could be seen as an opportunity for pedagogical renewal through the use of technology as a tool for teaching – as propounded by the National Curriculum Framework (2015) – the circumstances in which this shift took place were unique. The study thus sought to shed light on aspects deemed pertinent to the authors as teacher educators and curriculum developers, and it centred around the following research question: How did the transition to online teaching take place? For a sharpened focus, two sub-questions guided the study, namely (i) How was the transition lived by teachers? and (ii) How far did a pedagogical shift towards the use of technology take place? Since the COVID-19 ACT (Miscellaneous Provisions, 2020) is now in force and teachers may be called upon to engage in online teaching whenever the circumstances call for it, understanding the teachers' experiences of online teaching during the pandemic will serve to inform future professional and curriculum development endeavours.

## LITERATURE REVIEW

COVID-19 has affected over 63 million teachers worldwide (UNESCO, 2020) calling for an inherent change in the way teaching and learning have taken place so far. Sangeeta and Tandon (2020) aptly contend that “[d]eveloping content that not only covers the curriculum but also engages learners is the need of the hour” (p.2). While they commend the adoption of online teaching, they highlight the importance of “develop(ing) and enhanc(ing) the quality of teaching and courses delivered during (the) pandemic” (ibid, p.2). But how far is such an endeavour possible in a situation where ‘normal’ is being redefined with a number of additional factors impacting upon teaching and learning, rendering the task of teachers more arduous. Studies in this area highlight the multitude of difficulties that impede online teaching. For instance, Minkos and Gelbar (2021) point out how teachers are faced with the onerous task of “supporting students who have experienced an event unlike any that has occurred in modern history” (p. 418) while having to deal with “emotional and academic needs (that) vary in complexity and breadth, necessitating the use of systematic practices that can be readily adapted to support changing demands” (ibid, 2021). In another study on teachers' experiences during COVID-19, Wyse et al. (2020) found that during “(t)his transition, teachers grappled with how to continue to instruct and communicate with students and provide students with activities to help them practice what they were learning” (p. 60). Kim and Asbury (2020) also underscore the way in which the changes brought about by COVID-19 can be “cognitively and emotionally taxing for teachers” (p. 1063). Some of the hurdles mentioned by the authors are the new teaching modality; the added difficulty of coping with variations in students' capacity to access or willingness to engage in online teaching; and having to simultaneously cope with family related matters. They attribute these constraining factors to “the abruptness of the closures, uncertainty about how long they will last, and low familiarity with remote education” (ibid, p.13). In this study, some teachers harboured a more positive outlook and looked forward to the change as a challenge to overcome.

We agree with Duncan and Young (2009) who uphold online teaching and learning as an excellent alternative in education, especially when there are hindrances to traditional learning situations. The literature is replete with advocates of online teaching and learning (Arunachalam, 2019; Liaw & Huang, 2013; Palloff & Pratt, 2013) who stress the new possibilities this mode provides with regards to learner autonomy, flexibility in accessing the course, and collaborative

learning. Nevertheless, it cannot be denied that in spite of the teachers' willingness, online teaching and learning can be quite taxing in the conditions created by the pandemic. As a case in point, Chamberlain et al. (2020) highlight the struggle of a teacher who found it exhausting and time-consuming to use ZOOM with fifty students, as well as to conduct online discussions and provide feedback, despite adapting her teaching to the new modality.

Pedagogical change cannot be considered as a given since, even in 'normal' circumstances, it constitutes pre-requisites such as understanding teaching strategies and matching these with learners' needs (Mohon, 2008); a community of practice that sustains interaction and discussion (Goodyear & Casey, 2015), and a supportive environment to empower teachers to take risks (Le Fevre, 2014). These conditions were missing during confinement when teachers were on their own in their homes teaching. It thus becomes necessary to understand how Mauritian teachers lived the shift in teaching modality and how their pedagogy was adapted accordingly.

## METHODOLOGY

The study was situated within the constructivist paradigm. Constructivism is built upon the premise of a social construction of reality (Adom et al., 2016; Ehrich, 2006; Gregory, 2003; Reed et al., 2008) and fosters a collaborative rapport between the researcher and participants. Since the study was conducted during the confinement period, the researchers opted for convenience sampling which is also referred to as "accidental sampling (or) non-random where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included for the purpose of the study" (Etikan, Musa, & Alkassim, 2016, p. 2). The sample comprised 13 in-service teachers who taught Grades 10 to 13 and were preparing students for the O' and A' levels examinations offered by Cambridge Assessment International Education (CAIE). These teachers had completed or were still following a Postgraduate Certificate in Education (PGCE) in English at the Mauritius Institute of Education (MIE) and with whom the second author shared a good rapport. Contact was established via social media, that is Facebook and WhatsApp, and the participants readily accepted to take part in the study. Ethical considerations were upheld. The data was coded upon submission of the write-ups and pseudonyms were immediately attributed by the second author to ascertain the anonymity of the participants. Further, to counter the risks of research bias due to the familiarity between the second author and the participants, the first author played a predominant role in the data analysis.

The participants were asked to choose a Graphic Interchange Format (GIF) or a meme that described how they experienced teaching English online during the pandemic. Their GIFs had to be accompanied with a write-up that explained and justified their choice. According to Bhatia, Flowerdew, & Jones (2008), "semiotic modes other than texts can include gestures, posture, proxemics, visual images, document layout, music and architectural design" (p. 20). This mode of data generation was opted for since the use of GIFs/memes are widespread on social media and quite a prized means of expression by persons of the participants' age group. As such, they were considered as one of the most effective means to allow the participants to express their emotions visually. Harper (2002) avers that the use of images "(mine) deeper shafts of deeper parts of human consciousness than do words-alone interviews" (p. 22).

For data analysis, we adopted a multimodal discourse analytical approach (Bhatia et al., 2008) which has as theoretical underpinning that “textual data is not necessarily the most important mode used for the construction and interpretations of social meaning” (p. 20). In multimodal discourse analysis, meaning making involves the consideration of various modes of communication (such as text, images and colour), not merely in isolation but also in relation to one another. For Bower and Hedberg (2010), this approach provides a deeper analysis because it attends to the multiplicity of modes of communication that may be active. In contrast to single channel, discourse analysis techniques where one mode of communication is considered (as is the case with text-chat transcripts), multimodal discourse analysis allows all modes of communication to incorporate into an analysis (p. 464).

The GIFS and write-ups were analysed individually, as the experiences of teaching online during the lockdown period were highly personal for each participant, and then in conjunction with one another. The images used in the GIFs vividly conveyed the teachers’ feelings as they engaged in online teaching during the lockdown period. Some even traced the progression of feelings in the course of time, as Samples 1 and 2 below reveal.

### *Sample 1*



Source: <https://twitter.com/edublogs/status/1251623300016504832?lang=bg>

### *Sample 2*



Source: <https://www.mirror.co.uk/3am/celebrity-news/watch-kanye-west-crack-huge-5872800>



The write-ups served to add substance and depth to the visual data as they explained and justified what the images depicted. Gee's (2014) concept of "utterance token or situated-meaning task" (p. 65) was used to examine the different write-ups since "situated meanings arise because particular language forms take on specific or situated meanings in specific contexts of use" (p. 65). We interpreted and analysed the utterances of the participants in the briefs together with the GIFS, grounding these within the frame provided by the research questions. Hence, we chose extracts that were telling as they foregrounded salient aspects of the participants' experiences. Some examples are given below.

#### *Extract 1*

I was really excited at first.... When I started, however, students were very confused.... Students don't want to.... Students do not know how... a lot of students do not want to cooperate.

Extract 1 reveals the recurrent use of the negative form and is related to the students. It appears that, while the participant had been excited in adopting online teaching initially, her views underwent a change that is attributed to the students online engagement.

#### *Extract 2*

We have not been prepared...certainly not easy....Not all learners are able to connect...do not share real affinity....No clear guidelines have been given...no uniformity....Online teaching will not replace traditional classrooms...this is not really online teaching taking place.

Like Extract 1, Extract 2 reveals a negative form that displays a sense of frustration at the situation. Here, however, the responsibility for ineffective online teaching appears to be directed towards the authorities.

#### *Extract 3*

We have not been prepared...certainly not easy....Not all learners are able to connect...do not share real affinity....No clear guidelines have been given...no uniformity....Online teaching will not replace traditional classrooms...this is not really online teaching taking place.

As opposed to the two other extracts, this one is self-directed as the participant turns towards herself rather than external factors and highlights the impact of the shift in teaching mode on the teachers rather than the cause. The emotional and physical fatigue have resulted in a feeling of self-deficiency.

These extracts show how an examination of the discourse allowed us to identify factors that had enabled or impeded the shift to online teaching and, additionally, to be sensitive to the way in which these had impacted the teachers. In all extracts, the repeated reference to a particular factor (i.e. students' inability or unwillingness, teacher's lack of preparation, or teacher being overwhelmed) pinned down the cause of the teachers' reaction and foregrounded the emotional load. The write-up of teachers also depicted positive experiences as the examples below showcase.

*Extract 4*

...it proved to be a good experience actually. My Grade 11 students are in attendance, all of them (except 1 or 2 at most). They do have a positive approach and they respond rather positively and send me their completed works.

*Extract 4*

For Grade 13, it has surprisingly been a pleasant experience. All the students who never spoke in class, started opening up and putting forward their arguments rather confidently. They try to build up on the responses of their friends and I have not faced any issue with this class. They work out all the questions and do not hesitate to ask for clarifications unlike in classrooms.

## FINDINGS

In this section, themes that centre around the transition to online teaching and provide insights into the teachers' experiences are presented and discussed.

### Positive Experiences of Online Teaching

Only three of the thirteen participants felt that moving to online teaching during the lockdown was a positive experience. Asif, who was enamored by the newness of the experience, was excited to try out online teaching as:

*it is a first in Mauritius that online teaching is being implemented for secondary students and as a modern educator, I wanted to live and experience how implementing this new way of teaching students remotely would work.*

To his satisfaction, teaching online “proved to be a good experience”. Most of his students attended the online classes and responded rather positively”. This had been enabled by the measures Asif took, based on his knowledge of the learners and classroom management. For instance, rules and expectations were set right from the start to ensure that students would remain focussed. Asif built a good rapport with the students by making them all feel equal and valued, and by creating a risk-free environment to encourage participation. Individual feedback along with proposed remedial actions were sent to students on WhatsApp to maintain confidentiality.

Vanessa also had positive experiences of online teaching and indicated the success of online teaching depended on students' level. She was surprised to note how well online teaching worked with her Grade 13 students. Being behind a screen made them feel safe to voice out their opinions in comparison to the way they tended to shy away in class. She added that:

*All the students who never spoke in class, have started opening up and putting forward their arguments rather confidently. They try to build up on the responses of their friends*

*and I have not faced any issue with this class. They work out all the questions and do not hesitate to ask for clarifications, unlike in the classroom.*

Vanessa added that the small class size, namely only thirteen students, encouraged participation. She sustained the momentum by providing pointers to guide and foster discussion.

