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Editorial

Dolina Dowling

The digital revolution is advancing at an unprecedented pace. Large language models (LLMs) like ChatGPT, Gemini, and others are progressing exponentially. The tantalizing prospect of Artificial Intelligence (AI) becoming a major contributor to the global public good draws ever closer. Its expected capabilities mean that most, if not all, aspects of human life stand to benefit. Currently, AI is successfully used in the diagnosis of illness from medical imaging, the provision of personalised medicine using genetics and medical history, and AI-assisted robotic surgery. Such capabilities are not confined to healthcare, significant strides are being made which will enhance all aspects of human life. However, for everyone to benefit, the ever-widening digital divide between the global north and global south demands urgent attention, as highlighted in earlier editorials of this journal.

When we turn to education, AI is transforming the education landscape. Whilst we are still in the early stage of disruption, technology adoption across all education sectors is increasing albeit at varying levels of complexity. In the school sector, AI is having a positive impact by enhancing teaching and learning experiences and learning materials being tailored to meet individual needs which promotes student success. For example, online learning platforms like the US-founded Carnegie Learning MATHia and the Oak National Academy funded by the Department of Education in England are gaining momentum.

Higher education institutions (HEIs) are also increasingly embracing technology. Positive and innovative technologically-driven learning interactions abound. Despite their use and integration in all aspects of their operations, the human element is still key as social intelligence, empathy and creativity are attributes that AI cannot replicate. Human expertise is needed to harness AI effectively and yield the precise algorithms to meet the desired outputs.

In this first edition of the 19th volume of the journal, the use of technology in delivering a high-quality learning experience fit for the 21st century is clear as seen in the first cluster of four articles. In the first, the authors explore Collaborative Online International Learning (COIL) using a concurrent nested mixed methods research approach. Challenges identified include lecturer capability and preparedness, and the practicality of working across widely different time zones. In the second article, the authors address the impact of the COVID-19 pandemic with its concomitant move to online teaching, learning and assessment. The study shows that performance management systems need to be realigned as HEIs transition to university 4.0 with its focus on personalized learning, dynamic pathways, and student-centred education. In the following article, training of tutors within university tutoring programmes is explored. Given the identified positive effects of such training, HEIs need to invest in tutor training. The fourth article uses a qualitative study to explore the challenges arising from online student collaborations at an Open Distance Learning university. The author presents guidelines for enhancement and mitigation.

The next four articles deal with an array of issues both in schools and higher education. The first highlights the challenges of source-code plagiarism detection in coding assessments. This was exacerbated during the COVID-19 pandemic due to the introduction of online assessments. The authors use qualitative and quantitative data to refine the process of source-code plagiarism detection. The following article investigates how adopting a Social-Emotional Learning (SEL) approach to leadership influenced the learning culture in low-decile Limpopo, South African schools during the COVID-19 pandemic. The researchers found that SEL fosters mindfulness, self-mastery, effective communication, and relationship-building skills. They recommend providing SEL training for school leaders and integrating SEL into teacher training programmes. The third article provides a narrative approach to explore the hidden curriculum in classrooms within private higher education. The findings contribute to an understanding of how lecturers perceive and engage with the hidden curriculum. The last article in this cluster investigates a medical condition, Dyscalculia, which affects learners' comprehension and manipulation of numerical concepts. This has a negative impact on academic performance in mathematics. Recognizing this condition is crucial so that mechanisms can be implemented to support such learners.

In Practitioners' Corner the problem of increased child sexual abuse in Zimbabwe along with parent resistance to the use of comprehensive sexuality education (CSE) is explored. This resistance is due to cultural and religious beliefs. The authors' research shows that advocacy campaigns and communication with parents on what CSE entails is essential in gaining parental support.

Increasing proximities and reducing distances through COIL Virtual Exchanges[1]

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ABSTRACT

The Collaborative Online International Learning (COIL) teaching and learning methodology has gained increased recognition as a nuanced form of virtual exchange, especially in the last five years in South Africa and during the Coronavirus-2019 global pandemic era. COIL serves to connect local and global entities as strategic partnerships are developed between higher education institutions in different countries. An important condition for its successful implementation to achieve targeted learning outcomes is the active involvement, creativity, and collaboration of disciplinary teams. These teams address the epistemological (knowing), ontological (self-identity) and praxis (action) elements of the curriculum. Drawing from Boschma's dimensions of proximity, this paper uses a concurrent nested mixed methods research approach to explicate how the integration of COIL into the curriculum increases cognitive and social proximities while reducing geographical distances among students. This integration facilitates their access to and acquisition of various digital and research literacies, in addition to cognitive, functional, and social competencies.

Keywords: Boschma proximity dimensions, COIL, team-based collaborative learning, virtual exchange

BACKGROUND AND CONTEXT OF THE STUDY

As part of their mandate, universities face increasing pressure to transform curricula through internationalisation and virtual exchanges to create awareness and holistically prepare students for a globalised society and knowledge economy. This pressure escalated to higher levels during the Coronavirus-2019 (COVID-19) pandemic, when teaching and learning methodologies were strategically and creatively transformed to accommodate remote pedagogical and assessment practices. A notable example of one such transformation, especially in promoting scholarship and creative inquiry to facilitate students' awareness of the interdisciplinary nature of learning while enabling them to constructively acquire skills, abilities and dispositions, is Collaborative Online International Learning (COIL).

Coined by Jon Rubin in 2006, COIL is a bilateral exchange and associated pedagogy situated in a virtual exchange space. This innovative method facilitates the connection of two or more classes of similar course content in different countries, providing students with opportunities for intercultural and transnational learning (Rubin, 2017; Rubin & Guth, 2023). Once connected, faculty partners from geographically diverse universities co-develop a shared syllabus mediated by the relevant technology.

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This is typified as a dual/hybrid COIL model whereby student groups regularly engage in face-to-face meetings with their instructors, while the larger group collaborates online on specific assignments and shared productions (Jayendira et al., 2020). While there is no universally defined COIL methodology, a defining characteristic is the comprehensive integration of planned online activities and tasks into students' classwork. This integration aims to foster collaborative and constructive learning, enhancing cognitive (knowledge), functional (interpersonal and intercultural skills), and social competencies. It is also an intentional approach to training students to make informed decisions beyond the confines of their national institutional, linguistic, cultural, and disciplinary networks.

In 2014, the Durban University of Technology (DUT) was the first African university to join the State University of New York (SUNY) COIL Consortium (Samuels et al., 2023). In fact, in 2016 the author was the first pioneering academic at DUT to adopt this low-cost form of international activity within a virtual space. Notably, amid discussions on addressing South Africa's social capital inequalities, coupled with historical imbalances and inequities in access to and outcomes of traditional student mobility, COIL virtual exchange (VE) potentially promotes equity and active participation among all enrolled students (Rubin & Guth, 2023). Through meaningful international and intercultural experiences, COIL can contribute to bridging gaps and ensuring quality teaching approaches are accessible to students, irrespective of their social and cultural backgrounds (Naicker et al., 2022). The impetus of these objectives is gaining traction through the EU-funded Erasmus iKudu project, where 10 higher education institutions, five in South Africa and five in Europe, are intentionally structuring COIL across the curriculum. The project is also setting up North-South partnerships to foster cultural understanding and cultivate skills that enable individuals to thrive in a multicultural and interconnected world (DeWinter & Klamer, 2021).

Additionally, advocates of COIL contend that its integration into the curriculum serves more than a mere equalizer. They argue that it is a catalyst for students to develop basic research literacy and digital literacy skills (Hackett et al., 2023; Jie & Pearlman, 2018; Lenkaitis et al., 2019). The reported benefits also include the promotion of global identity, intercultural and diversity awareness, collaborative problem-solving, and the application of real-world and globally relevant problems and solutions. For instance, the inquiry-based activities in various COIL projects described in this paper prompt students to think critically about the challenges they encounter in COIL virtual exchanges. These activities involve scoping and reading relevant literature, interpreting, evaluating, and summarizing key findings, creatively presenting work via ePosters supported by appropriate technology, and publishing findings using various social networking sites. The aforementioned purposeful activities accord well with the high-impact practices (HIPs) identified by Kuh (2008), particularly collaborative team-based assignments and undergraduate research. Notwithstanding this, COIL projects that actively contribute to the sustainable development goals (SDGs) and underscore the aforementioned benefits align with employers' expectations for graduates, particularly their capacity to navigate a rapidly transforming globalised, technologized, and digitalised economy.

This article aims to enhance the existing literature on COIL VEs by delving into three projects involving partners from the global South (South Africa - SA), global north (United States of America - USA), and Brazil. The objective is to empirically assess how distinct forms of proximity either facilitate or impede collaboration and the acquisition of diverse competencies within COIL VEs.

The principal question leading this study is: To what extent do various forms of proximities facilitate or impede collaboration, as well as the development of cognitive, functional, and social competencies among students dispersed across diverse global contexts?

UNDERSTANDING PROXIMITY IN COIL VIRTUAL EXCHANGES

Boschma's (2005) typology of proximity dimensions provides a suitable conceptual and analytical lens to understand and assess the key factors that interactively shape the exchange of knowledge and learning during collaboration. He argued that the interplay between geographical, cognitive, social, organizational, and institutional dimensions of proximities profoundly influences the outcomes of collaboration. Proximity along each of these dimensions facilitates interaction, which is characterized by differences in the physical distance (geographical dimension); the extent of similarity in knowledge bases (cognitive dimension); the degree of common ownership required to protect the intellectual property of the knowledge created (organisational dimension); the strength of social *(personal)* embeddedness of collaboration (social dimension); and the extent of shared informal *(norms and habits)* and formal rules and laws under the same academic incentive structure (institutional dimension) (Hansen, 2014; Boschma, 2005; Broekel & Boschma, 2012).

Some key insights garnered from studies revealed that as a condition for geographical proximity to stimulate and facilitate processes of learning and innovation during collaboration, partners need to have synergies between their knowledge (cognitive proximity) and be able to interpret or absorb the knowledge exchanged (Davids & Frenken, 2018; Werker & Ooms, 2020; Hautala & Schmidt, 2019). The earlier work of Broekel & Boschma (2012) posited that to enable optimal levels of cognitive proximity there must be some cognitive distance to stimulate new ideas. Cognitive proximity is further enriched when collaborating partners are socially embedded, i.e., they have trust, are being and behaving respectfully and collegially, and are personally and professionally invested in a community of scholarship and practice (Broekel & Boschma, 2012). In fact, Vahed & Rodriguez (2019, 2021) demonstrated that former partners can reciprocally exchange knowledge more frequently as their social proximity from their past interactions generated the required level of mutual trust and respect. Moreover, the length of their sustained engagement in designing and developing several COIL modules made them familiar with each other's institutional contexts (organisational and institutional dimensions). This is consistent with the emphasis on faculty and student partners using other kinds of proximity to stimulate geographical proximity in order to effectively collaborate virtually (Hansen, 2014; Boschma, 2005; Broekel & Boschma, 2012; Hautala & Schmidt, 2019).

As alluded to above, faculty collaboration, project facilitation, and peer assessment are critical in addressing the institutional and organisational distance challenges that are pervasive in COIL virtual exchanges. These include but are not limited to managing and aligning the variances in semester sequences, curriculum goals, educational resources and institutional cultures/values/norms, which impact the overall quality of COIL virtual exchanges (Cifuentes & Shih, 2001; Ambrose et al., 2017; Jayendira et al., 2020). Apart from the culturally diverse student populations who are either English second or third language speakers, it is also strongly recommended that faculty partners conduct pre-COIL training sessions (Marcillo-Gómez & Desilus, 2016; Hautala & Schmidt, 2019; King de Ramirez, 2021). The objectives of these sessions are to initiate cultural awareness and sensitivity through structured cultural engagements, nurture positive learning attitudes and enthusiasm for international collaboration, and to enable students to navigate the learning management system of partner institutions. Further objectives are to create an awareness of the technologies available and invoke a culture and process that encourage trust building, and behaving responsibly, respectfully, and confidently, especially during team activities.

Drawing on a range of scholarly articles, another frequently cited hallmark of collaborative learning is teamwork, which is the process of learning through which a problem is solved (Hurst & Thomas, 2008; Suarez & Michalska Haduch, 2020; Lenkaitis et al., 2019). There is compelling evidence in the higher education literature on teamwork underpinning inquiry-based collaborative approaches to learning, which respond to employers' demand for 21st century graduates. For instance, Luna Scott (2015a, 2015b) explained that collaborative learning prepares students for real-life social and employment

situations, exposes them to differing viewpoints and diverse backgrounds, and leads them to higher levels of discussion and debate. Following this understanding, Appiah-Kubi and Annan (2020) elaborated that for team members to learn collaboratively online, a climate of respect must be cultivated where each member steps up and is accountable for their task, which contributes to the common project goal. Arguably, collaborative learning supports a constructivist pedagogy as students engage in meaningful inquiry- and problem-based learning with their peers, where new concepts learned are integrated with their existing knowledge and skills (Vahed et al., 2019; Ashwin et al., 2020).

Equally important, to invoke fresh perspectives and advance creativity in their case studies, international student teams need to be comfortable with collaborating at a distance (Luna Scott, 2015a; Suarez & Michalska Haduch, 2020). Several studies have postulated that cognitive proximity between geographically dispersed students increases when learning is supported by the appropriate technology (Vahed et al., 2019; Hautala & Schmidt, 2019; Anderson, 2008). These technologies empower students to co-create, share disciplinary knowledge, and collaboratively learn synchronously and/or asynchronously. This reiterates Northedge and McArthur's (2009) earlier arguments that instructors need to be adept at creating states of intersubjectivity, i.e. where two or more people participate in an activity of mutual meaning-making.