Patrick's write-up reveals that positive outcomes of online teaching are the culmination of a willingness to adapt, despite the difficulties this entails. He explained that:

*[a]s an English educator, I have also changed my perspectives and ways of looking at things. There has been a drastic transformation in my teaching styles and methods as the circumstances are no longer the same as they were before the pandemic. The tools and resources which I was using at school, that is textbooks and the whiteboard, have now changed to the use of technology to conduct online teaching and post work for my students.*

However, the shift Patrick referred to did not merely concern the adoption of technology, he also shifted to Creole when his students admitted they could not follow explanations in English. He took the initiative to contact a parent when he noted that his homework was recurrently not submitted. "As an English educator, I realised that things should be done differently in order to promote comprehension and to get things done." The adoption of what he describes as "unofficial channels" was his way of reaching out to and "show(ing) empathy towards the most vulnerable ones" — something he believes all teachers ought to do. It was through this willingness to strive and renew his teaching approach that Patrick earned the gratitude of the parent. The GIF below represents his personal satisfaction at making someone happy during this difficult time.



Source: <https://www.adweek.com/wp-content/uploads/2018/03/millie-brown-GIF-PAGE-2018.gif>

### **Short-Lived Expectations**

Conversely, positivity was short-lived, if not missing, in most of the cases. Waiza, for instance, had initially looked forward to online teaching, which she believed had much to offer:

*Teaching English language and literature online can be a pleasant experience. With a platform like Google classroom, it is easy to keep in touch with students and also keep*

*track of their work and progress. Moreover, the infinite number of activities, games and resources available online can be shared easily. This is not possible in face-to-face teaching in Mauritian schools because of the lack of proper equipment or the cost of print that teachers have to bear out of their own pockets. I conduct Zoom meetings with students where we read out passages and I explain the vocabulary, or we have discussions on GP essays or literature texts. Students then work out the questions and upload on our Google classroom where I correct the work. I have also been sharing links to websites, articles and videos to my students and I believe they will find it tremendously helpful too. Conducting classes online gives me a lot more time to devote to things that I would not have had time to devote to in class. For instance, in my literature classes, I can explain everything in detail and focus on ideas that I would otherwise not have had time to focus on, as I have much more time to do that.*

Waiza was convinced that technology would “give (her) students the right type and amount of support required for (them) to become independent learners and thinkers.” She assumed her learners were digital native who would readily engage in online teaching. However, she learned that her students were “just unthinking technological consumers” who had difficulties using different online platforms, “lost all interest” and made “silly excuses” not to attend sessions online. They struggled to upload their work or submitted “after the deadline”. Lack of participation was an unanticipated setback she had to face. Anu, whose experiences mirrored Waiza’s stated “if they are masters of Instagram and Tik Tok, they are unable to use other tools at their disposal for learning. They have not showed much interest to learn to use them either.” The transformation in Waiza’s views is starkly reflected in the GIF below:

**What I hoped virtual teaching**

**would be like:** Finally getting to teach my kids what I think is important for them to learn.

**What virtual teaching is**

**actually like:** Me answering 100 emails a day from students who can’t figure out how to open the assignment.



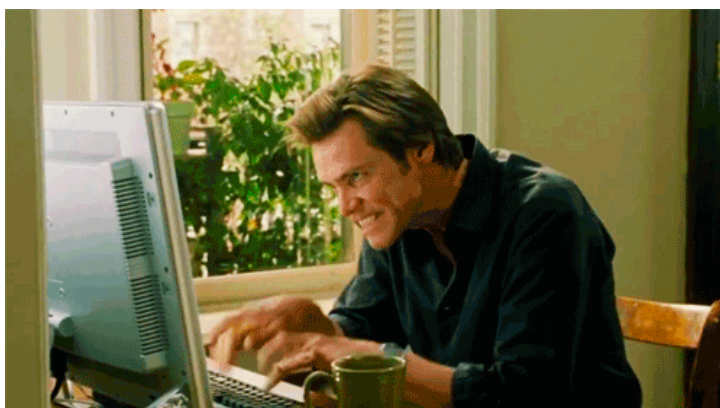
Source: <https://www.facebook.com/boredteachers/posts/the-struggle-is-still-real/4098670863484075/>

The schism between the teachers' expectations and the reality was disappointing for teachers as they learned that being digital natives does not guarantee students' ability or willingness to use technological tools for learning. Moreover, teachers who are deeply anchored in the conventional face-to-face teaching struggle to espouse new ways. As Anu shares:

*Teaching English and Literature in English requires face-to-face communication. The social cues that you get, when you are in direct contact with your students, help you read and evaluate their understanding of the subject....Teaching online has estranged me from my profession. Teaching now got me feeling like an automate.*

### Students as Key Determinants of Success

As indicated above, students' behaviours, attitudes and responses during online teaching failed to be a positive experience for most participants because students lacked engagement during the process. Referring to her choice of GIF, shown below, Waiza explained that:



Source: <https://www.create.co.uk/wp-content/uploads/2015/04/furious-crazed-typing.gif>

*occasionally, the frustrated typing is also due to unnecessary and lame questions from students and having to repeat instructions and answer the exact same question multiple times even though the instruction and explanation is right there in writing!*

Karen, who also initially felt that the whole experience would be exciting given the use of “apps were there (and) plans (were) ready” ended up being put off by the whole online teaching experience. She revealed that:

*students were very confused about how to proceed although I had already given explicit instructions. Students don't want to type long answers. Students do not know how to submit work (when I asked them to do the work and upload on the platform).*

She was disappointed to find her students were not willing to meet her halfway when it came to online teaching.

It would however be wrong to say that disappointment or frustration were the only emotions felt by teachers. They were indeed sensitive to the disarray of students. Anu stated “I receive messages, texts, and emails asking endless questions and showing so much anxiety.... Many of my kids are lost and anxious.” Anu explained how the national confinement had already made her apprehensive for her students since she was aware of their reality and knew that online teaching would only add to their daily struggles given that “many students come from poor backgrounds...and do not have access to technology and decent internet connection.”

Vanessa too indicated that many of her students did not have easy access to Wi-Fi and had to purchase mobile packages to keep abreast with the online teaching and decried this as a real hurdle for students who already have genuine financial constraints. This left doubt in the efficacy of online teaching.

### **Teachers’ and Students’ Inability to Adapt to New Teaching-Learning Culture**

The classroom is traditionally conceived as a physical room comprising a room equipped with a board, desks and chairs for students, as well as a teacher who yields authority and power. The shift to a virtual space rendered the traditional classroom management structures obsolete and also created a rift in the power and authority wielded by the teacher. Most participants deplored the fact that their students did not show any respect for their privacy or for them as individuals. The notion of 24-hour availability that the online mode appears to connote bred the students’ belief that teachers were at their beck and call. Most students did not hesitate to “send (their teachers) messages at any time during any day” and made them “repeat the same instructions on and on.” Parents too did not hesitate to call them late at night. Anu explained that “students seem to have lost any sense of personal space and respect for the teacher figure. I received messages via WhatsApp particularly at any time of the day and night, where kids demand things to be done immediately for them. Virtual teaching has robbed me of that precious connection with the profession and the kids.”

Waiza too expressed being taken for granted by her students. She shared how students:

*do not actually nurture the sense of respect as my generation used to. Normally, as a student, I would think well prior to sending an email to a teacher, predicting how he/she might react. I feel that my students take me for granted as they allow themselves to send me messages at any time during any day....If I post instructions which were answers to their questions, I would still get 10 to 15 students sending me private messages and making me repeat the same instructions not only with regards to work, but also with regards how to use the software. They feel entitled to everything and they do not respect my privacy. They seem to feel that I need to be always present at any time and any day.*

Classroom management in a virtual space requires new norms and modalities to run smoothly with well defined rules and roles.



## Facing Technological Impediments

Apart from a lack of expertise and the difficulties adapting to a new teaching and learning culture, the experience of online teaching came with a number of technological hindrances for teachers. For example, Waiza shared how her “computer lagged every 5 seconds, and a 5-minute work took literally 45 minutes to complete!” Asha also faced similar problems and ended up being overwhelmed by the whole situation. Since “students (had) connection issues as they (did) not have WiFi or quality (was) not good”, online teaching became more stressful and added to the load. For Sarah, her students could not hear her properly and would thus interrupt her whilst she was teaching. While technological problems were beyond the control of teachers and rendered them even more skeptical towards the efficacy of online teaching.

## Ill-Equipped Teachers

The problems arising from online teaching are not limited to students or the use of technology rather most participants felt unprepared. Teachers decried the acute lack of preparation and were of the view that the rushed move to online teaching was detrimental to their teaching since they had “not been prepared to face such a situation” And as Anu said, “we are expected to make miracles happen with practically nothing.”

Not only did teachers feel ill-equipped to carry out online teaching, but the lack of “clear guidelines” resulted in a lack of “uniformity” in terms of how different teachers proceeded. Mushirah wondered “whether it is meaningful” and added that “this is not really online teaching taking place, but emergency teaching, without any planning.” This situation made teachers feel more frustrated and ill-equipped to teach under such circumstances. Amy affirmed that teachers were not prepared to teach under lockdown circumstances and did not have the pedagogical knowledge to deliver online leaving teachers to put in more effort than usual to prepare for their classes. As Waiza shared:

*I’ve been looking for appropriate notes for each of my classes, then posting the notes and explanation on my school platform every week, along with homework for the students. I have to type some of the homework I’m giving because some students do not have the needed books with them, and this takes a lot of time. Selecting the appropriate notes for each class also takes time, especially when it comes to grammar notes. Correcting the homework on my laptop is a lot more difficult than correcting them in actual copybooks. Plus, I’m not even sure my students are actually reading the notes I am posting.*

Although teachers had undertaken professional development courses prior to the lockdown, they were unable to cope with the new pedagogical demands. This points to a gap in their professional development with respect to preparedness.

## Emotional Impact of Online Teaching During Confinement

The findings indicate that for most participants, online teaching during the lockdown was a difficult emotional journey. They were overwhelmed by the whole experience which they described as being “emotionally challenging”. The GIFs and write-ups foreground the deep frustration underlying the teachers’ attempts to create meaningful learning experiences for their learners. The difficulties discussed above crystallised into a deep-seated frustration and disappointment at their lack of success. Added to this, the fatigue of “(juggling) multiple tasks” and having to handle one’s personal load as well as professional load exacerbated the stress of some participants. Asha who has two young children found herself being torn between looking after her children and taking care of her students. The situation was overpowering for her as she felt she could neither do justice to her role as mother nor as teacher.

*Besides being a teacher, I am the mother of two children aged 7 and 3 respectively. Currently I cannot look after my own children as I have to dispense classes online. I cannot accompany my son while he is watching the Educational Programs. I feel helpless as I would have liked to be with him, but then can I ignore my 75 students with whom I work everyday???.... I am confused and question myself. Online teaching as such is not difficult but it is time consuming and draining. I guess I feel so because it is the first time I am engaging in online teaching and I sincerely hope I will improve with time. If there was a single platform to carry out all the tasks, it would have been easier. My perspective is mostly negative at the moment but I will make an effort to change it for the better.*

Asha was extremely disappointed with herself for falling short with respect to online teaching. Her GIF below reflects her feeling of inadequacy and her dismay.



Source: <https://awwmemes.com/i/7b04b718de1b4232a9010ee4adb44eaa>

The emotional condition of teachers is a significant consideration during attempts to bring about pedagogical change. While it is understood that the challenges lockdown presents cannot be generalised to all situations, change itself can be constraining and this inevitably entails starting a process.

## CONCLUSION

The findings of this study echo what extant literature reveals about online teaching during the lockdown. It is clear the teaching and learning process became more arduous due to an emotional load that was exacerbated by the pandemic. Only three participants displayed teacher efficacy, thereby sustaining a positive attitude and overcoming hurdles encountered. This was made possible by their willingness and ability to adapt their teaching to the need of the times, and, most significantly, giving due attention to the learners' affective dimension. The other participants were overwhelmed by a range of factors, such as learners' behaviours and technological limitations; inability to manage learners and learning in a virtual space; and lack of time and training. Consequently, not only was the change to online teaching limited, given the obstacles both teachers and students met, but its effectiveness is doubtful for the majority.

This paper shared teachers' experiences of online teaching during COVID-19 and provided a window to gain an insight into how far teachers undertake pedagogical shifts in relation to adopting online teaching. As mentioned at the outset, the forced move to online teaching could have been viewed as an opportunity for pedagogical renewal by embracing technology and making it an integral part of one's teaching kit, however many teachers struggled with online teaching even though the technology itself was known to them. According to Jaffee (2003), "pedagogical places and practices" are embedded "in tradition, habits, routines, and values" (p.233). He (2003) further expounds that "(t)he institutionalised social *space* -- the pedagogical ecology -- is accompanied by a set of institutionalised social practices" which he refers to as pedagogical isomorphism (p.229). For pedagogical change to be enacted, paradigms on traditional pedagogical ecology and pedagogical isomorphism should be reviewed and reconceptualised for teachers as well as learners. Until teachers and learners conceive of teaching as being encompassed within the premises of institutionalised social space and practices, it will be challenging for pedagogical change to be enacted.

What then are the implications for teacher education and curriculum development? In an era where technology has become a household tool, teacher e-readiness (Phan and Dang, 2017) whereby teachers are mentally prepared and willing to adopt technology and are equipped with the requisite pedagogical skills is more than ever necessary. Teacher Education is instrumental in empowering teachers for online teaching (König et al., 2020) by using the array of resources available. The focus on online teaching should be more overt and pronounced so that it becomes a customary approach rather than one limited to lockdowns or similar situations. This will allow teachers and learners to gradually become acculturated in the new modality. Further, the implications of using online teaching with respect to managing such aspects as the learning process, students and time should be given due consideration in Teacher Education programmes (Noor et al., 2020) offered in order to ease the process and thereby attenuate the emotional

load. It goes without saying that ample support should be provided by administrators and policy makers given the costs and infrastructural investments involved for schools and learners. Regarding curriculum, e-resources can go a long way to facilitate teaching and learning. Resources developed in line with the curriculum and that can easily be accessed by teachers and learners will help teachers to shift the weight on their learners – thereby making the latter more autonomous. All these changes can be made to work if key stakeholders reconceptualise their notion of teaching and learning along new paradigms and thereby depart from traditional definitions of pedagogy and pedagogical spaces.

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## Assessing Students' Perception of Blended Learning Approach Adopted at the University of Technology, Mauritius (UTM) during the COVID-19 Crisis

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### ABSTRACT

The COVID-19 pandemic led to an unprecedented crisis for most people and organisations including the university's teaching and learning environment. This paper presents students' perceptions of the use of the blended learning approach during the COVID-19 lockdown period at UTM in Mauritius. The paper also explores the challenges and opportunities of using blended learning for the future. A questionnaire was developed in Google Forms to measure the perceptions of the students regarding the blended learning approaches used at UTM. The questionnaire was sent to 3000 undergraduate and postgraduate students to provide their experience of the inclusion of online classes in their face-to-face classes during the pandemic-induced lockdown (n=1,001). The findings of this study support that blended learning provides a balanced pedagogical role for face-to-face and online classes. This study helped in understanding the current state of blended learning adopted during the sudden outbreak of the COVID-19 pandemic at the UTM and in Mauritius. The study will help in preparing a framework concerning the use of blended teaching and learning models during any future crisis-like situation at UTM.

**Key Words:** Blended learning; covid-19 pandemic; face-to-face; online mode; perceptions of students

### INTRODUCTION

The COVID-19 pandemic has forced many universities around the world to shift from traditional face-to-face classes to complete or partial online learning systems in their attempts to adapt to sanitary protocols. It was found important for the education sector to move towards a post-pandemic pedagogy as it is hard to foresee the educational landscape after the COVID-19 crisis (Weeden & Cornwell, 2020). Mirroring the global trends, the University of Technology, Mauritius (UTM) has not been immune to this change and also reacted to the challenges of the time by considering alternatives to the traditional face-to-face teaching approach. The COVID-19 pandemic posed unprecedented challenges requiring the UTM to adopt the blended learning approach. The UTM adjusted its teaching and assessment mode to ensure the continuity of the semester which started in the first week of March 2020 and was originally planned up to May 2020. The semester had to be abruptly stopped around mid-March 2020 after just two weeks of lectures on a face-to-face basis to continue on a distance mode, from using e-mail as

the most basic communication means to have recourse to Zoom, Moodle, Google LMS, and other learning management systems. Classes could resume on a face-to-face basis from July 2020 and the semester end date was extended to 31 August 2020.

Another big challenge was the need to revise the assessment strategies. The UTM opted for the 100% assessment of all its modules as take-home assignments at undergraduate and postgraduate levels so that the social distancing setting, as well as other sanitary protocols, could be strictly observed while still reflecting the learning objectives of the programmes of study. This was different from what is normally the practice of assessment based on 30% continuous coursework and 70% based on exams. The Blended Learning approach which was adopted on the spur of the moment in the immediacy of the lockdown of March 2020 with an immense administrative effort to sail in the uncharted waters was adjusted in the light of lessons learned for the semester which followed from October 2020. Ordering, structuring, and refinement of already adjusted policies made the semester that followed in October 2020 semester more certain and predictable. The focus of this study was to examine the effectiveness of the blended learning approach in the semester March 2020 – May 2020 which was extended to 31 August 2020. The lessons learned will help inform future teaching/learning strategies of UTM especially on the assumption that the new normal may be here to stay for quite some time and even under fully normal conditions and provide an opportunity to increase the UTM's preparedness.

The transition to blended teaching and learning was unexpected and rapid due to COVID-19. Assessing the students' attitudes and experiences of the blended teaching and learning was important to better understand their needs, opportunities, and challenges for the University to make appropriate instructional decisions and to close the 'gap' between the traditional teaching and learning and the experiences and skills that are needed to adopt the blended approach. Past studies examined the factors influencing 'emerging remote learning' (Bozkurt & Sharma, 2020) or 'emergency eLearning' (Murphy, 2020) and found the following critical factors: difficulties associated with poor online teaching infrastructure, information gap (limited information and resources to all students), lack of experience of academics on blended learning, the complex environment at home, and lack of mentoring and support. This study aimed to examine students' perceptions of blended learning adopted at UTM during the COVID-19 crisis to shed light on the challenges and opportunities that UTM had to face in adopting Blended Learning during the crisis phase to inform future teaching-learning strategies for the University. The study was therefore designed to respond to the following questions:

- Q1. What were the students' experiences of traditional face-to-face classes versus online classes?
- Q2. To what extent were students was engaged and committed to online learning?
- Q3. What were the challenges faced by students during the crisis?

This paper is structured as follows: brief literature is presented, followed by the methodology, results and discussions, and the conclusion makes some recommendations on the way forward.

## **BLENDED LEARNING IN HIGHER EDUCATION**

The term “blended learning” refers to a mix of traditional face-to-face learning combined with computer-mediated learning (Hrastinski, 2019). It is therefore important to examine the principles of traditional and blended teaching and learning. This brief review presents previous work conducted by the research community on blended learning, on its challenges and effectiveness. It presents factors that are to be considered by educational institutions in its implementation.

Over the years, the blended learning approach has been implemented in higher education for numerous reasons (Garrison & Kanuka, 2004; Bokolo et al., 2020; Lapitan Jr. et al., 2021) and the efficacy of blended learning is well-documented in the literature (Smith & Hill, 2019). It is to be noted that the implementation of blended learning is not straightforward as it is dependent on many factors (Kasner 2020; Bruggeman et al., 2021). For instance, an ingenious merging of technologies with the learning processes is vital for proper implementation. A salient feature of blended learning is that it enables educators to complement traditional face-to-face teaching with online learning. Blended learning allows for a flexible learning environment that caters to people with different learning styles and abilities (Berga et al., 2021). From the students’ perspective, besides allowing them to study at their own pace, blended learning is also cost-saving. However, the success of the blended learning model depends, inter alia, on the degree of self-motivation of the students and their ability to work independently (Wivell & Day, 2015). Moreover, it has been observed that students who cannot cope with traditional face-to-face classes also have difficulties dealing with the exigencies of the blended learning model (Chen & DeBoer, 2015). Just like in other sectors, the effect of the ongoing COVID-19 pandemic is having a pronounced effect in the education sector worldwide (Dhawan, 2020; Lapitan Jr. et al., 2021). Pokhrel and Chhetri (2021) have reviewed various studies that have been undertaken to deal with the impact of the COVID-19 pandemic on teaching and learning in developing countries. To alleviate the impact of the pandemic on the education sector, many institutions are exploring blended learning strategies as the institutions are obliged to move from the traditional face-to-face learning mode to online or blended teaching and learning (Dhawan, 2020; Adel 2021).