Technologies Strengthening Intersubjectivity and Proximities between Globally Distributed Partners

Research literature prominently documents how the various online collaboration technologies drive transformation and enable multi-professional teams to collaborate synchronously and asynchronously (Ceo-DiFrancesco & Bender-Slack, 2016; Niu, 2019; Liu, 2023; Carpenter et al., 2020). Proponents have argued that a technology-enhanced COIL course generally involves instructors and students using online collaboration tools existing on partner campuses or freely available to conduct synchronous video conferencing (e.g. Skype) during face-to-face sessions (Jie & Pearlman, 2018; King de Ramirez, 2021; Villar-Onrubia & Rajpal, 2016). As illustrated in Table 1, varied learning management systems, multimedia presentation tools, instant messaging applications, and social networking sites provide options for communicating asynchronously and outside of scheduled class time. These technologies mitigate the challenges related to time zone differences and encourage sustained collaboration while cultivating a virtual learning community of COIL scholars.

Table 1:
Overview of COIL Virtual Exchanges

Year	2020	2019	2018
COIL Project	Green Dentistry: Incorporating Sustainability and Conservation Concepts into Clinical and Laboratory Dental Practices.	Green Dentistry: Incorporating Sustainability and Conservation Concepts into Clinical and Laboratory Dental Practices.	The 4ps of Digital Business Practices in Dental Technology.
Duration *(Date)*	9 weeks: 2 October – 27 November 2020.	8 weeks: 27 February - 30 April 2019	5-weeks: 5 September - 5 October 2018
Collaborating Institutions (Country & Programme)	▪ Durban University of Technology ***(DUT, SA)*** – Dental Technology Programme. ▪ Federal University of Pernambuco ***(UFPE, Brazil)*** – Dentistry.	▪ Durban University of Technology ***(DUT, SA)*** – Dental Technology Programme ▪ Monroe Community College ***(MCC, USA)*** – Dental Assisting Programme ▪ Federal University of Pernambuco ***(UFPE, Brazil)*** – Dentistry.	▪ Durban University of Technology ***(DUT, SA)*** – Dental Technology Programme ▪ Nassau Community College ***(NCC, USA)*** – Business Administration Programme
Participating Students	▪ DUT: 2nd Year National Diploma in Dental Technology **(n=23).** ▪ UFPE: 4th and 5th Year Dentistry **(n=10).**	▪ DUT: 4th Year Bachelor of Dental Technology **(n=10).** ▪ MCC: 1st Year Dental Assisting **(n= 7).** ▪ UFPE: 4th and 5th Year Dentistry **(n=10).**	▪ DUT: 2nd Year National Diploma of Dental Technology **(n=14).** ▪ NCC: 1st Year Business Management **(n=21).**
Technologies Used	UFPE Moodle Learning Management System (LMS); Skype; WhatsApp; Facebook; ePosters; and Instagram.	UFPE LMS; WhatsApp; Facebook; ePosters; and Skype.	NCC Blackboard LMS; WhatsApp; Facebook; Voice Thread; and Skype.
Description Of Inquiry-Based Activities	**Case-based scenario:** Investigate sustainability protocols that will reduce the environmental impact of dental and laboratory practices by considering the four 'Rs' of ***Reduce, Reuse, Recycle and Rethink*** with regards to: 1. Water and energy conservation. 2. Use of non-toxic versus toxic products/materials.		**Business Plan:** Students are to: ➢ Discuss the different perspectives and worldviews in connecting the 4Ps of Business Practice ***(Product, Place, Promotion and Price)*** and the 4Ps of

	3. Eco-friendly infection control practices. 4. Waste Management and reduction of pollution. 5. Technology innovations and integrative practice. 6. Ergonomics.		Dental Technology, which is to be ***patient*** and ***passionate*** in ***persevering*** to produce ***precision***-made appliances. ➢ Identify the target market in order to complete the business plan. ➢ Develop a prototype to reduce material wastage in dental laboratories.
Learning Outcomes	▪ Four-minute Videos and inquiry-based activities were shared via Facebook. ▪ e-Posters ▪ Infection Control Protocols published on Instagram. ▪ Reflective Report using Gibbs Model.	▪ Four-minute Videos and inquiry-based activities were shared via Facebook. ▪ ePosters ▪ Reflective Report using Gibbs Model.	▪ Two-minute Videos were done via Voice Thread. ▪ Inquiry-based activities were shared via Facebook. ▪ Completion of a Business Plan.

In addition, the technologies outlined in Table 1 support 'social constructivist forms of participation by allowing comments and annotations by others, and by sharing resources' (Luna Scott, 2015b: 4). Subsequently, student-content, student-instructor, and student-student online interactions transpire (Anderson, 2008). For students to effectively engage with the case-based scenario and business proposal detailed in Table 1, they need to engage with each other (for example, having a shared understanding of the content of the ePosters through team discussions; peer-evaluation of the two- or four-minute videos), as well with the instructor (for example, teams discussing the formative feedback received from instructors on various tasks) throughout the duration of the COIL course/module. These examples accord with the earlier notion of creating states of intersubjectivity for students to work alongside the instructor or other students, especially when they are geographically distant.

Ultimately, the quality of learning in a dual/hybrid COIL model depends on course content and design, pedagogical practices sustained by technical and technological support, and having adequate infrastructure, which partner instructors from the participating institutions considered from the outset. Moreover, it is worth noting that prior to implementing their COIL VE projects, partners from the participating institutions mentioned in Table 1 actively engaged in an eight-week 'COIL Academy' with SUNY in 2016 and 2017 to scale up their COIL-enhanced modules and be part of a community of 'COILers' (Rubin, 2017). During this time, they intensely collaborated on defining learning outcomes, co-designing tasks and sequences, and co-crafting course syllabi. To ensure the students' COIL projects meet the shared expectations for quality and to encourage equitable contributions and fairness in various activities and tasks, their collaboration also extended beyond the Academy. This was facilitated through frequent Skype discussions across different time zones. Resonating with Rubin (2017), it became clearer from these engagements that the technology is to align with the specific task at hand. Disregarding this and crafting tasks exclusively to fit predetermined tools are bound to impede students from achieving their productivity goals, which introduces cognitive distance (Vahed et al., 2023).

RESEARCH DESIGN AND METHODOLOGY

Following the paradigm of pragmatism, a case study research design within a concurrent nested mixed methods research framework was used to examine the various forms of proximities between student partners who were geographically dispersed during COIL. Chadderton and Torrance (2011: 53) elaborated that the strength of using a case study approach to research is 'to engage with and report the complexity of the social and educational activity, in order to represent the meanings that individual social actors bring to those settings'. This aligns with Creswell and Plano-Clark's (2011) arguments that pragmatists do not see the world as an absolute unit, but are driven to use multiple methods as knowledge, and perceptions of the world are created from socially shared experiences. Ethical approval to conduct the research was granted by the Durban University of Technology (DUT) Institutional Research Ethics Committee (REC 33/18), Monroe Community College (MCC) Institutional Review Board, and Federal University of Pernambuco (UFPE) Dentistry School (IVE-148). The sample population was purposively selected and included 2020 (n=35), 2019 (n=27), and 2018 (n=33) students from the participating institutions outlined in Table 1. Written consent was received from all participating students.

In terms of institutional distance (Boschma, 2005), it must be noted that the semester structure and times differs between the global North (MCC and NCC), global South (DUT), and Brazil (UFPE) universities. The Dental Technology programme annually commenced in February as opposed to the Dental Assisting (MCC), Business Management (NCC), and Dentistry (UFPE) programmes commencing in August (Fall Semester). Given these differences, the instructors included ice-breaker tasks, which also introduced the cultural component that extended beyond 2-3 weeks, taking note that the DUT instructor introduced this as part of her pre-COIL training sessions. The DUT students, therefore, engaged in ice-breaker activities for weeks 2, 3, and 4 in 2018, 2019, and 2020, respectively. It must also be noted the NCC instructor continued with the teaching of the business management module concurrent with the COIL module.

Data Collection, Data Analysis, Validity & Reliability (Trustworthiness)

For the predominant quantitative phase, students completed an anonymised descriptive questionnaire, which consisted of four sections: Section A collected students' demographic details; Sections B and C assessed students' use of technology and online tools, respectively; and Section D used a 5-point Likert scale (5 = strongly agree and 1 = strongly disagree) to capture students' opinions about their COIL virtual experiences. The questions in Section D were adapted, with permission, from the post-COIL project survey developed by the Global Learning Experience (GLE) team at DePaul University (email communication with Rosita Leon, Assistant Director on 11 April 2018 – DePaul University survey). Descriptive (univariate and bivariate analysis) and inferential (Chi-Square) statistics were used to analyse the data with $p<0.05$ set as statistically significant (SPSS-Version 26®). Factor Analysis was performed for data obtained from the Likert Scale to identify underlying variables/factors and explain the pattern of correlations within a set of observed variables. Content validity was used to ensure the questionnaire focused on concepts and constructs that emerged from the literature review on online learning. The internal consistency of the survey was assessed through Cronbach's alpha.

For the secondary or nested qualitative phase, students' responses to the three open-ended questions, which focused on content delivery, project implementation, and use of technology, together with their reflective reports (n=30) were used to augment the quantitative phase. The data were thematically analysed and followed the two-level coding principles advocated by Punch (2014). Low inference codes were used to summarise segments of the data for level one. In pulling the data together into smaller meaningful units, higher-order conceptual codes (themes) were used for level two. In addition to the author being immersed in the data, and reading it multiple times, elicitation materials such as Moodle and Blackboard discussion threads together with WhatsApp asynchronous communication messages, and debriefing sessions between instructors maintained the trustworthiness of the data (Creswell, 2014).

DISCUSSION OF THE FINDINGS

Predominant Quantitative Phase: Demographics, and students use of technology and online tools

In 2020, 2019, and 2018 the questionnaire response rate was 76% (n=25); 67% (n=18); 80% (n=28), respectively. Although a higher number of females (n=49) than males (n=22) participated in this study, no significant differences were noted for gender per year (p=0.849). More than 60% of the students were in the 21 – 29 age group, which corresponds with the expected age group of the 5th/6th year Dentistry and 4th year Dental Technology students. In contrast to 58% of students in 2018 and 53.5% in 2020, 88.9% of the 2019 students declared that it was their first time participating in an online module. Across all years more than 75% of students conveyed that they use social networks every day citing Facebook, Instagram, and WhatsApp as the top three technologies (Table 2). In fact, more than 60% of students across all years confirmed using WhatsApp to communicate synchronously.

Table 2:
Social Networking Sites Commonly Used by Students

Social Networks	2018	2019	2020
Facebook	60.0%	55.6%	56.4%
Instagram	84.0%	72.2%	71.4%
WhatsApp	56.0%	66.7%	64.3%

Despite a high percentage of the students in 2020 *(78.6%)* and 2019 *(94.5%)* agreeing to have been prepared for the technology aspects of COIL, more than 68% of the 2018 students disagreed. Qualitative feedback from the open-ended statements corroborates this as the students declared that 'the connection between the students did not start early' nor did they receive the relevant training with the

various technologies, which resulted in them experiencing endless 'difficulties to upload videos'. Unfortunately, what appears to have happened is that the inadequate preparation at an institutional/instructional level reduced the cognitive and social proximities between students with a fair percentage of DUT students perceiving NCC students as being apathetic. This limitation seems to have perpetuated throughout the 2018 COIL module with a fair number of NCC students (>50%) proposing the following:

> I think this project should be presented at the end of the school year when we have all the knowledge on marketing.
>
> …it should be done after a while in the semester when we at least have learnt most of our business course.
>
> Learning the marketing component before starting the project would be easier.
>
> Don't do it at the beginning of the semester. Do it more towards the end.
>
> Do the project towards the middle or end of the semester.

The above recommendations clearly point to the NCC students not having sufficient discipline-specific knowledge, which suggests that a state of intersubjectivity was lacking (Northedge & McArthur, 2009). This was acknowledged by the NCC instructor during the debriefing session with the DUT instructor post-COIL. The DUT and NCC instructors also identified other areas needing improvement to increase cognitive and social proximities between student partners such as:

- A COIL module must never be initiated at the beginning of the semester as the number of students enrolled on the course does not stabilise until after the third week of the term.
- Undergraduate students, especially at lower levels, should be familiar with, or at least have some knowledge of the discipline-specific component of COIL before its commencement.
- The COIL module should be a gradable component of a module/subject.
- Pre-COIL training sessions must be conducted to afford students the reported benefits of such sessions.

Cognizance of the above was considered in the planning of the 2020 and 2019 COIL VEs.

The reliability scores for the Likert scale for Question 19 in Section D of the questionnaire exceeded the recommended Cronbach's alpha value of $\alpha = 0.700$, which indicates the consistency of scoring (Table 3).

Table 3:
Reliabilities

Section D – Q 19 of the Questionnaire	No. of Items	Cronbach's α
I. Project Introduction and Preparation	3	0.915
II. Cultural and Diversity Competence	4	0.948
III. Impacts on Personal Behaviour	5	0.834
IV. Quality of Learning	3	0.911
V. Overall Experience & Course Quality	4	0.910

As presented in Table 4, the test results from the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO > 0.50) and Bartlett's Test of Sphericity ($p<0.05$) indicated that the conditions to conduct factor analysis were satisfied.