In these moments of crisis, universities around the world are faced with challenges such as internet accessibility, readiness, technology affordability, flexibility, learning pedagogy, and quality management to make learning accessible to every student (Bordoloi, Das, & Das, 2021). Hasan (2020) conducted a study to evaluate online teaching-learning during the pandemic-induced lockdown with 408 students. The study indicated that online teaching is an important tool to support students’ online learning, however, and it is important to understand students’ priorities and challenges while learning remotely as these would help in aligning the adoption of technology and pedagogy with students’ interests and learning preferences. The success of blended learning is due to the pedagogical technique adopted by the state-of-the-art technological tools which are involved year in and out. According to Hofmann (2011), one big challenge of blended learning is the students’ commitment to using the technological tools for learning from a distance. Kintu et al. (2016) supported that this challenge is important but argued that other fundamental aspects need to be addressed to catalyse the effectiveness of blended learning. Indeed, evidence in the literature mentioned that 16% of students do not believe that blended

learning is an effective method for teaching and learning and the report also indicated that 26% of students think that the programme of study would not be completed (Oxford Group, 2013). In response to the report, Kintu et al. (2016) argued that the students' background is the reason for this negative impact in the adoption of teaching and learning and is not been taken care of by the technological tools. The authors investigated the impact of the student's characteristics and background on blended learning by designing a quantitative questionnaire. The results showed that the student background is a factual challenge and a significant predictor to consider when implementing a blended learning model in an educational institution (Kintu et al., 2016).

The current study responds to the call of Wivell and Day (2015), Hasan (2020) and Berga et al. (2021) to go beyond the work of Kintu et al. (2016) and analyse the perceptions involved in blended learning. The research is exploratory as there is no past data collected for the university which provides a comparison between online learning and traditional classroom delivery which allows us to determine whether the blended-learning setting is more beneficial to a traditional classroom one or vice versa.

## METHOD

This study adopted a questionnaire survey approach to collect data from students. A self-administered online questionnaire was designed to collect data from the students through an online student survey using google form from September to October 2020 during the semester break. The survey questionnaire was sent to 3000 full-time and part-time students. Students' participation to the study was voluntary and no identifying information was captured. Reminders were sent to all students every week for 3 weeks, which resulted in 1001 responses, that is, 33.5% response rate, and these were more than adequate response rates from a statistical perspective. The initial survey items were drawn from a review of existing literature. The items measured the students' perceptions of face-to-face and online learning modes of delivery. The scales were adapted from a survey used by Bailey and Morais (2005) and Poon (2014). The survey instrument consisted of three sections. Section one captured students' information related to their socio-economic and educational background. Section two measured students' learning experience with the traditional face-to-face mode of learning. Section three examined the students' study preferences towards the various online learning options available to them. The students were asked to rate the statements using a 5-point Likert-type scale as 1 = strongly disagree to 5 = strongly agree, in addition to yes/no questions.

To better guide the study and understand the relationship between traditional face-to-face and online classes, the following hypotheses were proposed:

- (i) H1: There is no significant difference in communications among students between the traditional face-to-face classroom and online classroom.
- (ii) H2: There is no significant difference in understanding a module between the traditional face-to-face classroom and the online classroom.

The survey data was analysed using descriptive statistics such as percentages, mean, standard deviation, chi-square tests as well as pie charts and bar charts.

## RESULTS

This section presents the findings from the questionnaire data collected from the students' experiences of blended learning at the UTM. It is to be noted that face-to-face delivery is the standard method of delivery at UTM. However, following the unprecedented sanitary crisis, a need to assess the effectiveness of blended learning to understand whether the intended objectives of using blended learning to support students' learning have been achieved or not.

### *Demographics Profiles of Students*

The results of the students' profiles are presented using pie charts, bar charts and percentages to depict the information (Figure 1). The sample of students who responded to the survey consisted of 40% male students and 60% female students. It is further observed that the majority of the respondents were full-time students (78%) compared to part-time students (22%).

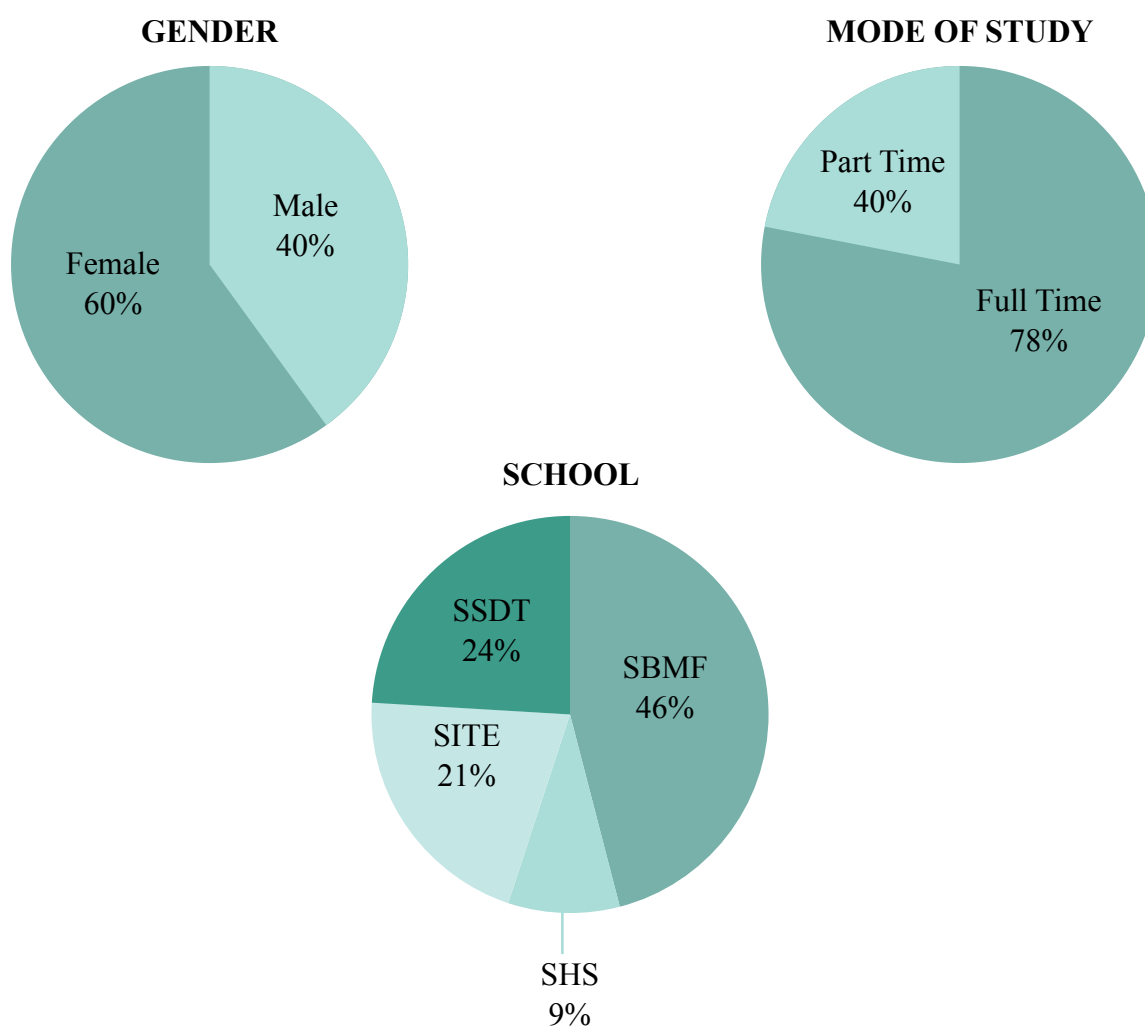


Figure 1: Demographic Profiles

It is further observed that the majority of the students who responded belonged to the Schools of SBMF (46%), followed by SSDT (24%), SITE (21%) and SHS (9%).

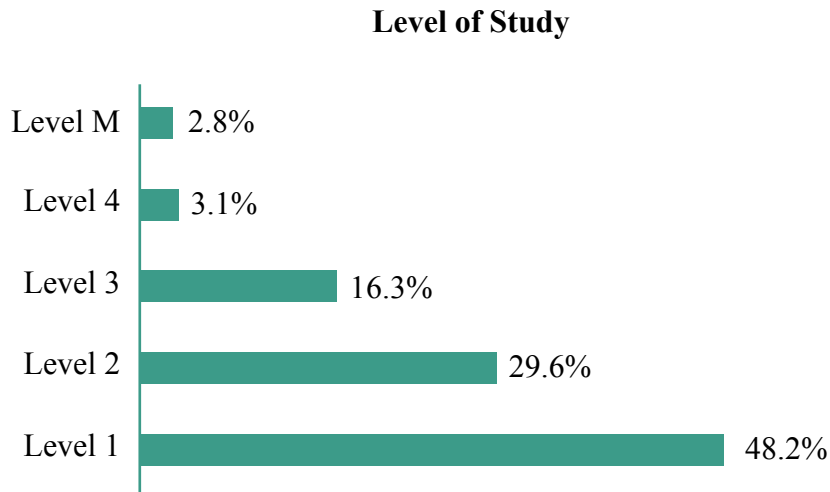


Figure 2: Student's Level

The students who responded to the survey were mostly from level 1 of the study (48.2%), followed by Level 2 (29.6%) and Level 3 (16.3%) (Figure 2). It is further observed that Level 4 (3.1%) and Level M (2.8%) participation in the survey were low.

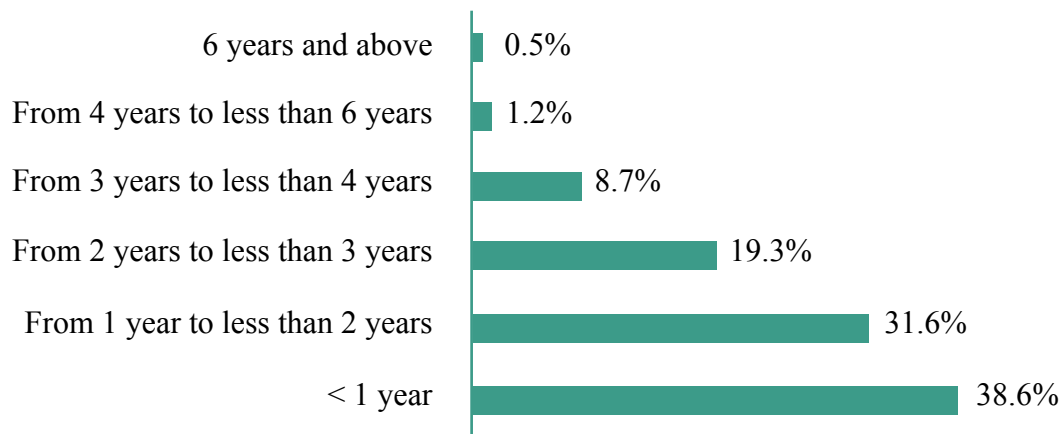


Figure 3: Number of Years, studied at UTM

As shown in Figure 3, the majority of the students who participated in the survey were registered at UTM for less than 1 year (38.6%), followed by those who were registered from 1 year to less than 2 years (31.6%), from 2 years to less than 3 years (19.3%) and from 3 years to less than 4 years (8.7%).



### ***Students' Experiences of Traditional Face-to-Face Classes***

To gauge the students' experiences of the traditional face-to-face classes, a five-point rating scale was used with 1 = strongly disagree to 5 = strongly agree. The interactions among students, academics and supporting resources are important to promote collaboration and relationships to establish a social presence in the educational environment. The students' experience of traditional face-to-face sessions is measured by (1) in-class student-to-student interaction, (2) in-class student-academic interaction, and (3) supporting resources for the face-to-face interaction. A summated percentage for 'agree' and 'strongly agree' was used to explain the level of agreement. The results for these measures are presented in the sections that follow.

#### **(i) In-Class Student-to-Student (IS2S) interaction**

The students' online interactions with other students were assessed with a 7-item scale. The findings revealed that most of the students agreed or strongly agreed with the seven statements relating to in-class student-to-student interaction (Table 1). The mean score for these statements ranged from 3.8 to 4.0. The highest agreement could be observed for 'I was able to communicate with other students during the face-to-face class sessions' (76.7%, M=4.0), followed by 'I was able to share learning experiences with other students during the face-to-face class sessions' (74.2%, M = 3.9) and 'The face-to-face sessions created a sense of community with fellow students' (71.2%, M = 3.9). It could thus be observed that students overall had a positive attitude toward in-class student-to-student interaction when classes are conducted on a face-face basis.

**Table 1 – Students' Attitudes of In-class Student-to-Student (IS2S) Interaction**

In-class Student-to-Student (IS2S) interaction	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1. I was able to communicate with other students during the face-to-face class sessions	3.7	3.8	15.7	42.0	34.7	4.0	1.0
2. I was able to share learning experiences with other students during the face-to-face class sessions	0	5.7	17.4	43.4	30.8	3.9	1.0
3. Face-to-face contact with fellow students helped me get more out of the classroom discussion	3.6	8.1	23.5	38.0	26.8	3.8	1.0

4.	The face-to-face sessions created a sense of community with fellow students	2.6	5.1	21.1	40.6	30.6	3.9	1.0
5.	The ability to have face-to-face group work discussion enabled me to collaborate with other students and increase my critical understanding of the module	2.7	6.1	20.4	38.9	31.9	3.9	1.0
6.	I enjoyed the face-to-face environment	3.8	4.4	22.0	36.6	33.2	3.9	1.0
7.	Time spent in the face-to-face environment was worthwhile	2.8	4.9	23.3	36.3	32.6	3.9	1.0

Students were also asked to state if the modules that they were studying required any ICT tools, for example, computer and internet. 84% responded 'Yes' and 16% responded 'No'. Thus, it could be observed that the majority of the students already required the ICT tools for their study and therefore, they could easily adapt to the changing situations in the learning environment to cope with the blended learning even during and after the lockdown period.

## **(ii) In-Class Student-to-Academic (IS2A) Interaction**

The students' online interactions with academics were measured using a 4-item scale (Table 2). The majority of students agreed or strongly agreed to the four statements regarding the in-class student-to-academic interaction, with the mean scores ranging from 3.7 to 4.0. The highest agreement was observed for 'I was able to interact face-to-face with my module convener during the traditional classroom session' (77.1%,  $M = 4.0$ ), followed by 'I had a better understanding of the module during the traditional classroom session' (57.3%,  $M = 3.9$ ). It could thus be observed that the participants had positive attitudes for in-class student-to-academic interaction during face-to-face sessions and had a good understanding of the taught lessons.

**Table 2 – Students’ Attitudes of In-class Student-to-Academic Interaction**

In-class	Student-to-Academic (IS2A) interaction	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1.	I was able to interact face-to-face with my module convener during the traditional classroom session	2.0	2.9	18	49.5	27.6	4.0	0.9
2.	I had a better understanding of the module during the traditional classroom session	2.7	5.2	24.9	34.3	33.0	3.9	1.0
3.	I learned more with traditional classes	3.0	7.1	27.6	30.7	31.6	3.8	1.1
4.	The module convener encouraged me to be more involved in the traditional classroom discussion	2.9	6.6	30.9	34.7	24.9	3.7	1.0

**(iii) Importance of Supporting Resources for Face-to-Face Interaction**

The importance of supporting resources for face-to-face interactions provided to the students was also examined using a 6-item scale. The results showed mixed feelings regarding the supporting resources available to them during the face-to-face interaction (Table 3). Most of the students’ responses were ‘neutral’, however, there were some students who still agreed that supporting resources for face-to-face interaction were available. The mean scores for the 6-items ranged from 3.0 to 3.5. The highest agreement was for ‘I could easily contact the School Exam Unit for a query when required’ (50.9%,  $M = 3.5$ ). It was further observed that 53.6% of the respondents were neutral regarding ‘Lab facilities were made available to me’ ( $M = 3.0$ ), followed by ‘Computing facilities (e.g. MatLab, SPSS, Language, Graphics software, Programming) were made available to me’ (49.1%,  $M = 3.0$ ). This indicates that computing facilities may not be adequately provided or available to students even in the traditional method of teaching and learning.

**Table 3 – Students’ Attitudes of Supporting Resources for Face-to-Face Interaction**

Supporting Resources for Face-to-Face Interaction	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1. Library facilities were easily accessible	5.4	9.2	39.3	33.9	12.2	3.4	1.0
2. Computing facilities (e.g. MatLab, SPSS, Language, Graphics software, Programming) were made available to me	8.0	15.3	49.1	20.6	6.9	3.0	1.0
3. Lab facilities were made available to me	7.6	14.0	53.6	18.6	6.2	3.0	0.9
4. I could easily contact Student Affairs for a query when required	6.1	8.5	35	37.6	12.8	3.4	1.0
5. I could easily contact School Registry for a query when required	5.4	7.4	37.4	37.2	12.6	3.4	1.0
6. I could easily contact the School Exam Unit for a query when required	4.9	6.6	37.6	38.0	12.9	3.5	1.0

#### (iv) Student’s Experience of Online Learning

This section presents the findings of students’ experience of online learning, which were measured by (1) online student-to-student interaction, (2) online student-to-academic interaction, and (3) supporting resources for online interaction, using item scales captured on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree). A summated percentage on ‘agree and strongly agree’ was used to explain the level of agreement. The findings are presented in the sections that follow.

##### Online Student-to-Student (OS2S) Interaction

To examine the students’ experiences of the online student-to-student interaction, a 7-item scale was used (Table 4). The responses were mixed ranging from ‘disagree’, to ‘neutral’ or to ‘agree’, with the mean scores ranging from 2.9 to 3.2. Five of the 7-item scales scored a mean of 3.0 or above, especially for statements ‘I was able to communicate with other students during online classes’ (M = 3.2), ‘I enjoyed the online environment’ (M = 3.2), ‘Time spent in the online environment was worthwhile’ (M = 3.2), and ‘I was able to share learning experiences with other students during online classes’ (M = 3.0). The lowest mean was observed for the

statements ‘Contact with fellow students during online classes helped me get more out of the online discussion’ ( $M = 2.9$ ), and ‘Online sessions created a sense of community with fellow students’ ( $M = 2.9$ ) respectively. These findings suggest that the respondents perceive that the integration of human interaction into the online learning environment is important.

**Table 4 – Students’ Attitudes of Online Student-to-Student Interaction**

Online Student-to-Student (OS2S) interaction	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1. I was able to communicate with other students during online classes	3.7	3.8	15.7	42.0	34.7	4.0	1.0
2. I was able to share learning experiences with other students during online classes	0	5.7	17.4	43.4	30.8	3.9	1.0
3. Contact with fellow students during online classes helped me get more out of the online discussion	3.6	8.1	23.5	38.0	26.8	3.8	1.0
4. Online sessions created a sense of community with fellow students	2.6	5.1	21.1	40.6	30.6	3.9	1.0
5. The ability to have online group work discussions enabled me to collaborate with other students and increase my critical understanding of the module	2.7	6.1	20.4	38.9	31.9	3.9	1.0
6. I enjoyed the online environment	3.8	4.4	22.0	36.6	33.2	3.9	1.0
7. Time spent in the online environment was worthwhile	2.8	4.9	23.3	36.3	32.6	3.9	1.0

### Online Student-to-Academic (OS2A) Interaction

The students' online interactions with academics were measured with a 4-item scale (Table 5). Students' responses were mixed ranging from neutral to agree regarding the 4 statements for the in-class student-to-academic interaction with the mean scores ranging from 2.8 to 3.4. The highest agreement was observed for 'I was able to interact with my module convener during the online session' (51.8%,  $M = 3.4$ ), and the least agreement and mean score was 2.8 for 'I learned more via online classes' (24.8%). The effectiveness of online learning is debatable because it seems to be perceived as being characterised by the absence of face-to-face relationships among students, and students and academics.

**Table 5 – Students' Attitudes of Online Student-to-Academic Interaction**

Online Student-to-Academic (OS2A) interaction	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1. I was able to interact with my module convener during the online session	6.5	11.5	30.2	41.9	9.9	3.4	1.0
2. I had a better understanding of the module during the online session	13.6	19.2	39.2	22.1	5.9	2.9	1.1
3. I learned more via online classes	16.6	22.3	36.3	17.3	7.5	2.8	1.1
4. The module convener encouraged me to be more involved in the online discussion	9.6	12.7	38.5	30.9	8.4	3.2	1.1

### Supporting Resources for Online Interaction

The level of supporting resources for online interaction was measured with a 6-item scale. The responses are mixed, although the respondents tend to agree to these statements, some of them also tend to be neutral or disagree (Table 6). There were mixed feelings about the availability of supporting resources for online interaction, in particular the availability of lab facilities, computing facilities, and accessibility to library facilities, with a low mean ranging from 2.5 to 2.9. The results indicate that being a conventional university, to adopt the blended learning approach during the COVID-19 pandemic appropriate technical changes have to be made in developing online learning that will facilitate the interactions amongst students, staff, and resources.