Table 4:
Results from the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and the Bartlett's Test of Sphericity

Section of the Questionnaire	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx. Chi-Square	*df*	*Sig*
I. Project Introduction and Preparation	0.742	153.686	3	0.000
II. Cultural and Diversity Competence	0.867	290.385	6	0.000
III. Impacts on Personal Behaviour	0.790	153.140	10	0.000
IV. Quality of Learning	0.734	143.453	3	0.000
V. Overall Experience & Course Quality	0.755	239.833	6	0.000

Factor Analysis was performed for the Likert Scale data to identify underlying themes and to explain the pattern of loading within a set of observed variables (Table 5). The responses to the statements per section of the questionnaire revealed that students could see the direct link of the statements to the overall theme.

Nested Qualitative Phase

Two prevailing themes emerged: team-based collaborative learning, fostering the acquisition of cognitive, functional, and social competencies; and the co-construction of knowledge, facilitating the acquisition of research and digital literacies. These identified themes underscore the ensuing discussions in the subsequent sub-sections, delving into students' perspectives on their COIL virtual experiences. In particular, how the different forms of proximities either facilitated or impeded collaboration, as well as the development of cognitive, functional, and social competencies.

Table 5: Factor Analysis

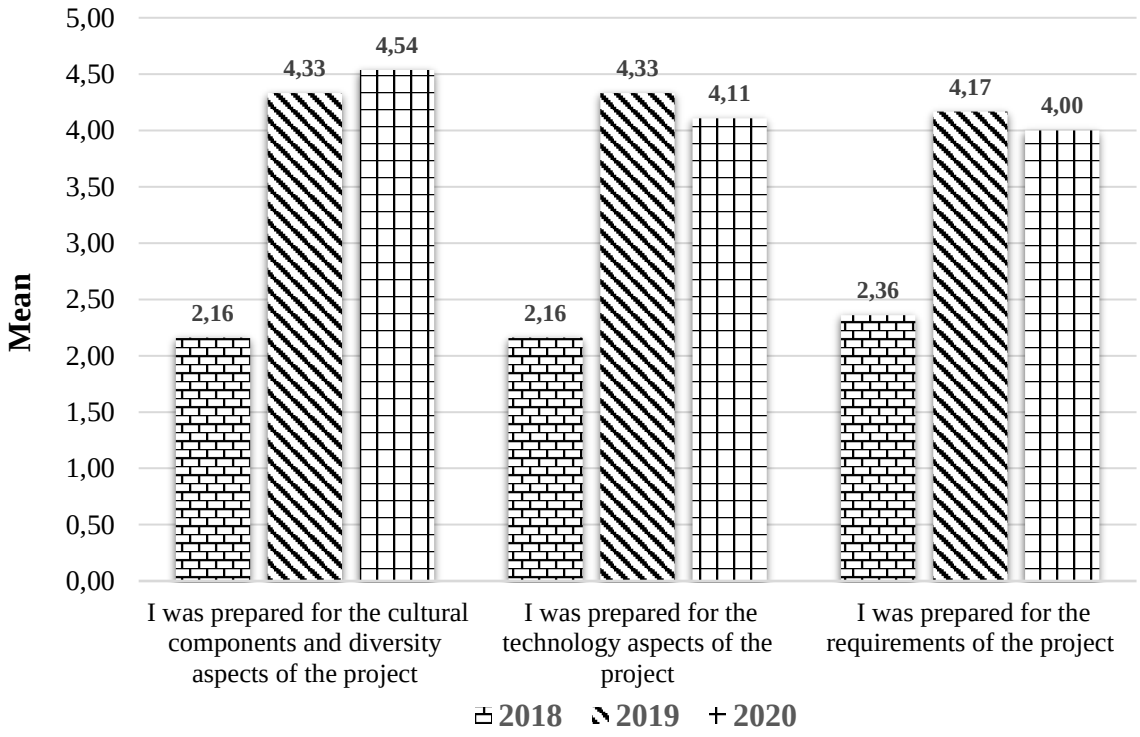
Section D of the Questionnaire: Q 19 Statements	Project Introduction & Preparation	Cultural & Diversity Competence	Impacts on Personal Behaviour	Quality of Learning	Overall Experience & Course Quality
1. I was prepared for the cultural components and diversity aspects of the project.	0.903				
2. I was prepared for the technology aspects of the project	0.932				
3. I was prepared for the requirements of the project.	0.945				

4. The COIL project introduced me to a new perspective on culture and diversity.		0.950			
5. The experience changed my perception of another cultural or diverse group.		0.948			
6. The experience introduced me to a different worldview.		0.948			
7. The experience increased my interest in further opportunities for international exchanges.		0.881			
8. The experience changed the way I behave in interpersonal and cultural encounters.			0.775		
9. The experience increased opportunities for discussion and debate outside the online class.			0.892		
10. The experience provided me with skills and knowledge that I will use in the future.			0.873		
11. I made connections with international students that I will maintain in the future.			0.455		
12. This project experience will affect my future career.			0.835		
13. Participating in the COIL project made me feel more engaged with my learning.				0.911	
14. The COIL project directly improved the quality of my learning experience in this course.				0.946	
15. I acquired the pertinent discipline knowledge required by the project case.				0.909	
16. I would recommend a course/subject that includes a COIL module to other students.					0.907
17. I would choose another course/subject that includes a COIL module.					0.788
18. Overall, the learning experience in this COIL module was positive.					0.946
19. Overall, the quality of the COIL module content contributed to a valuable learning experience.					0.902

Project Introduction and Preparation: Reducing geographical distance and strengthening institutional proximities

In terms of being prepared for the culture and diversity, and technology aspects of COIL, figure 1 depicts significant differences in the mean scores ($p<0.001$), with higher levels of agreement observed amongst the 2020 and 2019 students (>75%). It can be gleaned from the results that invoking cultural awareness and sensitivity, and exposing students early on how to use the relevant technologies through pre-COIL training sessions reduces geographical distance and strengthens institutional proximities. These findings are consistent with Ceo-DiFrancesco and Bender-Slack (2016) and Naicker, Singh, and Van Genugten (2022).

Figure 1: Project Introduction and Preparation



Cultural and Diversity Competence: Strengthening social and cognitive proximities

Figure 2 shows significant differences in the mean scores ($p<0.001$), with higher levels of agreement also noted for the cultural and diversity competence aspects amongst the 2020 and 2019 students (>75%). Similar to the positive outcomes experienced between the Taiwanese and American students in the reciprocal, intercultural, participatory, and peer e-learning or RIPPLE programme (Cifuentes & Shih, 2001), the cultural exchanges in this research led to shared expressions around food, music, personal philosophies of life, and information of both family and academic lives. In turn, the cognitive and social proximities amongst the geographically distant and culturally diverse students were strengthened, as evidenced by their positive remarks:

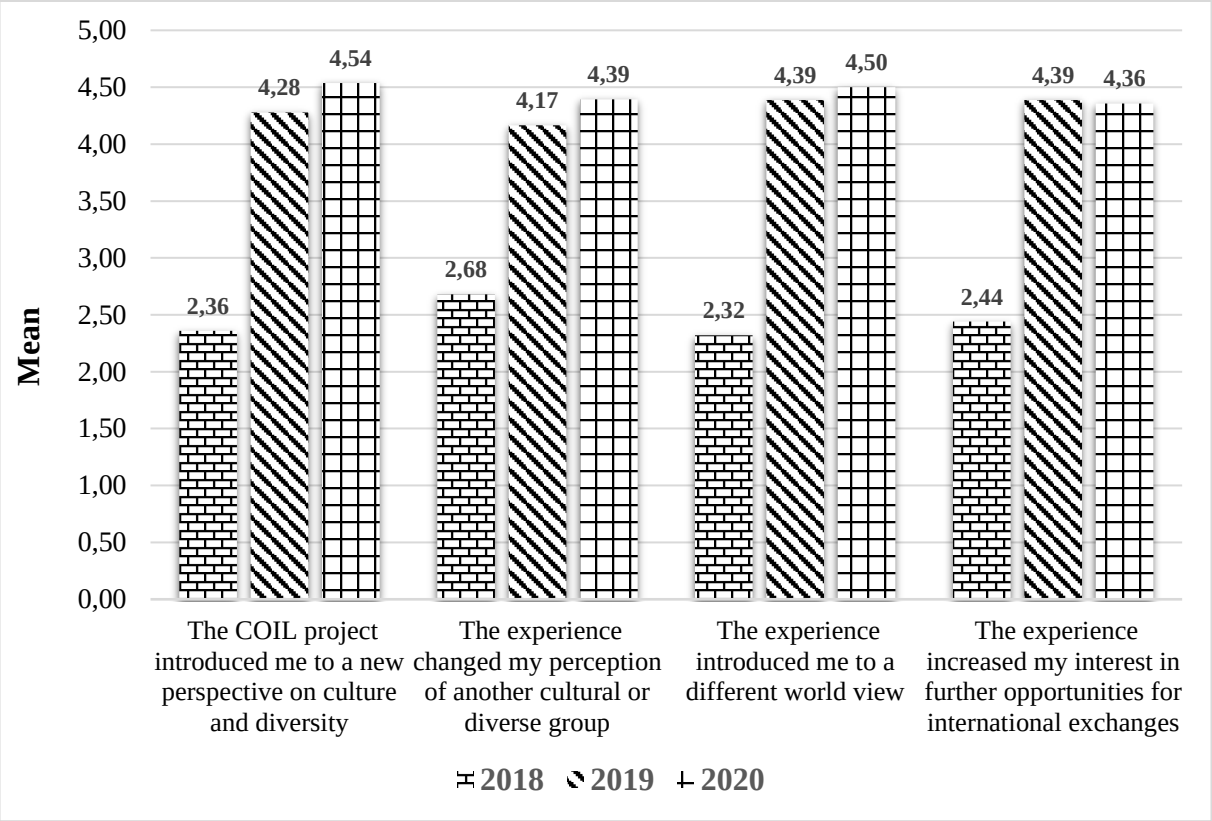
> It was a supercalifragilisticexpialidocious experience meeting new people from different backgrounds…It was exciting to have the opportunity to make the video and introduce myself… I got to even know a little bit about different Brazilian cultures.
>
> … individuals from Brazil had so much love and respect towards us as South Africans as they went all the way teach us about their cultures, values, favourite food and favourite music genres from Brazil even offering to sing for us during our video calls.

… I was able to express who I am as a young African Zulu woman through my Zulu culture and got to experience such great cultural exchange in a very creative, visual, and exciting way. I got to understand and appreciate the beauty as well as the uniqueness of our cultural diversity across our collaboration. I learnt to value and appreciate all cultures and embrace my culture without being arrogant or disregarding another's, instead embracing all our different cultures combined through our tasks of watching and commenting on each other's posts on Facebook and sharing our thoughts applauding each other and celebrating humanity in the process.

It was indeed a great learning curve that also opened a new perspective on online collaboration, in the way I view it and also taught me to engage more and enjoy each other's differences.

I learnt that having differences whether it be culturally or socially doesn't mean that a group cannot work efficiently, effectively and cohesively.

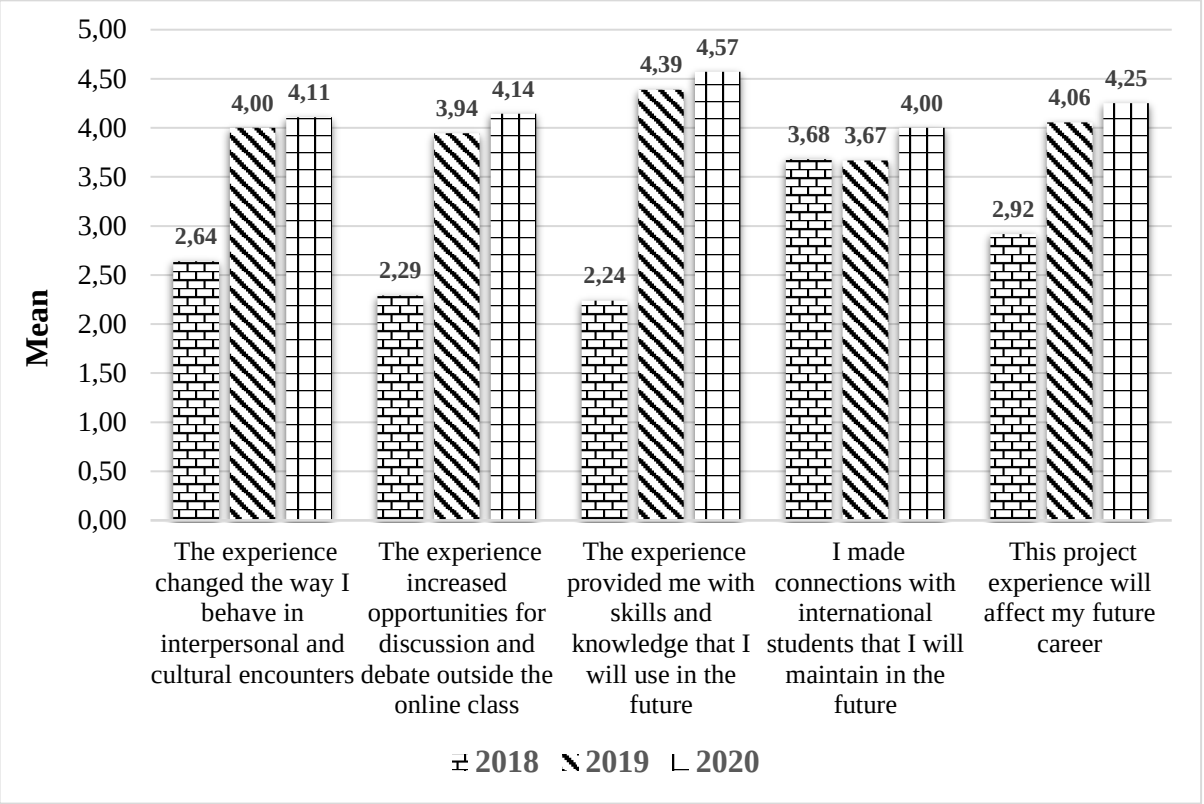
Figure 2: Cultural Diversity and Competence



Impacts on Personal Behaviour: Collective Students Agencies Mitigating Cognitive and Social Distances and Facilitates Collaborative Learning and the Acquisition of Functional and Social Skills

Apart from the statement, *I made connections with international students that I will maintain in the future* ($p = 0.214$), significant differences in the mean scoring patterns on the 'impacts on personal behaviour' were observed ($p<0.05$) for all other statements in Figure 3.