**Table 6 – Students’ Attitudes of Supporting Resources for Online Interaction**

Online Student-to-Academic (OS2A) interaction	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1. Library facilities were easily accessible	16.9	22.2	43.8	14.4	2.8	2.6	1.0
2. Computing facilities (e.g. MatLab, SPSS, Language, Graphics software, Programming) were made available to me	15.7	23	46.6	11.6	3.1	2.6	1.0
3. Lab facilities were made available to me	18.4	24.5	48.3	7.1	1.7	2.5	0.9
4. I could easily contact Student Affairs for a query when required	13.8	17.5	42.4	21.4	4.9	2.9	1.1
5. I could easily contact School Registry for a query when required	13.1	17.1	44.0	21.1	4.7	2.9	1.0
6. I could easily contact the School Exam Unit for a query when required	12.6	16.4	44.1	22.1	4.8	2.9	1.0

### Students Engagement and Commitment to Online Learning

The study also captured the students’ engagement and commitment to online learning using a 5-item scale (Table 7). The responses are mixed, although the respondents tend to agree to these statements, they were also neutral or disagreed, with the mean scores ranging from 3.0 to 3.4. For the statement “Studying from distance was the same for me and my fellow students”, the student participants’ responses ranged from disagree (21.6%) to agree (29%) to neutral (29.3%). Similarly, for “Teaching from distance was the same for my module convener”, the student participants’ responses ranged from disagree (21.6%) to agree (25.8%) to neutral (34.8%). It is observed that the highest agreement was obtained for “Online blended learning and study from distance have speeded up the work to be completed” (52.7%,  $M = 3.4$ ), followed by ‘Flexible arrangement when studying from distance boosted my enthusiasm to complete my assignment’ (50.6%,  $M = 3.4$ ). There is still some way to go for online education to attract the same level of student engagement as during face-to-face teaching-learning

**Table 7 – Students’ Engagement and Commitment to Online Learning**

Students’ engagement and commitment to online learning	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1. Studying from distance was the same for me and my fellow students	11.8	21.6	29.3	29.0	8.3	3.0	1.1
2. Teaching from distance was the same for my module convener	11.1	21.6	34.8	25.8	6.6	3.0	1.1
3. Online blended learning and study from distance have speeded up the work to be completed	10.0	11.8	25.5	36.5	16.2	3.4	1.2
4. Flexible arrangement when studying from distance boosted my enthusiasm to complete my assignment	10.9	11.3	27.3	32.7	17.9	3.4	1.2
5. Studying from distance did not affect the amount of effort I put in.	13.1	15.9	27.5	27.1	16.3	3.2	1.3

### Challenges to Online Learning

Following the lockdown, UTM has adopted the blended teaching and learning approach to continue with the March 2020 Semester to a delayed completion at the end of August 2020. This transformation of instructional delivery led to several challenges. It is to be noted that because of COVID-19, laboratory-based modules and field-based assignments were not possible. The study further captured the challenges faced by students for online learning and the factors that supported or deterred their online learning during the last semester were measured using a 7-item scale. It was observed that mixed responses were ranging from neutral to agree to strongly agree (Table 8). However, it observed that the highest agreement was for ‘I had the technological tools (PCs, laptops, etc)’ (47.2%). This is also indicative that a large majority of students might have had adequate access to ICT resources but is also indicative that there existed a non-negligible population of students without adequate access to ICT.

**Table 8 – Students’ Experiences of the Challenges of Online Learning**

Factors supported/deterred online learning during the last semester	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	SD
1. I had the technological tools (PCs, laptops, etc)	2.9	5.0	15.6	47.2	29.2	4.0	0.9
2. I had a proper Internet connection	3.7	13.0	21.1	39.6	21.4	3.6	1.1
3. Studying from distance could be distracting	6.9	12.2	23.7	33.8	23.4	3.5	1.2
4. Follow up my progress work from distance by the module convener could be difficult	5.7	12.1	27.5	36.6	18.0	3.5	1.1
5. Lack of communication with other fellow students could be demotivating	7.0	14.0	22.5	33.5	23.1	3.5	1.2
6. Lack of communication with university staff could be demotivating	6.3	12.2	28.5	29.8	23.2	3.5	1.2
7. Student attendance was difficult to manage by the University	6.9	12.3	35.7	25.3	19.8	3.4	1.1

Finally, the two hypotheses were tested to find out whether or not there is a significant difference, firstly, in communication among students and secondly, in understanding a subject of study between the traditional classroom and online classroom. The results of the Chi-Squared analysis, which are tested at a significance level of 5%, are depicted in Tables 9 and 10. The second hypothesis testing results from the p-test revealed that there were no significant differences in the degree of understanding of a subject taught between the two learning modes. H2 is once more rejected. Based on the two preliminary testings conducted, it is perceived that students’ engagement and commitment to learning are the same regardless of the mode of study.

**Table 9 – Rating of Communication Amongst Students Using the Two Learning Modes**

		Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total
Learning Mode	Face-to-face	37	38	157	420	347	999
	Online	104	171	282	334	99	990
	Total	141	209	439	754	446	1989

**Table 10: Rating of Understanding of a Module is Independent of Learning Mode**

		Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Total
Learning Mode	Face-to-face	27	51	246	339	326	989
	Online	132	187	381	215	57	972
	Total	159	238	627	554	383	1961

## DISCUSSION AND CONCLUSION

The move to lecture from distance using online platforms had a significant impact on students at various levels of teaching and learning. This study showed that online teaching emerged as an essential tool to support students' learning remotely during the pandemic crisis, which is in line with the findings of Hasan (2020) ensuring continuity of education at all levels. The adoption of platforms such as Zoom, Google Classroom, Microsoft Meet as well as learning management systems (LMS) like Moodle were observed to manage and stimulate students' learning. The blended teaching and learning were new and innovative experiences to many who were motivated to complete the syllabus and semester following the lockdown to cater to the students' needs.

Similar to past studies, it is observed that it is important to find different approaches to engage students to keep them interested and focused on their online learning (Hasan, 2020; Bordoloi et al., 2021). Moreover, online communication has to be improved to maximise the use of technology to effectively communicate with students. Online learning is dependent on technological equipment and the provision of the equipment for online delivery could be a big challenge. It was also observed that digitalisation of the library is important so that there is the

optimal utilisation of the digital resources at all times. In addition, remote laboratories could be used as alternative laboratories in online learning and such virtual laboratories offered by online learning can only fill the theory-to-practice gap. It was further observed that online learning was supported by self-spacing, self-learning, no commuting to campus, and allowed students to learn at their own pace. Flexibility empowers students to actively control their learning environment and also enhances self-learning. However, the findings reported that some students found studying from distance distracting. Further research into this could be pursued.

The COVID-19 pandemic situation has given the opportunity to the educational systems to transform their educational landscape by introducing blended teaching and learning where students are provided with continued learning opportunities. In order to align with both local and global sanitary practices and policies to overcome the spread of the COVID-19 pandemic and maintain the academic calendar, the UTM adopted online teaching and learning to complete the outgoing semester. The UTM has developed a strategic combination of students' presence at the university and also structured approaches to student learning at home. The study revealed that students appreciated the efforts made by UTM to maintain academic continuity. The use of blended learning during the COVID-19 lockdown has enabled students to receive the necessary educational inputs to complete their syllabi and submit their assignments even during the current crisis situation. The findings of this study suggest that blended learning creates a sense of community among the students, academics, and supporting resources and thus face-to-face classes and online classes provide a balanced pedagogical role.

UTM has put in place the Blended Learning Unit (BLU) whose objective is to go beyond the emergency online teaching and learning and smoothly respond to the transition from face-to-face to the blended approach by creating a quality and innovative blended approach that meet the needs of all stakeholders. The BLU of UTM has also as its mission to ensure continued digitalisation of education to prepare students for a more digitalised world of industry and employment. Its first mission has been the capacity building of the academics and students on the Learning Management System (LMS) and infrastructure in place that could readily be accessed to support the transition and ensure they can fully appreciate the use of the technology and effectively engage with blended learning. The UTM has adopted and implemented a Learning Management System at times of crisis. The findings of this study will help UTM to develop instructional design and planning that are efficient and effective. Although technology is an important aspect, the most important element for the successful development of blended learning is to also consider the ICT Act, Quality Assurance framework, online ethical issues to deliver sessions and the need for online teaching/learning policy. Any challenges observed or experienced by students could be transformed into opportunities as it is evident that blended learning and teaching will be educationally sustained and become more hybrid in the future.

Overall, students' experiences of traditional face-to-face and online sessions were positively perceived by most of the students surveyed. The blended learning experience adopted to adhere to all sanitary protocols has created a supportive learning and teaching environment which has resulted in strong collaboration among all partners, mutual understanding as well as trust and helped to alleviate any challenging experiences to opportunities. This study revealed that blended learning is a suitable model of learning, being student-centric and also synchronous, thus providing an optimum and flexible learning opportunity for students. There is still scope for improvement to make blended learning as effective as learning on a face-to-face basis.

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## Muslim Chaplaincy Curriculum: Defining the Approach

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### ABSTRACT

This paper explores Muslim chaplaincy curriculum in British institutions. With no formal history of Muslim chaplaincy and no existing curricula to rely on, Muslim chaplaincy has modelled itself on a Christian chaplaincy model. However, Christian chaplaincy has not been helpful because of the different belief systems, purposes and dynamics. My study on Muslim chaplains in Higher Education (HE) revealed the role of a Muslim chaplain that includes elements of the spiritual, social, cultural, psychological, and emotional (SSCPE). Stutt, (2018) suggests three types of curriculum design: subject-centred, learner-centred and problem-centred. Therefore, the approach to a Muslim chaplaincy curriculum should be based on a Muslim-centric problem-centred curriculum that identifies the lived experience and needs of the Muslim community. This paper draws on a qualitative study of Muslim chaplains and my own personal experience as practitioner and researcher.

**Key Words:** Curriculum development; chaplaincy; Muslim

### INTRODUCTION

This paper explores the approach that is currently being applied to the development of a Muslim chaplaincy curriculum strategy. Muslim chaplaincy is a recent phenomenon in the United Kingdom (UK) and at present there is no structured framework for what chaplaincy is, and what Muslim chaplains do (Rajput, 2015). The current approach to Muslim chaplaincy is focused on spiritual care (Ahmed, 2020; Isgandarova, 2019; Long and Ansari, 2018; el-Aswad, 2017; Hafiz, 2015; Abu-Shamsieh, 2013; Ansari, 2009; Lahaj, 2009). Thus, this paper argues that the current approach to Muslim chaplaincy courses is based solely on spiritual development and does not reflect the everyday *lived experience* of Muslims at ground level. In the UK, the Markfield Institute of Higher Education (MIHE) offers a master's degree level programme in Muslim Chaplaincy and Counselling that is modelled on Christian chaplaincy. In a North American context, two seminaries, the Hartford Seminary and Bayan both offer a Master of Divinity Islamic chaplaincy programme with its core features adopted from Christian chaplaincy programmes. These programmes are founded on faith-based counselling and ethics. The Hartford Seminary highlights its courses in Islamic law, Islamic spirituality and mental health from an Islamic perspective (Long, 2018).

A multiple method study on the intersection between faith obligations and studies for Muslim students in Higher Education (HE) (Rajput, 2020) and a mixed methods study on practical theology exploring the self-identity of Muslim chaplains in HE revealed that the majority of the work of a Muslim chaplain in English HE is non-spiritual. Findings show that the role of

Muslim chaplains is divided into two domains, the religious and the non-religious. The majority of time is spent on chaplaincy practice, between 70% to 80% is taken up on non-spiritual, non-religious social wellbeing and welfare issues or as some chaplains call it, secular issues. Muslim chaplains' time and effort is spent on religious and spiritual matters and all things related to faith, including leading prayers, rites and rituals, delivering a faith talk or a tutorial. My own personal experience and the findings of the combination of my studies on Muslim chaplains in HE (Rajput, 2017) show that Muslim students' experiences and their needs are a combination of the spiritual, social, cultural, psychological, and the emotional (SSCPE). In my current study on the role of the *Imam*, all twenty-six *Imams* interviewed, affirmed that they were only trained in Islamic studies to lead prayers, perform rites and rituals, teach Quran, and respond to jurisprudence concerns. They had no training in social issues, counselling skills, or mental health among other necessary social skills and competence that is required in the broader aspects of the Muslim chaplaincy role. When an *Imam* chose to gain any other skills, it was not because the additional skills were part of their faith leadership training but because they wanted to undertake a particular separate programme of learning. Therefore, I argue that an *Imam* centred curriculum does not meet the needs of the Muslim community in institutions and a drastic change is required if we are to provide an appropriately targeted support service.

This paper argues for a new approach to Muslim chaplaincy curriculum development that focuses on the *lived experience* and needs of the Muslim community in institutions, as well as the role of a Muslim chaplain that has already expanded beyond that of spiritual care. This paper argues for a problem-centred curriculum based on the concerns of Muslims in British public sector institutions. This is in line with Osmer's (2008) four questions approach to practical theology: What is going on? (the descriptive-empirical task); Why is this going on? (the interpretative task); What ought to be going on? (the normative task); How might we respond? (the pragmatic task)

In order to respond effectively to these broader issues and concerns, it would require the development of well-rounded individuals who have the competence and ability to respond to the needs of Muslim communities in these institutions. It would also necessitate learning a complete new set of knowledge and attitudes. Therefore, it requires the appropriate curriculum that encompasses a broad spectrum of knowledge and attitudes to respond to the issues and concerns of Muslims in a UK context. These knowledge and attitudes include but are not exclusive to; mediation skills, counselling skills, coaching skills, effective communication skills, empathy, being non-judgemental, understanding mental health and how to respond to it, dealing with emotion, understanding the national and local social concerns of the Muslim community and how to respond to them, interfaith collaboration, working in multi-faith contexts, negotiation skills, advocacy skills (speaking, writing and representation) among other such skills as required in order to offer a whole person-centred holistic support. Many of these necessary skills are non-faith related, making the curriculum development approach multidisciplinary. Furthermore, an important aspect of working in institutions is to understand the nature of the institution and the possibilities and challenges within them. This means the Muslim chaplain should have institutional credibility and understand the needs of Muslims in institutional contexts. Therefore, the curriculum should include the development of individuals' capacity to understand the nature and context of issues and concerns in institutions, understand current trends nationally and locally, and understand the different personalities in the institution

that can either make things happen or not. If the opportunity arises, a Muslim chaplain could also be engaged in and contribute to advisory board meetings, presenting a more diverse and inclusive perspective and giving voice to the needs, issues and concerns of Muslim students. As a result, the Muslim chaplain would contribute to enhancing the students' experience. Additional skills related to the competence of Muslim chaplains in Higher Education (HE) are presentation skills, report writing skills, writing policies, audit of faith provision, networking, tutorials, and forming partnerships both internally and externally. The approach to an appropriate Muslim chaplaincy curriculum development strategy needs to be experience-based because Muslim chaplaincy emerges from practice.

### **Traditional and Non-Traditional Courses**

While traditional courses such as medicine, engineering, law, and psychology have long histories of development and, therefore, have long established curriculum strategies, chaplaincy is a non-traditional subject with a history in another faith tradition, Christianity. As such, there is no history of Muslim chaplaincy and therefore, Muslim chaplaincy cannot be consulted for existing curricula. The lack of a history of Muslim chaplaincy curriculum strategy designates it a new practice and a new field of study, making the development of a new but effective curriculum strategy even more challenging. This paper locates Muslim chaplaincy in institutions as a coping strategy for a minority community. There is no tradition of chaplaincy in Islam (Rajput, 2015, p. 228). Consequently, the role of a Muslim chaplain can be undertaken by anyone who meets a prospective employer's criteria for essential skills and competencies. Furthermore, the term chaplain and the practice of chaplaincy remain ambiguous. According to Gilliat-Ray, Ali, & Pattison (2013), chaplaincy was not "an integral part of Islam" (p. 48). It is for this reason Muslims have struggled with the term 'chaplain' and 'chaplaincy' in spite of many accepting to be called chaplains and to work in multi-faith chaplaincy. This highlights the uncertainty of a Muslim chaplains' role, which in turn, exacerbates the challenge for the development of a Muslim chaplaincy curriculum strategy. The role of Muslim chaplains is not confined to spiritual development because they are also involved in the everyday experiences of Muslims in institutions (Rajput, 2017; 2020).

## **BACKGROUND TO MUSLIM CHAPLAINCY**

In a HE context, Muslim chaplaincy started when a Muslim staff member was asked to advice and guide the university on Muslims and their faith issues. Later, Imams were invited as 'visiting ministers' (Gilliat-Ray, 2008). Muslims were then recruited as chaplains to work in these institutions similar to Christian chaplains. Historically, chaplaincy started out in the army, but chaplains are now placed in numerous public sector institutions, such as prison, hospital, education and airport (LeGood, 1999; Threlfall Holmes, & Newitt, 2011), where the work of chaplaincy is primarily pastoral care. A chaplain supports people, primarily of the same faith, but is available to all people of faith and none. The ambiguity of Muslim chaplaincy has led to uncertainty regarding the title of Muslim chaplains and their status. It has also resulted in the designing of Muslim chaplaincy courses and curriculum that could be considered a mismatch

to what is going on at the ground (Rajput, 2019). Little is known about what Muslim chaplains actually do. I argue that a chaplain ought to apply a holistic whole person approach that includes interventions or resolutions concerning issues of SSCPE.

In this paper, the focus of investigation and discussion is specifically on HE chaplaincy. The conditions and dynamics in sector institutions, such as prison, hospital, education and airport, are different from each other. The reason for choosing HE chaplaincy is because that is where I have worked and gained sixteen years of chaplaincy experience; ten years as a faith advisor in one HE, and six years chaplaincy experience in another. My other areas of experience are in hospital and airport chaplaincies. This has enabled me to compare and contrast my role in the different sectors. It is in HE that I have gained my qualifications and conducted the most research (Rajput, 2020; 2017; 2015). I also taught on a Muslim chaplaincy programme with a focus on HE. In addition, I use the term chaplain because it is a recognised legal term in the UK and is used in public sector institutions nationally, rather than the terms offered by other authors and practitioners, such as Spiritual care (Isgandarova, 2019), Islamic care, (Ahmed, 2020) Islamic pastoral care (Long & Ansari, 2018), Islamic care and counselling (el-Aswad, 2017). All these terms, including chaplaincy, have an underlying faith dimension. These terms may apply in other sectors away from HE, but they highlight the uncertainty regarding the specifics of the term itself. Further, I use the term chaplain to mean a helper, carer, caregiver, or other similar terms that could apply to a supporting role.

Muslim chaplaincy is located within multi-faith chaplaincy that is made up of people from the recognised world faiths and, in rare cases, people of no faith. Minority faith communities only enter chaplaincy in a multi-faith context. This means that Muslim chaplains do not work in isolation but work alongside colleagues of other faiths and none, developing strengths in teamwork, interfaith and multi-faith work. Multi-faith chaplaincy affords other faith communities the opportunity to be engaged in chaplaincy practice. In this regard, Muslim chaplaincy modelled itself on Christian chaplaincy and it is also the same pathway for other minority chaplains as well.

## **A Faith Framework**

Muslim chaplaincy attempts to remain close to a Christian chaplaincy model with regard to terms and motivations. However, these terms also suggest a top-down approach rather than a bottom-up approach. A top-down approach gives the topic a title, such as spiritual care, Islamic care and such like, and then develops a programme around the title, having identified and declared the Imam as practitioner who is grounded in Islamic studies. This is based on the already constructed assumption that individuals require spiritual development while located in these institutions. Rather than attempting to identify and label Muslim chaplaincy based on existing Christian models of pastoral care, the basis for developing a framework and a theory should start by identifying the needs of the Muslim community in British institutions. This is a bottom-up approach that starts with the exploration of the Muslim community's lived experience, and their SSCPE issues and concerns that have an impact on their daily lives. Anton Boisen (1876-1965), founder of clinical pastoral education realised the importance of the individual's first-hand human experience and called it the 'living human document' (Boisen, 2012). The needs of

the Muslim community can be broad ranging from financial concerns, finding accommodation, being bullied, prejudice, booking a room, organising an event, relationship discord, illness or death in the family, grief and bereavement, stress, mental health, advice, guidance, the meaning of life, not getting on with colleagues or a staff member, to simply asking directions. Some of these issues can be intricate and complex and require a well-rounded person with broad skillsets in varied areas to support individuals. This paper argues for a Muslim chaplain practitioner who has counselling skills without necessarily being a counsellor, advocacy skills without being an advocate, mediation skills without being a mediator, and such like. There will be core skills that are absolutely necessary in this helping practice, such as listening, communication and empathy that would be mandatory for everyone. The curriculum needs to be properly defined in order to achieve the best result for its purpose.

There have been attempts to Islamise the Muslim chaplaincy curriculum by framing chaplaincy within a faith lens and seeking to elicit Islamic sources of pastoral care. The attempts have been to apply faith text to modern secular professions, for example counselling, psychotherapy, and social psychology in order to understand social problems. This has led to a Muslim faith identity being tagged alongside these professions: Islamic counselling, Islamic psychotherapy, Islamic mental health and such like titles. By placing most situations into a faith-based framework, curriculum designers, either through lack of an academic base or lack of experience in curriculum design, fail to understand Muslim chaplaincy in a practical sense. As a result, the curriculum strategy of Muslim chaplaincy is somewhat misplaced and prospective chaplains are not adequately equipped to respond effectively to the social, cultural and psychological concerns of Muslims, and the chaos and crisis of the modern world. Accordingly, the attempts to Islamise secular professions has not been successful in practice because by simply embedding Islamic examples does not necessarily resolve the modern-day cultural, social, and psychological challenges that Muslims face in secular institutions. Furthermore, not every situation is faith based or requires a faith response.

### **The Needs of Muslim Students in HE**

In my capacity as chaplain, the numerous conversations with colleagues, and including my studies on Muslim chaplains in English HE (Rajput, 2017), the results reveal that students express a need to resolve their everyday social concerns. In considering the nature of Muslim chaplaincy, by way of my studies, I explored with students what chaplaincy means to them and its relevance as a coping strategy for a minority community in a plural society. As a result, there is an urgent need to develop curricula that includes the social sciences (Isgandarova, 2019) specifically psychosocial and socio-spiritual interventions. A psychosocial approach is the combined influence that psychological factors and the social environment have on an individual's wellbeing and their ability to function. A socio-spiritual approach is the combination of the social and the spiritual. For example, questioning whether investing funds into stocks and shares is Islamically permissible. Disadvantageously, researchers and educators in the field of Muslim chaplaincy are exceptionally few. The absence of an academic base and the lack of any substantial theories of Muslim chaplaincy, as well as the mirroring of Christian concepts and models, the differing roles and responsibilities of faith chaplains, and the lack of focus on social issues and concerns are just some of the reasons why Muslim chaplaincy curricula development and the teaching of such programmes can be exceptionally challenging and onerous.