Figure3: Impacts on Personal Behaviour



Reflective reports and the responses from open-ended statements permeated with evidence on the extent to which students valued learning about each other's culture and acquiring functional and social skills that will help to advance their careers long-term.

> I believe that the goal of this collaboration which was to expose students to different cultural perspectives and develop intercultural and critical thinking skills was reached.
>
> The collaboration has also taught me that as a person you have to be tolerant and empathetic because we all are faced with different challenges each day and that we should be able to accommodate the situations of others and find a way forward from them because at the end of the day 'umuntu ngumuntu ngabantu' (a person is a person through other people).
>
> …I have learnt how to communicate with other people from other countries…build good relationships and share ideas.
>
> …I have learnt how to communicate with other people from other countries…build good relationships and share ideas. It helps train us for the workplace such as learning how to share ideas, express opinions and manage time.

Even though <40% of the students reported being frustrated by the lack of communication or having to persist in establishing communication with team members to complete various tasks, this probably contributed to international student partners struggling to connect with each other (p = 0214). The 2020 and 2019 Dental Technology students expressed that

> …COIL could have been better if all team members were engaged in the project and had better exploited their potential.

> The project would have been enjoyable if the partners we had were as committed as us, but they were not, so it made this experience to be bad and I did not enjoy it.
>
> I did sometimes feel as if I was alone on this project as other students from other countries did not seem as enthusiastic as I was.

Despite the frustrations experienced, the collective agencies of students within a team mitigated the non- or low participation by individual:

> Even though some members did not participate nor communicate on the WhatsApp group that was created, we were able to submit on time.

A closer analysis of the qualitative feedback revealed that students' collective agency stemmed in part from their motivation and expectations of themselves to progressively advance their own personal and academic growth:

> Some people were dedicated to doing the work and some never cared, however, we worked pretty fine with those who participated.

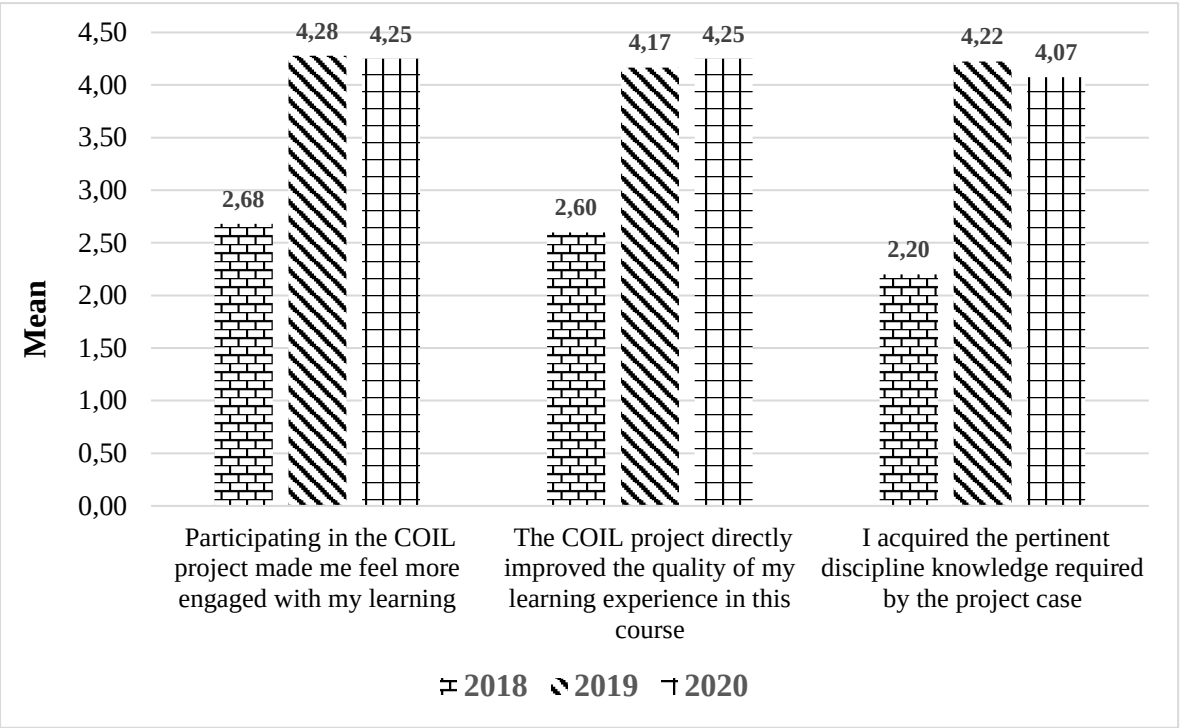
These findings are reflective of the reports from other international online courses (Suarez & Michalska Haduch, 2020; Cifuentes & Shih, 2001; Ambrose et al., 2017; Rubin & Guth, 2023; Naicker et al., 2022).

Quality of Learning: Collaboration at the Crossroads of Cognitive Proximity/Distance Divide

As presented in Figure 4, significant differences in the mean scoring patterns on the 'quality of learning' were noted ($p<0.05$). Students' engagements ($p=0.004$) '*facilitated idea generation and creativity'* and enabled them to acquire discipline-specific knowledge ($p=0.002$). The 2020 and 2019 students qualitatively reported that they were forced out of their comfort zones and had to *'think beyond and outside the box'* in co-constructing knowledge. This entailed them critically reading and summarising scholarly articles, analysing, and collaboratively communicating their research findings with their teammates, and creatively sharing ideas in developing ePosters and Instagram posts. It can be gleaned from the students' excerpts below that in addition to acquiring cognitive *(knowledge)* and functional *(skills)* competencies (Table 6 - *excerpts in verbatim*), students further acquired knowledge and skills in research and digital literacies:

> …we were required to research multiple things that we did not know such as the topics of ergonomics, how some materials are toxic in the lab and some of the clinical aspects. It was constructive to learn about them as we carried out the research.
>
> Our activity through Instagram was very good to help us develop our creativity and at the same time made us research a lot about a specific topic.
>
> I learned how to do an Instagram post in Module 4. My team members were very informative. I have learned to accept negative feedback and use it to help me improve my work rather than give up.
>
> ... the culmination of the whole COIL experience was when we had to be innovative in making posters and videos for the Instagram publication.

Figure 4: Quality of Learning



Despite the positive results in Figure 4, there was a cognitive distance between the different levels of undergraduate students in the 2019 COIL virtual exchange. As deduced from the qualitative feedback the 4th/5th year Dentistry and 4th year Dental Technology students possessed the know-how knowledge in doing research in comparison to the 1st year Dental Assisting students, who were perceived to be 'free-riders' during the case-based task due to their lack of communication. This influenced the way Dental Assisting students were able to exercise their agency and thus emerged as a constraint to more equal participation. In addition to mixing students within a team, instructors engaging in COIL are advised to provide their students with pre-COIL training where team dynamics, roles, and responsibilities for virtual exchanges are explained. Moreover, instructors need to be more explicit on the learning outcomes and their grading per level of study to mitigate the challenges associated with involving different levels of students.

As illustrated in Table 6, the functional competencies commonly cited included teamwork, time management, increasing confidence, improving communication, and writing skills, and being a good listener who is patient and open-minded. These attributes increased social and cognitive proximities, enhanced the co-construction of knowledge and shared meanings, and strengthened team-based collaborative learning and the quality of the outcomes, which in this case were the business reports and ePosters. Another noteworthy point is that academic instructors facilitated the co-construction of knowledge through formative feedback. The excerpts below confirm that this form of deep learning further stimulated students to collectively co-create ePosters, which was shared with the wider community via Instagram.

> I was inspired to do more analysis by the low mark, went back to the drawing board with team members, and we ended up recognizing the ergonomics principle and how to report it because it was important to be able to handle the last module.
>
> My colleagues and I realised that we had to go back to the drawing board. We arranged a private loop gathering on WhatsApp specifically to talk about the dental laboratory aspect. We

chose to redo everything. My colleagues and I decided to talk about Rapid Prototyping, Plaster trap modification and lighting systems in dental laboratories.

All four groups were able to put together a post on Instagram regarding their given topics. These posts were all very formative, creative, and educational; those that needed improvement were positively criticized and resubmitted.

The results outlined above confirm that the learning experiences of students improved ($p=0.013$), particularly in preparing them to be future-ready graduates of a globalised 21st century 'who can treat knowledge not as a nourishment that can be consumed passively, but rather a muscle that needs to be exercised to stay in top shape' (Suarez & Michalska Haduch, 2020: 333).

Overall Experience and Course Quality: Converges organisational/institutional, social, cultural, and cognitive proximities

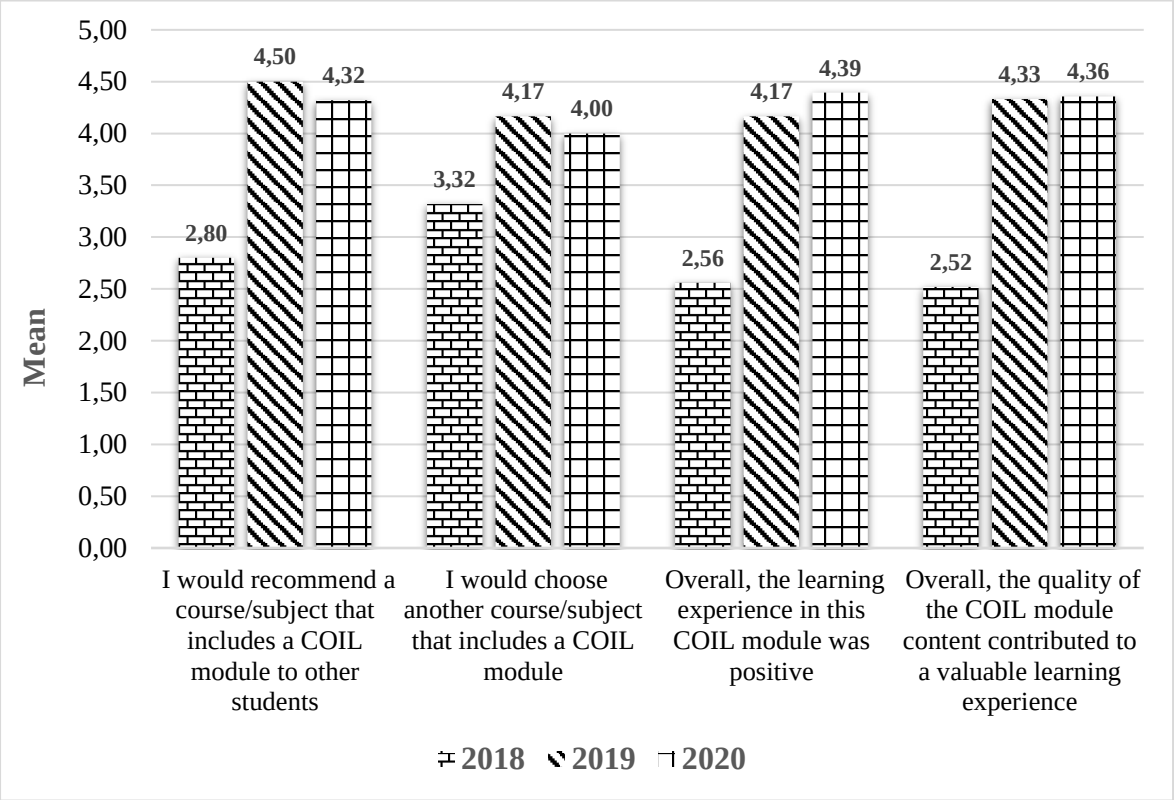
As presented in Figure 5, contrary to their recommendation that COIL be included in a course/subject ($p<0.001$), students unanimously agreed that they would not choose another course/subject that includes a COIL module ($p = 0.220$). Students' contrasting opinions above signal the early identification of instructional and institutional constraints at project planning and development stages. Consistent with Jayendira et al. (2020), Rubin and Guth (2023), and Suarez and Michalska Haduch (2020), course design and course content sustained by the relevant technologies are directly proportional to the quality of learning. It is therefore imperative that faculty attend COIL training with their partners and plan their course/module to enable organisational/institutional, social, cultural, and cognitive proximities in terms of scaffolding and structuring students' learning. The attempts made by the COIL instructors to achieve is motioned by the students statistically confirming that they had meaningful learning experiences ($p<0.001$).