On identifying the needs of individuals in the institution, the next step would be to identify the prerequisites in meeting these needs. For example, the ability to identify the support required and mark it into one of the following categories: spiritual, social, emotional, or practical. Once identified, plan a strategy and decide how to best resolve that particular issue according to its category. In addition, consider the resources needed to reach a favourable conclusion. Often, the issue does not necessarily warrant an intervention or resolution but simply requires a listening ear, a conversation with the concerned individual doing most of the talking and the chaplain most of the listening. The individuals might feel a sense of relief by simply speaking to someone. Therefore, from the Muslim chaplains' perspective, the ability to listen, communicate effectively, both verbal and non-verbal communication, including empathy skills would form part of the required mandatory learning. Finally, the curriculum strategy would require identifying the right calibre of individuals with the right character and skillset who are keen and willing to give their time and effort to support others. The development of this approach to a curriculum strategy would require all the steps mentioned above. The primary purpose of the curriculum is to develop the student with the necessary skills to adequately and effectively support the Muslim community and meet the spiritual, the social and the psychological needs of individuals in particular institutions. In order to understand the needs of the Muslim community in institutions, further empirical research should be conducted, and evidence-based case studies need to be recorded, monitored and analysed. The final step is to develop a curriculum strategy or programme around meeting the key broader needs that include clear interventions and/or resolutions, or simply listening when required to do so. Another option when unable to find a solution, is to signpost the individual to another department or person. An example of signposting is when the situation is beyond one's remit, such as self-harm. The chaplain would be required to seek further help by directing the individual elsewhere. Making affiliations and forming partnerships internally and externally are vital in being able to offer wider support when required.

The Muslim community is not adequately prepared to respond appropriately to Muslim social concerns both in the community and in institutions. Muslim chaplains only learn about these issues and concerns in institutions and often have to come up with interventions and resolutions spontaneously whilst on the job. This shows the importance of identifying the right approach to developing a curriculum strategy. One example of a case that one university encountered was Muslim female students had refused to roll up their sleeves in a laboratory class. The reason students gave was their faith edict regarding non-exposure of certain parts of their body. When chaplains were asked to respond, most chaplains thought of practical resolutions, such as suggesting an all-female laboratory class, which was not a feasible option. The solution in this case, however, was fairly simple. The university was informed that they could consider providing translucent gloves to these students and any other students who wanted to use them. The translucent gloves were long enough to cover the arms, were easy to put on and work with. Importantly, the gloves were also cheap, incurring a minimal cost to the university. The end result was that everyone was content, and the students could fully engage in their laboratory sessions.

The perspective of Muslim needs in institutions and the advent of Muslim chaplains as a consequence, means that a new unique methodology is being constructed that identifies a minority community's faith and social needs in secular institutions, in a Western context. This, in turn, produces a unique individual with new knowledge, understandings, skills and competency for a particular environment. Future aspirations envisage this model emerging out into the wider community and being implemented more broadly.

## THE CURRICULUM

A curriculum is a programme of study that outlines how it will contribute to learners' knowledge, understanding, skills, capabilities, and competencies. The curriculum refers to the student acquiring social, personal, emotional and cultural capital skills. There are a number of ways to approach a curriculum in order to gain these skills. According to Stutt (2018), the three types of curriculum design are subject-centred, learner-centred and problem-centred. The curriculum designer decides which type of curriculum is best suited to their programme requirements and outcomes. Developing a curriculum strategy; planning, design and development can be a complicated process that involves the objectives and a framework. This includes the principals, vision, intentions, pedagogy and assessment. These also include the subjects a learner will learn for progression through the curriculum. These strategies define the various elements of a curriculum; the core objectives and the competencies to be achieved, the subject matter or course content, the units and module definitions, activities undertaken in order to achieve learning, the resources to be used, and how the learning will be assessed. Therefore, it is important to identify appropriate resources that enhance the curriculum, and aid learning, such as practical equipment and teaching resources.

The curriculum strategy under proposal is not a student-centred curriculum that empowers students in their learning through choice. Meeting student interests with the required outcomes can be challenging. The foundation of the Muslim chaplaincy curriculum would be based on identifying the needs of Muslims within the institution. This is a problem-centred curriculum that focuses on real life issues, for example wellbeing, welfare, relationships outside marriage, inter-religious relationships, family and peer pressure, racism and prejudice, Muslim hate, bullying, finance, stress, mental health, grief and bereavement, ethical issues, cultural sensitivities and such like. Further, this paper does not set out the detailed instruction in how to develop a curriculum as that is beyond the scope of this paper.

There are differences in course design, as there are in methods of teaching. The Muslim chaplaincy curriculum design currently being applied in various Muslim chaplaincy programmes is learner centred. This means the curriculum is geared to suit the individual or in this case, the Imam in preparation on supporting spiritual development in an institutional context. Subject-centred curriculum design revolves around a particular subject matter or discipline. The subject-centred curriculum design tends to focus on the subject, rather than the student. The curriculum designer will compile a number of subjects and how they should be studied.

## A Praxis Approach to Muslim Chaplaincy Curriculum

Muslim chaplaincy in HE serve and support the needs of students and staff. There is little research on Muslim chaplains in HE and therefore, little is known about what they do (Rajput, 2017). There is also a lack of theory or empirical research or academic grounding to base the curriculum on. Therefore, the praxis approach is not only an alternative but the a viable approach to Muslim chaplaincy curriculum strategy at present because it provides first-hand evidence-based case studies of Muslim experiences. It also begins to respond to Osmer's (2008) first question, what is going on? A praxis problem-centred curriculum identifies what the issues are and focuses on resolutions, interventions and other means of finding solutions. Understanding the challenges that Muslims face in institutions, whether it is prayer space, *halal* food, fasting during Ramadan, ethical concerns, social and cultural issues, emotional trauma, mental health or other wellbeing and welfare concerns, the Muslim chaplain engaged in the everyday concerns is best informed as an insider. Therefore, it is imperative that they are equipped with the right skills in order to face these challenges. The chaplain should have a thorough understanding of the institution and institutional policies and procedures to ensure a satisfactory resolution. This in turn leads to satisfied individuals who are more engaged in the institution and their learning. The overall result is an enhanced student experience. Once a curriculum has been established, regular review should be undertaken for its impact on teaching and learning, and to make any further changes.

## CONCLUSION

Muslim chaplaincy is a recent phenomenon with no history of curricula to rely on. There is little clarity about what chaplains do and why and has roots in another faith tradition. Muslim chaplaincy curriculum development strategy needs to start on a blank page. With an already available empirical study on Muslim chaplains and their self-understanding of themselves, a clearer picture emerges that highlights the different areas Muslim chaplains are engaged in. However, a carefully planned analysis is required to understand why Muslim chaplaincy exists, what is going on, why, what are the benefits, who benefits and how. It is from this understanding that the needs of Muslims in institutions can be identified and a congruent curriculum developed. A Muslim chaplaincy curriculum should be developed based on the *lived experience* and needs of Muslims in institutions. The argument for this is based on the different needs of the 'clients' in the different institutional sectors. The needs of a prisoner would be different from that of a student, for example. Therefore, once the specific needs are identified, then the Muslim chaplain can be trained and skilled in meeting these needs. The lived experience and identifying Muslim needs in institutions, is a bottom-up approach, and a problem-solving curriculum. The numerous areas of support required is broad depending on the needs of the community, and Muslim chaplains can tap into various areas of skillset for support. For example, pastoral carer, counselling skills, befriending, coaching, mentoring, guide, negotiating skills, facilitating, or mediating, conflict resolution, among many other available skillsets. Getting the curriculum right ensures a congruent praxis needs based, problem-centred curriculum resulting in a skilled individual who can offer an effective support service to avoid a disservice to the community and leaving individuals disillusioned and disheartened.

The two approaches to Muslim chaplaincy in HE curriculum strategy is to create a curriculum based entirely on the individuals' capacity, in this case, the capacity of *Imams* or those that have gained Islamic knowledge. This points to a learner-centred curriculum that seeks to enhance the capabilities of an Imam in an institutional role. This is the common strategy being applied, both in a UK context (MIHE, 2020) and a North American context (Bayan, 2021; Hartford Seminary, 2020). This approach follows a Christian model of designating the role of chaplaincy to the clergy. This is because chaplaincy is the Christian ministry and mission of taking the Church to the people (LeGood, 1999; Threlfall Holmes & Newitt, 2011).

The other curriculum that I propose in this paper is based on the *lived experience* of the Muslim community that includes a minority communities SSCPE issues, concerns and challenges (Rajput, 2020) that leads to a problem-centred curriculum. This curriculum identifies the SSCPE needs of the Muslim community in institutions. The curriculum would then be developed as a result of diagnostic and formative assessments to reflect the competence of individuals in meeting these needs of the Muslim community within institutions. Most of the learning would centre on specific units of learning that would incorporate evidence-based case studies and real-life problems. This would be in the form of group work discussion and learners collectively seeking outcomes. The facilitator would monitor the discussion to check engagement and ensure learners were on point.

The curriculum strategy approaches under discussion are not opposed to each other. This is not a case of *Imam* specific learning; therefore, it becomes an issue of spiritual development versus Muslim needs. There is scope to incorporate the two approaches that could possibly complement one another. The possibility of social issues and concerns being introduced into the curriculum from a social sciences perspective, and when combined with a learner-centred curriculum, the entire programme could focus on developing an individual's skills in SSCPE, as well as on developing the necessary skills and characteristics of the chaplain.

Focussing specifically or entirely on spiritual care, creates a gap in Muslim chaplaincy curriculum that neglects the social, cultural, psychological, and emotional aspects of the individual. Muslim chaplaincy should be focussed on the whole person-centred approach and not just on spiritual care. Educators, scholars, professionals and researchers should be dialoguing and researching, both through empirical studies and practice-based experiential learning the role of a Muslim chaplain and the information required to develop a curriculum within the broader chaplaincy roles, the content and how this content should be taught.

The Christian model of chaplaincy is not in line with the proposed Muslim chaplaincy curriculum because it has a different purpose of ministry and mission for a majority community, whereas this paper argues for the cultural, social, and psychological needs of the Muslim community as minorities in a Western context as a priority. Further, Christian chaplaincy and other faith chaplaincies do not have similar faith issues to contend with that concern the Muslim community such as five daily prayers, Friday prayer, washing facilities, fasting during the month of Ramadan, examination during the month of fasting, ethical concerns, and gender issues. Therefore, Muslim chaplaincy is more akin to a coping strategy.

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## Aims and Scope

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## Peer Review

All research papers in this issue of the *Journal of Education* have undergone a rigorous peer review process. Each paper has been reviewed by at least two anonymous referees.