Table 6: Team-based Collaborative Learning Enabled the Acquisition of Cognitive and Functional Competencies

Functional Competencies		Cognitive Competencies	
▪ This collaboration has taught me **patience** in terms of working together as a **team** and being understanding and considerate of everyone's opinion. ▪ One important quality I obtained from this online collaboration was to be **confident** as an individual and not feel inferior. ▪ The COIL experience has taught me **patience** with others and to be always selfless and considerate. ▪ The coil project taught me a lot of **patience** and polished my **teamwork skills**, in the sense that I realised that our differences can greatly enhance our **teamwork.** ▪ COIL is a beautiful project it gives information in many aspects, it teaches discipline, **respect,** how to be dedicated, **organizing yourself** on and off the workstation and also teaches us how to be good at **managing time** as we collaborate with peers who	▪ How to work as a **team** through the project and I learned about other safety measures in the dentistry field. ▪ It helps train us for the workplace such as learning how to share ideas, express opinions and **manage time**. ▪ One of the great things about my group was the freedom to speak, everyone had their chance to write their ideas and we would **listen to them** … my views and comments were **respected and well listened** to. ▪ … helped me to be an **attentive listener**, in a way that I now listen to understand rather than listening to decline another person's view on certain matters. ▪ My **communication and writing skills** have improved because of COIL. I'm also a different person than I was a few months ago because I'm now able to talk and seek help when needed…all the knowledge, skills and empowerment I have	▪ Being part of the COIL 2020 Green Dentistry project has helped me look at my lab with a more precise eye, I now know how bad it is to waste materials including gas, gypsum products and water and how important it is to save everything possible. ▪ Green dentistry is a necessary component in the dental industry as there is a great deal of pollution and ecological damage caused by dentistry that can easily be avoided with the incorporation of a few minor "green" changes by those working in the industry. ▪ … one group educated us on how to correctly handle monomers and the effects of not wearing protective clothing. They educated us on the risks of not wearing proper clothes which are acquiring diseases such as asthma and silicosis. ▪ … learned a lot about the clinical aspects of dentistry	▪ …the information learnt about green dentistry and the environment will most certainly be utilized in my future career as a dental technician and one day if I have the opportunity to own a dental laboratory of my own it will most certainly be a "green" laboratory that utilizes ideas garnered from this coil collaboration. ▪ I discovered the benefits of the digital and electronic gadgets and technologies adopted within the dentistry industry in upholding the green dentistry philosophy. ▪ The value of good posture to prevent exhaustion and other skeletal muscular disorders in ergonomics is one of the questions raised that I never knew before participating in this learning experience. It is necessary to utilize machines that will conserve water and use disposable plaster filters therefore only less water can be wasted, and reuse would

are on a different time zone … ▪ I have improved my skills of being on **group work** I know how important it is to voice out your opinion even if you doubt it other teammates might be able to manipulate it and make a good point out of it basically this experience has also improved my **confidence.**	acquired will be very valuable for future use … ▪ … taught me that **time management** is important and vital, and voicing out constructive criticism amongst your teammates at an appropriate time is not a bad thing.	such as how to keep the dental practice a hygienic and economically friendly environment. I also learned about other laboratory-related topics such as ergonomics that I was previously not aware of.	also help to minimize the expense of dental practices water bills. ▪ The experience encouraged me to treat the laboratory facilities and equipment in an eco-friendly manner, conserving the environment while protecting myself from harmful and toxic substances.

Figure 5: Overall Experience and Course Quality



CONCLUSION AND FUTURE DIRECTIONS

The prominent features of this study confirm that a COIL course/module that uses inquiry and problem-based learning, especially around global issues in relation to the SDGs, enables students' epistemological development in terms of acquiring pertinent discipline-specific knowledge, together with critical thinking, collaborative problem-solving, creativity and communication skills that are sought after by 21st century employers. An underpinning condition for this, however, is the ability of the instructors to carefully plan and deliver course content that is actively monitored and includes tasks that are constructively graded. This positively influences the cognitive, social, and institutional proximities between globally disparate students who can also self-regulate their learning and develop their agency in ways that are meaningful to them.

In the pursuit of internationalising and innovating the curriculum, the author has initiated COIL VEs at a Sino-foreign transnational university, which she recently joined. Apart from the benefits of COIL reported in this paper, the objective is to ensure inclusive and equitable quality education while promoting lifelong learning opportunities for all (Sustainable Development Goal: SDG4). Undoubtedly, VEs create cross- and inter-disciplinary spaces for students to acquire the cognitive, functional, and social competencies needed to address significant global issues. In bolstering the Sino-foreign transnational learning agenda, COIL, a nuanced eHigh Impact Practice (eHIP), can make a difference to education for a sustainable future.

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Perceptions of the effect of the COVID-19 pandemic on academics' teaching, and research key performance areas (KPAs)[1]

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ABSTRACT

The COVID-19 pandemic forced education systems and institutions to rethink how they operate. A new normal is emerging, where Higher Education Institutions (HEIs) are reshaping how they teach, assess and interact. This exploratory research highlights the need for institutions to embrace the tenets of University 4.0 while raising a number of issues related to how academics' performance is measured, and thus consider if performance management systems are able to adapt in tandem. This paper presents the results of a study that set out to investigate perceptions of academics in a public higher educational institution in South Africa on the impact of the COVID-19 pandemic on their teaching and research key performance areas (KPAs) used in their institution, as these are used to monitor and manage academics. This study adopted a qualitative research approach with purposeful sampling so that a range of views from academics and leadership at this institution were included. The results suggest that where implemented, performance management needs to be realigned to the new approaches to teaching and research adopted by academics since the COVID-19 pandemic.

Keywords: Key Performance Area (KPA), teaching, research, performance management

INTRODUCTION AND BACKGROUND

This paper examines how the COVID-19 pandemic impacted two key performance areas (KPAs), namely the teaching and research KPAs, of academics at a public Higher Educational Institution (HEI) in South Africa. At this HEI, academics' key focus is to teach students and produce knowledge through research. It is understood that academics experienced turbulence brought about by the sudden changes to how they taught and performed research. But what may be lacking is an understanding of how these rapid changes impacted the specific KPAs of academics.

This institution has an Integrated Talent Management (ITM) policy that includes a performance management (PM) process designed to 'assess individual performance for the purposes of talent management' (UKZN, 2011: 5). Academics in the College under investigation, at this HEI, were expected to allocate 45% of their time to teaching [via a teaching workload (TWL) framework (2011)], 40% to research, 10% to community engagement, and 5% to administration. However, an individual's KPAs should also be aligned with the strategic priorities of the individual and department (Wilkinson, 2004). The researchers believe that having a one-size-fits-all approach, with a set of generic KPAs, as listed above, is inappropriate in a profession with such varied activities as academia, and this generic approach

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may not work in the best interests of all academics across disciplines. They also acknowledge that performance management in HEIs is a highly contested phenomenon worldwide.

This HEI's employees' performance is reviewed annually. Individual contracting occurs between the employee and line manager to set the criteria for a given year. A mid-year review should occur, followed by the final review. The HEI considers itself to be a research-led institution, where the productivity of each College academic should be rewarded. Different levels of productivity are expected from academics, dependent on their seniority.

Being a research-led institution (University, 2014), productivity units (PU) are adopted as a means of rating and comparing academics' research productivity. A PU is a 'weighted value of the AU [Author Unit, determined by the Department of HE & Training (DHET)] allocated to different categories of the institution's accredited research outputs' (University, 2014: 5). A lecturer is expected to produce a minimum of 60 PUs per annum. PUs produced determine the share of DHET research funding a researcher will receive into their research cost centre. However, it has been noted that researcher incentive schemes may create unintended consequences, such as predatory or poor-quality publications (Masinde & Coetzee, 2021).

Langa (2015: 92) states 'The academic core consists of the inputs available for the delivery of teaching and research, and the research and teaching outputs the university produces on the basis of those inpts'. In research-led HEIs, this core refers to the activities and deliverables of academics - similar to the KPAs outlined by the HEI under investigation – teaching, supervision of postgraduate students, research and dissemination, with the core outputs of these activities being postgraduates, research and publication of results. In South Africa, if published in an accredited journal or in peer reviewed conference proceedings or books, authors receive a percentage of the subsidy provided to the university by the Department of Higher Education and Training (DHET) for that research (Macleod, 2010). However, these monetary incentive schemes are absent in many other African countries. Muthama and McKenna (2020: 1) argue that there are ethical questions raised when 'knowledge dissemination is so explicitly linked to financial reward through the payment of commission to academics'.

LITERATURE REVIEW

The development of metrics to assess academics' performance and productivity has been highlighted as HEIs have become managed more like businesses (Sheikh et al., 2022). In addition, Sheikh et al. (2022) suggest that PM is not neutral and is uniquely experienced by each employee, based on the individual actors involved, the organisational culture, leadership, and the institutional PM process. In a South African context, PM is one aspect of the Integrated Quality Management System (IQMS) that was introduced to hold educational institutions, and their academics, accountable for the time spent on their responsibilities (Mosoge & Pilane, 2014). These responsibilities are seen as discrete areas of activity or key performance areas (KPAs) (Hull, 2006).

A workload allocation model (WAM) typifies academic work into distinct activities and includes some basis for comparison (Hull, 2006). Academic perceptions of WAMs will depend on whether they are presented as a *fait accompli* or if a degree of flexibility is allowed during implementation (Hull, 2006). TWL system generated values are often reported as seriously underestimating the time required for tasks, or totally omitting activities that are necessary for teaching (Kenny & Fluck, 2022). The researchers acknowledge that there exists a suite of literature which highlights the problems associated with the underestimating and assumptions of genericism of academic work within PM in universities worldwide (Taylor & Baines, 2012; Hughes & Solar, 1992). A review of international practices in PM in Higher Education (HE) indicates a variety of models being applied in managing performance in HE worldwide. As far back as 2008, Walwyn highlighted the significant price tag associated with PM in SA HE, as that

of 'the constraining impact on creativity' (2008: 2). Franzsen (2003) added the lack of academic freedom when being measured quantitatively. Mintz (2022) makes an appeal:

> Our colleges and universities may be impersonal and bureaucratic in the Weberian sense—with their rigid division of labour, clearly established hierarchies, functional specialization and comprehensive sets of formal rules and regulations. But it's essential that their faculty and staff struggle against bureaucratic rationality and infuse our institutions with creativity, empathy, caring and a sense of mission that goes well beyond bringing students to a degree.

Although research metrics for published work are a contested PM area in universities, the literature presents two main metrics, namely a productivity metric and publication impact metric (Carpenter et al., 2014). They have document-level metrics that represent the early stage of impact indicators of the published work (Camilleri, 2021). In addition, organisations and universities are using a Balanced Scorecard (BSC) approach which involves financial and non-financial measures linking the mission, the vision of the future of the organisation, and core values (Camilleri, 2021). Contrary to one-size-fits-all attempts, HEI management systems need to be viewed in relation to the public sector context in which they are located (Busetti and Dente, 2014).

In the area of teaching and learning (T&L), a 'standard unit of work', e.g. presenting a one-hour lecture, forms the basis of comparison for how long the variety of teaching tasks take. Corbera et al. (2020) stress that globally emergency remote teaching (ERT) as triggered by COVID-19 did not generally represent a well-constructed e-learning delivery but was rather an emergency remote mode of T&L as mediated by technology. The resultant delivery often reflected the lack of training for both academics and students, the absence of appropriate pedagogic devices and methodologies, and insufficient resources. It is assumed from the researchers' experience and interaction with colleagues that at the HEI under consideration, most academics felt the tasks required to mount the ERT were unclear and ill-defined. In addition, the assessment of the time needed to complete such tasks and hence an appropriate metric to evaluate their performance would not have been available at this HEI. At the implementation of lockdown restrictions in South Africa, the HEI drafted a Teaching and Learning Project Plan which aimed to prepare students and staff for their online academic engagement. However, practical challenges such as providing access to data and laptops, scheduled power outages (load shedding) and the challenges of implementing higher order, multi-modal assessments via online tools, meant approximately three months of teaching delays occurred. The university formalised principles underpinning the remote learning approach (University, 2022).

At the time of data collection, the Teaching-KPA was informed by an academic's Teaching File (TF) of evidence for the year's teaching. This file consists of the same range of metrics as a full Teaching Portfolio (TP) and bears evidence of the quality of teaching by academics (UKZN, 2016:1).

The experiences of academics during COVID-19 varied dramatically based on their personal circumstances, e.g. whether they lost their jobs (Corbera et al., 2020). Kenny and Fluck (2022) opine that other experiences of academics were challenging as they involved a dismissive view of academic workload allocation as a low-level operational issue, yet it is central to academic effectiveness and research plans. In SA, the number of academics on contract has increased rapidly, with more than 60% of SA academics now employed on contract (CHE Vital Stats, 2022). Acknowledgment of workload allocation at the level it deserves is also central to building trust and should be developed in consultation with academic staff to ensure its credibility and adoption.

During COVID-19, research practice required adjustment, specifically regarding the collection of primary data due to social distancing and lockdown protocols (Corbera et al., 2020). Research activity experiences during COVID-19 were quite individualistic: Like Hedding et al., (2020), some participants at this HEI claimed they could use the opportunity to return to data that were unpublished to complete an article, while others cited that the anxiety, stress, and additional care responsibilities, especially for

women, limited their ability to engage in research when working from home. Some academics indicated that homes were conducive to academic work, while others not. The gendered nature of many families meant that female academics often bore the brunt of homeschooling and such, more extensively than male academics. This varied across countries whereby women in France, Netherlands, and Switzerland experienced more challenges than men while gender differences were not noticed in Sweden and the United Kingdom. Batista et al., (2022) identified a gap in the literature regarding the scientific studies on research professionals and anxiety, depression, stress, fears, and coping strategies during COVID-19. This knowledge would be important in developing intervention plans in the future.

The literature on the T&L and research experiences of academics during the pandemic provides a context to report this study's findings, which indicate that the impact of demanding workloads on academics is highly relevant. Academic work has become more pressured with greater pressure to publish, higher student: lecturer ratios, and greater bureaucratic monitoring requirements. It is suggested that this stress will inevitably impact academics' ability to deliver high-quality teaching and research (Kenny & Fluck, 2022). As in other studies, (McGaughey et al., 2021), academics in our study felt taken advantage of and exploited and complained of long work hours and feeling exhausted. If a university hopes to retain good academics, it needs to consider its working conditions, rewards, and ways to assist with balancing the ongoing dual pressures of ensuring quality teaching as well as research productivity (Sheikh et al., 2022). While a number of these issues were prevalent pre-pandemic, the pandemic has led to a re-evaluation of academic lives and livelihoods. In addition to the changes in academics' roles and responsibilities, it has stimulated academics to revisit their approach to work and their view of its place in their personal lives and a broader societal context. In crises, participants usually grapple with uncertainties. While the COVID-19 pandemic presented challenges, as is the case with other crises, the severity of the pandemic within the university context meant that academics and students had to find practical means to navigate their way through their academic responsibilities and other obligations.

RESEARCH METHODOLOGY

The study adopted a qualitative research approach to understand the opinions and views of academics in the selected HEI on academic teaching, and research KPAs during the COVID-19 pandemic. The study was exploratory in nature. Ethical clearance approval was obtained from the HEI. The study used purposive sampling where focus groups were held with academics and academic leaders in a selected college at the HEI. Focus groups were considered appropriate because of the ability to further probe responses provided and the potential for generating richer data based on the discussions which spontaneously develop between focus group participants (Kitzinger, 1995). It is important to note that the researchers assumed the role of facilitators in a sense, and not just interviewers.

A pilot study determined whether the questions were clear and whether there were any possible areas of confusion. All academics and the leadership in the selected college were invited to participate in the study.

Seven focus group sessions of 1 to 1.5 hours were conducted in October 2021. These included academics; academic leaders of research, teaching, and academic disciplines; and the senior leadership of the College. The specific HEI follows the College Model where each College is considered to be independent and has its own leadership structures and decision-making powers to enable more efficient operations.

The focus groups allowed the researchers to engage participants in an interactive manner aimed at facilitating dialogue. The questions used in the focus group schedule were developed by the researchers, centred on how the COVID-19 pandemic affected the key performance areas (teaching, research, supervision, administration, community engagement, etc.) of academics in the College. The academic leadership of the College was asked to share perspectives on how the pandemic affected the key

performance areas (teaching, research, supervision, admin, community engagement, etc.) of academics in the College. These produced, as summarised in Table 1, diverse perspectives from the multiple academic stakeholders, namely Academic leaders of research, Academic leaders of disciplines, Academics from the various Schools in the College, and College Leadership (College Deans and Head of School, College Dean of Research, and DVC of the College).

Table 1:
Multiple Academic Stakeholders

Focus groups	Group	No. of participants per group
1	Academic Leaders of Disciplines	3
2	Academic Leaders of Disciplines	4
3	Academics	4
4	Academics	3
5	Academics	4
6	Academic Leaders of Research	4
7	College Leadership	4

The focus group sessions were recorded and thereafter transcribed. Anonymity and confidentiality were strictly adhered to. Data analysis was conducted using NVivo to inductively identify themes and sub-themes based on the constructs used in the research questions. The researchers wanted the views and opinions of the participants to emerge, and thus data production was not focused on a particular theoretical framework. The thematic results are presented below.

FINDINGS

The findings of data collected during the pandemic (2021), related to two key KPAs, and are presented in this paper. While the findings indicate that there were challenges relating to the measurement of KPAs and overall PM during the pandemic, participants indicated that they had experienced issues with the PM system before the COVID-19 pandemic. It is evident from this study that the COVID-19 context acted as a profound example of many of the inherent flaws of PM reported in the literature. With regards to PM issues experienced before COVID-19, Kanyangale and Chikandiwa (2022) postulate that there is a scarcity of scholarly work which compares PM before the pandemic to PM during COVID-19. The findings from this study are summarised in the Table 2.

Table 2:
Summary of the Findings

1. T&L KPA	
1.1 Teaching	Online teaching quality Online skills development Lack of student engagement Time consuming KPAs not adjusted for online

1.2 Learning	Physical feedback cues absent Students physically present, cognitively absent
1.3 Assessment	Reduced options for assessment Student outcomes vs actual learning
1.4 Operational challenges	Electricity "load shedding" Excessive amounts of admin Delays in student feedback on T&L
2. Research KPA	
Research	Research output decreased due to: • Delay in ethical clearance • Time on T&L • Admin • Reduced library access National audit of research programmes The pause in teaching created time for research Pipeline & desktop research continued Pandemic themed research was expedited Need to recognise a broader range of research artefacts for PM
Research supervision	Students dropped out Online meetings • Facilitated feedback • Provided recordings • Saved time and travel costs Greater flexibility for training and meeting times Connectivity challenges Delay in ethical clearance Missed deadlines due to pandemic-related stressors

Theme 1: Teaching, learning, and assessment

The T&L KPAs were affected by seven subthemes that emerged during analysis, namely: the concerns of academics related to maintaining the quality of teaching, learning and assessment provided to students; the challenges of keeping students engaged in the content; concerns about the ability of online assessment to accurately reflect student performance against learning objectives; and the inability of the traditional KPAs to represent the performance of academics in an online space. In addition, operational challenges such as the availability of devices and connectivity, the disruptions caused by load shedding and the excessive amounts of administration required by ERT present severe challenges to staff achieving their performance contracts. and are summarised in Figure 1. While these issues are complex and interrelated, the findings are presented under four sub-headings namely teaching, learning, assessment and operational challenges. Academic staff at all levels saw the quality of teaching, learning, and assessment as the most important aspect of the KPAs within the PM System (University, 2016).

1.1 Teaching

1.2 Questioning the quality of teaching in a non-contact environment is one way in which academics flagged their own sense of the disconnect created by the pandemic. The majority of academics in this study were not familiar with the online environment required to deliver ERT. While they were provided with training and assistance in available online tools, they did not have the necessary time to experiment with and implement an appropriate online pedagogy. Empowering productive teaching staff with technology skills aimed at reducing stress and anxiety related to technology use is important, especially during the implementation of ERT. However, attending this training enforced an additional responsibility when academics were already inundated with changes on multiple fronts due to pandemic-related stressors.

The PM system did not seem to measure new online methods of teaching required in a disrupted environment. The fact is online teaching in its most stripped down ERT form, involves more processes as opposed to the majority of physical teaching methods. The components of online pedagogies used in instructional design may be specific to an academic discipline, the academic level of the student and the nature of the module learning objectives. This form of deliberate transitioning of teaching to an online space differs vastly from ERT which largely focused on video recordings of standard lectures, Zoom- or MSTeam-based discussions and use of Moodle-based assessment tools. While academics may not have articulated these concerns using educational theory terminology, as experts in their disciplines they intrinsically felt they were being forced into a position they would not normally face:

> I don't think I am able to teach as effectively as I could previously. I struggle with how I can get the message across during a consultation which is different from a lecture.

The pandemic required adjustments to how academics approached their teaching which meant their traditional ways of judging the quality of their teaching e.g. observing student reactions, were not available. They mentioned that it was difficult to know if students were grasping the lecture.

> … I think I was affected because the level of engagement from students was very minimal, very, very minimal … for example, some of the students were attending classes, while they were driving. (FG2, R1)

Supporting this:

> … the teaching philosophy (implemented, and outcomes) achieved in contact sessions was significantly lost to the virtual platform. Without translating information in a contact session the traditional way, I had to learn new ways to interact and keep students engaged. (FG3, R4)

It seemed that quality assurance procedures were not adapted in the sudden move to the online space. There were concerns about whether the KPAs suggested could measure the quality of online teaching, learning and assessment, specifically as they failed to account for the technology-related challenges or the problems of ensuring engagement from students during COVID-19 ERT. Another academic suggested that the virtual mode of delivery was challenging and time-consuming.

> ... the technology-related challenges … just getting acclimatized to the new setup you know … convincing the class that this is the new direction that we are taking … the assessment type … trying to learn the new way of doing things. (FG1, R2)

Coupled with the increased investment in online teaching, another academic added that

> … the teaching load has significantly increased. Initially it was due to the creation of content. Now, however, it is mainly due to setting more and more assessments and responding to student grievances. (FG6, R3)

PM processes should not be divorced from personnel development. Academics become conditioned to perform according to the metrics of the PM system. Achieving an "excellent" rating for T&L is complex and the metrics are highly specified, along numerous dimensions of Scholarship of T&L (SoTL). Developing a file or portfolio of evidence is thus in itself time consuming. Mosoge and Pilane (2014), show that COVID-19 unveiled a tension between the measurement of performance and a commitment to developing human capacity and skills where the former took precedence over the latter.

1.2 Learning

Academics were forced to face the possibility that their major aim of supporting learning might not have occurred:

> Most likely the student was technologically in class, physically elsewhere, so learning never happened. (FG3, R2)

Another academic attributed lack of engagement from students to the mode of delivery i.e. they could access recorded content:

> I strongly feel that the quality of teaching and learning has significantly dropped. Students no longer want to engage effectively as recorded lectures are made available to them regardless of class attendance. (FG4, R3)

Resources to support online teaching like laptops and network connectivity during ERT add less value when there are no adequate monitoring systems to assist with tracking and stimulating student engagement in a virtual environment. Subirats et al. (2023) propose the use of gamification strategies to motivate students to engage with the content while enjoying the experience. This would assist academics to monitor time spent on a learning task, which provides evidence in support of a KPA focused on monitoring continuous student progress. However, during ERT academics were forced into crisis management in their teaching and expecting them to deliver nuanced lectures that optimised the use of virtual environments was unrealistic.

If a student does not pay attention in class their ability to grasp the work and succeed in a submission are reduced. It was difficult for academics to realise that students could be virtually present but cognitively absent:

> I had expected that the learning should have been the main activity. So, I was having a wrong impression of reality … there are also other students who were not in class, they would just log in and do other things. But for the purpose of technology and all that they were in your class. And that affected the quality of their submission … (FG6, R1)

1.3 Assessment

The assessment of student learning is considered to provide some insight into the T&L opportunities to which they were exposed. In this ERT context academics were hesitant about the assumptions that could be made based on student performance:

> … even if my students managed to pass the module that I taught, the quality of the marks that they got was questionable … they stated the content and so forth …(but) it was not that interesting. So, generally … I can say this KPA …, did not improve, it was drastically reduced. (FG4, R2)

This suggests the nature of assessment online may not have allowed academics to interrogate student learning in the way they wanted to, and as a result any assumptions being made in terms of the achievement of 'quality teaching' may be flawed.

This created a conundrum for academics: In most cases they did not have the time or skills to transition to online teaching in pedagogically nuanced ways but from a PM perspective they would either be rated according to in-person teaching KPAs or advanced online transitioned practices; neither of which could accurately accommodate their experience.

1.4 Operational challenges

To add to the challenges academics, faced there were operational issues over which they had no control. The disruptions caused by loadshedding, i.e. the scheduled limiting of electricity supply at preset times affected teaching and supervision. PM is effectively implemented if supported by reasonable access to necessary resources, e.g. ERT online systems depended on availability of electricity. The ability to manage ERT demands while academics and students could be offline at different times and for different lengths of times, added an additional challenge to an already demanding environment:

> … loadshedding was very hectic and I was teaching in that load shedding … this week also there's load shedding … it's kind of disrupting the lectures… So, … we have to be tolerant to people. The second thing is like at six o'clock you know when you start teaching and when there is load shedding at six/seven o'clock some are gone and you can't continue the lecture because it would be unfair to the others. (FG6, R3)

This was not accommodated for in the PM system. Essentially, the PM KPAs failed to allow for the complex realities of ERT in the context of load shedding and unequal access to the Internet. While it can be argued that online lectures were recorded for distribution, this required additional administration and management. It also robbed students of the opportunity to be active participants in classroom learning. These additional demands which are unanticipated and usually require immediate attention are not factored into the TWL nor are they sufficiently accommodated for in the 5% administration KPA routinely assigned to academics.

High levels of administration became the 'new work norm' for academic staff and was not quantified in the PM system. There was a significant amount of administration involved in preparing electronic lecture content, coordinating meetings, planning assessments, online quizzes, and dealing with emails and queries among many other related administrative tasks, which ultimately affected the quality of T&L and assessment. While the data suggest dissatisfaction with PM prior to COVID-19 it is unclear whether or not academics felt more positive about their KPAs and PM prior to the pandemic. Overwhelmingly data for this period however illustrate how teaching behaviour is adjusted to suit the metrics of the T&L KPA and the dissatisfaction with how T&L tasks are delimited and the metrics assigned. There are numerous indications that significant amounts of work were not credited in the PM system during the pandemic.

The overwhelming administration load was repeatedly emphasised:

> a huge increase in administration (FG2, R2)

> an increase in teaching not because we're doing more of it, but because we had to now record all our lectures. Administration, which is a key KPA…had to shoot up and when teaching showed up, meeting it, achieving it, it was difficult because of a lot of work. (FG5, R1)

Another academic highlighted,

> I would say, I went above and beyond, and I'm pairing teaching and admin together and coordination because they all kind of interweaved. (FG6, R4)

One of the metrics used to evaluate teaching is student feedback. *Delays in receiving student evaluation feedback*, impacted T&L KPA scores negatively:

> I wanted to upload the evaluation. But then when I went to Moodle, the questionnaire was not there. … I raised the question with the Academic Leader for Teaching and Learning … That was also raised … in our board meeting, school board meeting … I approached the QPA... So, students never evaluated the teaching because, by the time the questionnaire was made available students were busy with another module … (FG4, R2)

Theme 2: Research

The general feedback from participants was that their individual research output decreased. The responses from eight academics provided insights into how they felt that their research slowed down. There were delays in obtaining ethical clearance:

> ... the ethical clearance office was not attending to those issues as timeously as we would want, so no approvals. (FG6, R1)

Research students also experienced the frustration of ethical clearance that took a very long time, which delayed students' research.:

> … it was terrible because ethical clearance took too long. (FG5, R3)

The decrease in research output was attributed to the additional effort and time academics had to put into embracing the new 'teaching methods' in the online space, coupled with the extra work in handling the transition to the online space and increased administration load. Consistent feedback from academics included that the pandemic '*has slowed down my research activities'.* This is illustrated by:

> … any time previously dedicated to research was taken up by the continually increasing demands of remote working. Continuous keeping up to date with the frequently changing information, training on the various online teaching methods and systems, communicating with my staff and the extended university community, led to increased dedicated time to administration … (rather than research) ... (FG3, R3)

And:

> … inability to focus on research – spending more time on admin, … my research has significantly dropped due to the effects of the pandemic. (FG4, R1)

This concern around deprofessionalising the role of the academic resonates with García-Gallego, Georgantzís, Martín-Montaner, and Pérez-Amaral (2015) who argue that university teachers should not be given administrative duties.

COVID-19 social distancing restrictions limited the number of people in one space; hence libraries were closed. Lack of ready access to physical and virtual library resources also contributed to less research being completed:

> I enjoy working in the library when doing research but now … it has often been closed and the fact that we are not able to search the shelves for ourselves. I have had to rely on what is available online which is not sufficient. (FG6, R3)

Library services had to be accessed online with several challenges experienced related to network, device and data access. This finding is echoed by Dube and Jacobs (2023) who also stress that while chatbots can assist with online library use their ability to assist users is limited. At the HEI under investigation Libguides were developed to help users but did not provide the same range of assistance as the traditional in-person experience.

As the institution has research targets mandated by the DHET, research had to continue, even in the midst of other detractors such as an audit of current research programmes. This put a lot of pressure on

academics who wanted to publish their research, but had to undertake the entire audit process even amidst the pandemic, as described by one academic:

> ... the University has requirements with the CHE and DHET in terms of these audits and things so, for example, middle of pandemic last year we had to have the … review of our doctoral programs. That puts the higher degrees colleagues and Schools under huge pressure … we had to provide documentation… The process admittedly had been initiated the year before, during 2019. But the audit still happened during the course of 2020, amidst all of the chaos that we were all experiencing, and we had to do it, it was one of those things where, yes, we know that you're struggling, but it has to be done, and so we did it. (FG5, R1)

The combination of national quality assurance processes and internal PM processes result in great pressure on academics in terms of compliance – and leaves little space for creative engagement with research for knowledge creation and dissemination.

However, another academic suggested transitioning research online was relatively seamless it was finding focused time for research that was difficult:

> … I have found it relatively easy to transition researching fully online as most of my work is desktop based. The frustration has been that other demands on my time (teaching, admin, and the additional household burdens like home-schooling) have made it very hard to find enough time to work on my own research. (FG2, R3)

A few respondents indicated no change in their research output, as 'work was in the pipeline' while three academics increased their research output. One academic stated:

> I was able to focus on my research during the initial stages as the university was closed for a prolonged period of time while we were deciding how to approach the pandemic. (FG3, R4)

These findings reveal that the delays in establishing new ways of addressing T&L methods provided an opportunity that some academics could use to their research advantage.

Another opportunity capitalised on was the ability to research themes related to the pandemic which were topical and thus expedited by publishers:

> … as I shift focus and published on themes that relate to the pandemic. Publishers were quick to provide feedback as they sought to release work of relevance. (FG4, R3)

This suggests that because research has been so wholly commodified by the PM system to entail measurable outputs, rather than knowledge dissemination, academics were quick to 'play the game'.

The DHET does not consider other, less formal forms of research output directed at the general population. Their funding model is based on peer reviewed output such as peer reviewed journal publications which is the internationally accepted gold standard for quality research scholarship. Other forms of respected research artefacts in the public domain are not credited: 'The Conversation' or NGO research reports.

> ...if … they've contributed to things like 'The Conversation' or sent in a few newspaper articles or produced some reports for an NGO. They're probably (a) being read by 10 times more people and (b) making much more difference … particularly in a kind of developing context; and yet there is no recognition for that whatsoever. You can put it in your comments in the performance management thing, but it all boils down to those numbers. Again, a 'one size fits all'. (FG5, R3)

While these broader-based publications can be converted into peer-reviewed works it is not clear why a metric is not created for PM purposes to recognise these artefacts as progress towards formally recognised publications.

Research supervision was affected by lower engagement levels by students for the majority of the sample. Physical meetings were no longer an option, which led to a 'lack of meetings with students'. There is difficulty in reading the moods and attitudes of students using remote or virtual platforms. Online supervision may compromise the compassion, empathy, and understanding of the student by the supervisor when there is distant separation (Hendrickse, 2022). Some students had to suspend their studies or drop out. This was supported by another academic who also faced difficulties with 'students who just disappeared – for the first time my output of student supervision will sharply decline'.

However, there were some benefits of online supervision as 'the online space has allowed for ease of meeting and feedback, and so that is a pro that may help in future times too'. Another advantage of online supervision is that supervision meetings on Zoom or Microsoft Teams are recorded which assists students to revisit the content and make sure they have engaged with all points of discussion. The online sessions saved time and money students would have spent travelling to meet supervisors.

Additionally, some supervisors experienced an improved ability to arrange to meet and train research students because they (and their students) were not limited by formal work hours. There may be reduced engagement with supervisors due to fewer informal meetings such as during coffee break meetings (Pyhältö, Tikkanen & Anttila, 2023).

> ... time could be dedicated to supervision, the related supervision training, and following up with students. Setting up times to meet improved as it was no longer dependent on availability solely based on work hours. (FG7, R3)

However, the quality of the virtual supervision experience was very variable due to connectivity issues:

> Technology is a bit of a problem, the connectivity, especially, even if you're using a router, it says it's not connected. Load shedding is something and the router is also something. (FG6, R2)

Another academic added that

> …you really don't get to meet your student face to face…at times when the technology's down, they can't connect on [the] Zoom ... then you have to reschedule the meeting. (FG3, R1)

It was argued that students were *unable to meet deadlines* due to social isolation, financial pressure, anxiety and overall pandemic strain. Participants empathised with students saying:

> ... the pandemic has put significant strain on my students who are struggling to meet deadlines. (FG4, R1)

One participant shared that

> their [students'] loss of connection to peers and support systems like the library and stress from financial pressure, illness and worry have had a HUGE impact on their ability to focus and engage critically with difficult subjects. Many of my students report loss of motivation from depression and high anxiety. Many are missing deadlines. (FG1, R3)

The mental health impacts on academics and students alike were enormous and the inability of the institution to recognise this and remove the PM pressure from staff had senior academics reeling with the senselessness of the situation:

> The lack of empathy, … was crystallized by the insistence that performance management was still done in exactly the same way as it had been previously … and the other aspect of that is that we were being told verbally what a great job we'd been doing, … Yet on the other hand, they're slapping us on the back of the head with poor performance management scores, … I was flabbergasted when they didn't ditch PM for 2020. Just like, "forget it guys let's just regroup in 2021" but no, no, no, they had to carry on. (FG2, R3)

DISCUSSION

The aspects related to teaching, learning and assessment were grouped into a single theme, as they are all interrelated. The study results of Kulikowski, Przytula and Sulkowski (2021) indicate that 'pandemic-forced e-learning' may have led to unintended consequences for academic teachers. There was great concern about the quality of the teaching and assessment processes, especially since quality assurance procedures were not adapted in the sudden move to the online space. It was critical for HEIs to strengthen monitoring of quality teaching and learning as suggested by Gamage et al. (2020) and Barrot et al. (2021) because the adjustment to the teaching and learning methods had to change due to the introduction of ERT during COVID-19. Student learning was difficult to measure, with minimal student engagement while online, and the move to remote assessment without proctoring, coupled with continuous assessment. The lack of boundaries and designated working hours while working virtually caused academics to experience burnout and fatigue. Filho et al. (2021) argue for the need for support mechanisms to help academics to meet the demands of their teaching, as well as home-schooling demands that may exist. Coupled with this, was the additional administrative burden that most participants felt was 'dumped' onto them. In the South African context, in addition to home factors, social context, and the stress of a global pandemic, the negative impact of load shedding and load reduction made teaching and learning difficult.

The research KPA was impacted firstly by a general decrease in research output attributed to higher teaching and administration, as well as the social effects of the pandemic as suggested by Masinde and Coetzee (2021). Filho et al. (2021) point to the various tasks academics had to focus on, including administration and research. Postgraduate supervision was also hindered, as student engagement levels were far lower than in the face-to-face environment. Additionally, administrative processes, like obtaining ethical clearance, had long delays; hence students were unable to progress further. The overall quality of the supervision and research experience decreased in the online space. Access to institutional resources through virtual spaces was challenging. Not all academics were able to convert their research focus to include research on the pandemic, and this resulted in them being left behind regarding the necessary internal and external support as argued by Gamage et al. (2020). It was not easy for institutions to provide support remotely to students and academics during COVID-19 because of the physical and virtual distance created by social isolation that prevented teachers and supervisors from observing other behaviours and emotions. Publication timelines with journals were also impacted by the pandemic. According to Sevryugina and Dicks (2022: 565) 'medians for peer-review and production stage delays were 66 and 15 days, respectively, and the entire conversion process from a preprint to its peer-reviewed journal article version took 109.5 days'. The 'one-size-fits-all' way of measuring research output, as explained earlier, was also criticized.

The learning environment at home and the learning resources accessed by students had a significant impact on the quality of learning during the pandemic, particularly for those from developing regions (Barrot, Llenares & Del Rosario, 2021). In terms of internal and external support to academics and students in HEIs, Gamage et al. (2020: 8) focus on the importance of Quality Assurance of supervision, and T&L. They define internal quality assurance (QA) as 'internal processes that an institution has developed in order to monitor and improve the quality of their student's learning experience and ensure

achievement of established goals, objectives and standards'. In agreement with Barrot et al. (2021), they reiterate that important parts of QA, such as monitoring of learning and the student experience; and provision of feedback, was compromised. Internal quality assurance is supported by periodic external reviews. It is important that the two processes be harmonized to maximise the benefits to HEIs. The changes to remote working also challenged the traditional methods of external reviews conducted by most Quality Assurance Agencies (QAA) (Hou, Lu & Hill (202). Factors which were considered include adherence to integrity, ensuring equity and access, enhancing the role of partnerships and sharing good practices, and the agility to adapt to unprecedented crises (Hou, Lu & Hill (202).

Research produced through COVID-19 experiences came as a wake-up call to other research institutions to widen their research scope to other disasters like earthquakes and the looming Climate Change disaster. These similarities could include loss of teaching and learning time due to 'school disruptions, inequitable impacts among low-income and minority families, resource scarcity, declines in mental health, and vast economic impacts, to name a few' (Newsome, Newsome & Miller 2023: 20).

Filho et al. (2021: 14) opine:

> ... there is a new normal emerging, where teaching, learning, and knowledge creation are unfolding in the context of social interactions (itself being reshaped) rather than in organisational contexts. As these new ways of working persist, civic society, policymakers, and HE practitioners need to reimagine how educational strategies might better support equality, the creation of knowledge, and the search for innovative ways of democratising work patterns and modes of learning, without the social cost of isolation. These seemingly divergent demands call for a broader integration of the university's role within society, in turn requiring substantial changes to the existing HE ecosystem.

The measurement of research output as determined by DHET for all publicly funded South African universities is used to develop a generic metric on the research management system. As outlined earlier KPAs are being driven by what is funded in public universities in the national system and not by the valuing of knowledge, the desire for impactful knowledge, or other aspects of the academic project.

In the context of this study, the emphasis of PM during ERT triggered by COVID-19 should have been on the facilitation of 'temporary' organisational change. There are six types of organisational change, namely, strategic-, people-centred-, structural-, technological-, unplanned-, and remedial change. This context required a temporary organisational change with a focus on an unplanned and remedial change to urgently plan for and support high levels of administration, in addition to navigating the new mode of teaching and assessment. This should include a process whereby KPAs are 'temporarily' amended, and academics supported by resources that makes it possible to be productive in a disrupted teaching and learning space. The comments by academics show this did not occur. However, Nyamunda (2021) opines that there is a lack of clarity on whether organisations must consider these changes to be temporary or permanent, which provides a different perspective to the changes experienced.

CONCLUSION

Pokhrel and Chhetri (2021: 133) argue that 'The COVID-19 pandemic has created the largest disruption of education systems in human history'. The unprecedented disruption caused by the COVID-19 pandemic affected many academic processes beginning with the T&L methods which needed to be aligned to the lockdown restrictions. Research methods, supervision approaches, and QA processes had to change when introducing online learning and virtual supervision of research. These processes influenced PM with respect to academic workload and research production. They also affected the concentration of students during lecture times thus affecting their performance which subsequently impacted the T&L metrics used in PM.

As discussed in the findings, Hou, Lu & Hill (202) outline eight principles of QA as an attempt to streamline QA to cover essential elements of quality education. The QA would include components that inform the PM of academic workers and influence student outcomes. Future studies must improve these processes after reviewing the impact of these principles because COVID-19 processes prevented the conducting of site visits which is one of the essentials of QA. COVID-19 may not be the last disaster, hence, Nyamunda (2021) suggests that the adoption of online learning, improvements in academic PM, and quality QA could be permanently used by HEIs. Given the likelihood of the COVID-19 problems coming back as a result of climate change related extreme events, there is a need to update teaching and learning methods and consider making online learning the future method in readiness for climate change disasters (Newsome, Newsome & Miller, 2023).

The researchers acknowledge that the results of the study are limited to the views of a few academics and leadership at the selected institution; thus, they cannot be generalised to other Colleges within the institution or other HEIs in general. Furthermore, to develop a holistic understanding, the perspectives of other stakeholders, academics, leadership, administrators, and students should be explored in future research. Another focus of interest in future research could be on how academics perceive their work and KPAs in a post-pandemic world, especially given that most HEIs are returning to face-to-face teaching and working.

In conclusion, this paper highlights the perceptions of academics regarding the inability of the PM system at the selected HEI to suitably address the challenges and embrace the opportunities for positive change brought about by the pandemic. This echoes many of the concerns in the literature arguing that rigid PM systems are not appropriate for dynamic work environments like academia.

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Perceptions of tutors on tutor training at a University of Technology[1]

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ABSTRACT

Tutor training is an essential component of any university's tutoring programme, but the role of tutor training is often understudied. Underpinned by a reflective practice theoretical lens, this study investigated the perceptions of tutors regarding the tutor training they receive at the beginning of the semester, with the thesis that tutor training imbues tutors with essential skills. A quantitative approach was assumed, buttressed by a positivist worldview. A sample was drawn from tutors who participated in the tutor training (n=69), whereas a self-administered questionnaire was used to collect data. Statistical analysis was conducted through the Independent Samples t-test (One-sample t-test). Results reveal that tutors who participated in the survey felt more confident, personally developed, more empathetic, and skilled in academic areas such as writing and student diversity. Training appears to help them understand the dynamics of teaching and learning and contributes positively to their work as tutors. The main implication of the study is that universities should invest in tutor training.

Keywords: tutor training, tutor development, tutor programme, tutoring.

INTRODUCTION

The effectiveness of tutoring is well-established in academic literature as a valuable tool to improve student performance. As such, tutors must be well trained to ensure the quality of tutorship, which largely depends on the training provided to tutors (Bennet & Marsh, 2002). The importance of tutor training is underscored by scholars such as Layton (2013), Faroa (2017) and Staub and Hunt (1993). Moreover, studies attest that continuous training and support for tutors are critical to the development of tutors and ultimately enhance their performance (Layton, 2013). Given the significant role of tutors attested by McKay (2016) and Baleni et al. (2016), training is arguably one of the most critical factors for effective tutoring (Bennett & Marsh, 2002). To this effect, Bennett and Marsh (2002) recommend that tutor training should be conducted throughout the academic semesters. The importance of tutorship in higher education is well documented (Gazula et al., 2020; Maphalala & Mpofu, 2020; McKay, 2016). In the South African higher education context, a large body of literature appears to have mainly focused on the benefits of tutorship for students regarding improving academic performance (Arco-Tirado et al., 2020; Bhorat et al., 2010; Gazula et al., 2017; Kim et al., 2021; Penprase, 2018). Seemingly, this foregrounded focus on tutorship is apt, due to the persistent challenges that mar student academic

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success in South African higher education which are well documented (Bhorat et al., 2010; McKay, 2016; Penprase, 2018).

There appears to be scant research on tutor training and its effectiveness in the South African context. Elsewhere, De Smet et al. (2010) explored how different types of tutor training influence tutorial support patterns and characteristics of tutors, while Motaung and Makombe (2021) studied the experiences of online tutoring to develop a focused training programme. Accordingly, the current study aimed to explore the perceptions of tutors on tutor training on various aspects of the training content, tutor confidence, personal development, communication skills, empathy, academic skills, organisation and understanding of the dynamics of teaching and learning. The following literature review focuses on tutor training, competencies and e-learning.

LITERATURE REVIEW

The literature is saturated with the documented significance of tutorship in higher education (Baleni et al., 2016; Horn et al., 2009; McKay, 2013) in that tutorial interventions in higher education provide students with extra academic support regarding the subject matter. The challenges faced by universities inherently necessitate tutor programmes. Institutions of higher learning in South Africa face challenges regarding undergraduate pass rates, retention rates, throughput rates and graduation rates (Badat, 2010; Bhorat et al., 2010; Penprase, 2018; McKay, 2016). The studies by McKay (2016) and Badat (2010) show that first-year students are at greater risk of failing; two in three first-year students fail at least one module during their first year of university study. Similarly, Baleni et al. (2016), Horn et al. (2009) and McKay (2013) argue that first-year students are often underprepared as they transition from high school to the higher education environment. One of the objectives of tutorial programmes in this regard is to assist first-year students to transition into higher education smoothly through the provision of tutorial interventions (Horn et al., 2009; McKay, 2013). Support does not end at the first year; undergraduates at all levels are also provided with support through tutorial interventions (Penprase, 2018; Bhorat et al., 2010). Given the critical role played by tutors in the higher education ecosystem, it follows that tutors should be trained to be fit for purpose. For instance, the findings of Motaung and Makombe (2021) show that e-tutors ought to be prepared for e-tutorials through training.

In contemporary discourse of tutorship, it is important to distinguish face-to-face tutoring and e-tutoring, given the advent of e-learning and its impact on tutorship. Face-to-face tutoring involves physical interactions between tutors and tutees in a typical classroom setting, which allows for personal interactions, activities and a non-verbal cue. On the other hand, the term 'e-tutoring' has extended the framework of traditional tutoring so that its purpose could be achieved in virtual environments as well (Copaci & Rusu, 2015). For Maré and Mutezo (2021), e-tutoring refers to the use of the internet to deliver teaching and learning. Unisa (2018) describes e-tutoring as organised interactions between students and e-tutors during online teaching. Similarly, Motaung and Makombe (2021) define e-tutoring as teaching, support, management, and assessment of students on programmes of study that involve significant use of online technologies (Motaung & Makombe, 2021). As higher education institutions gravitated towards online learning (Motaung & Makombe, 2021), adopting e-tutorship was almost inevitable, even for traditional universities (Dube, 2020).

Competencies and e-tutorship

The advent and adoption of new educational technologies in higher education have impacted the sector over the past few years (Joubert & Snyman, 2020). Consequently, several competencies which tutors should be imbued with are proffered in the literature, to the extent that Bennett and Marsh (2002) recommend continuous training for tutors to impart relevant skills. The core competencies for tutors in higher education include communication skills, patience, critical thinking, curricular knowledge (Menke, et al., 2018) and pedagogical skills (Altmann et al., 2022). Chan et al. (2016) posit that the primary role

of e-tutors is to provide support by guiding, facilitating, helping and providing supplementary instruction to students. Beyond these competencies, with the advent of e-learning, tutors should also be trained for e-tutorship, of which Motaung and Makombe (2021) developed a focused training programme. The term 'e-tutors' appears unsurprisingly in synch with the rising popularity of e-tutorship in higher education. COVID-19 also brought another dynamic to the e-learning and online space as attested by Shange's (2022) study. Clarence (2016) posits that in South Africa, just like in the United States of America and Canada, universities appoint senior students as tutors to facilitate student learning and engagement. According to Chan et al. (2016), e-tutors are not lecturers and, as such, should not be expected to do activities done by lecturers. Given the critical role of e-tutors in supporting students in the online learning process, they should possess not only discipline-specific expertise but also pedagogical and technological competencies (Altmann et al., 2022). This is important, as the overarching task of an e-tutor is to support students in the online learning space to achieve learning objectives and clarify questions (Altmann et al., 2022). As Clarence (2016) explains, tutors need opportunities to develop in areas such as assessment, facilitation, and giving students feedback and practices relevant to their work.

THEORETICAL FRAMEWORK

Given that the nature of the tutor training alluded to incorporates reflective practice, a theoretical grounding that undergirds study is reflective practice. The origins and evolution of reflective practice in the context of education can be traced to the seminal works of the likes of Dewey (1933), Schön (1983; 1987), Beauchamp (2006; 2015) and Mezirow (1998). Recently, Winberg et al. offered an important groundwork in their work titled 'A reflection on critical reflection in professional education research', thereby critically reflecting on key tenets for universities of technology, namely, work-integrated learning, entrepreneurship, research innovation and curriculum development. Although Winberg and associates did not necessarily focus on reflective practice in relation to training, their work offers an important foundation for reflective practice in general within education. 'Reflective practice' is a term that is used a great deal in contemporary professional discourses (Leigh & Bailey, 2013), and to reflect is often considered a *sine quo non* for professional competency and recognition in several disciplines, including education (Smears, 2009). Collin et al. (2013) even postulate that reflective practice is progressively a dominant paradigm in education beyond its enshrinement as a professional competency. For Leigh and Bailey (2013), reflection is a process of awareness of unconscious assumptions to change behaviour. It is a means through which a practitioner can develop heightened self-awareness about the impact and nature of their performance. According to Leigh and Bailey (2013), this awareness creates opportunities for professional growth and development. As such, reflective practice provides a useful framework for analysis regarding tutor training. Since reflection in the context of training is inherently and mainly *post facto* (Collin et al., 2013), it enables tutors and trainers alike to perceive experiences differently and change their reactions to experiences in future. In essence, the tutors can affect changes in approaches and reactions within the tutoring environment and with their interactions with students, thus improving approaches to tutoring and development. Here, Winberg et al. (2023) proffer that through 'critical' reflection, practitioners can question their assumptions, practices and approaches to improve them.

Tutor training

The significance of tutor training is underscored by Staub and Hunt (1993), whose study found that trained tutors had significantly higher success with students than a control group of tutors who were not trained. Staub and Hunt's (1993) findings were reaffirmed by Aladağ and Tezer (2009), who also found that the peer helpers who received the training programme had significantly higher levels of helping skills than the peer helpers who did not receive the training programme. The same study further reported that the peer helpers who received the training programme also reported significantly higher levels of self-growth than the peer helpers who did not receive it. Furthermore, Faroa's (2017: 6) study shows 'that tutors seem to exhibit a generally positive attitude toward training as well as recognise the need for training'. The importance of training for tutors can therefore not be overstated, especially given that tutors

are also students themselves (Clarence, 2016) and not professional tutors. Tutor training typically focuses on various aspects; for example, Bennett and Marsh (2002: 15) note that tutor training can focus on topics such as 'contextual issues, academic skills such as writing, psychosocial topics such diversity, social and personal well-being, train the trainer (which includes tutor and student learning strategies) and e-tools (ICT training)'. This infers that the training exposes tutors to different aspects of their roles and leads to the development of high-quality tutors who can facilitate quality student engagement. Typically, tutor training exposes tutors to the different pedagogies and pedagogical challenges of teaching and learning. Ng and Kong (2008) postulate that through training, tutors can demonstrate various competencies like online learning technical skills, distinguish between online learning and face-to-face learning, formulate strategies to foster collaborative and online learning and develop effective tutorial strategies. By acquiring these competencies, tutors can carry out their responsibilities more effectively, and as a result of the training, contribute positively to their performance (Waltz, 2019).

Training is therefore implemented to provide the skills and knowledge needed for tutors to effectively support students. Previously, training focused more on specific assessment tasks and marking memos, difficult sections of work that will be included in the tutorial curriculum, or other aspects of subject knowledge (Clark, 1998; Bell, 2001; O'Neill et al., 2009; Underhill, 2009; Blaj-Ward, 2014). Research shows that tutor training now focuses on how to facilitate learning, how to create inclusive and student-centred learning spaces, and how to help students become more confident and capable learners (Clarence, 2018; Bell & Mladenovic, 2015; Spark et al., 2017; Kim et al., 2021). Research further indicates that experiential, meaningful learning occurs when learners do, rather than when they are told what to do (Clarence, 2018; Spark et al., 2017). For instance, in the training, tutors have to participate in activities that draw on their knowledge and experiences, are offered opportunities for practising new skills and can model or mimic the kinds of facilitation or teaching expected of them (Bell & Mladenovic, 2015; O'Neill et al., 2009). The aim of this is to demonstrate to tutors how learning can become effective when students are involved in discussions by making them participate during tutorial sessions. Clarence's (2018) study implies that tutors begin to learn how to tutor more effectively by participating in workshop-style engagements that mimic a desirable tutoring environment. This means that there are salient and explicit benefits attached to training, including tutorials, for tutors. Studies attest that continuous training and support for tutors are critical to the development of tutors and ultimately enhance their performance (Layton, 2013).

Contextualising the research

The tutorship programme at Mangosuthu University of Technology (MUT) is coordinated by the Teaching and Learning Development Centre (TLDC) and is part of the broader academic support programme for students. The purpose of the tutoring programme is to provide academic support to undergraduate students through tutorship (Sithole & Gumede, 2022). The primary role of tutors in this regard is to provide undergraduate students with academic support through mainly face-to-face tutorials. As an entity entrusted with coordinating the tutorship programme, the TLDC provides pedagogical and generic training to all appointed tutors at the beginning of each semester. Underpinned by reflective practice, that training involves active learning scenarios and action planning during the training and post-training surveys, which enable tutors to apply newly acquired knowledge and reflect on what they have learned. The content of the training programme covers various areas such as personal development, academic skills, organisation, communication skills, empathy and understanding of the dynamics of teaching and learning. As such, the objective of the study was to explore the perceptions of tutors on tutor training on these aspects of the training content.

METHODOLOGY

A quantitative research approach was adopted in this study, underpinned by a positivist philosophical stance. The common denominator among scholars (see Bryman, 2012; De Vos et al., 2011) is that quantitative research ordinarily involves quantities and quantifiable properties. It primarily encompasses

data collection and analysis procedures that generate or use numerical data (De Vos et al., 2011), which is measured with numbers and analysed with statistical procedures- to determine whether the predictive generalisations are true. Bryman (2012) considers a positivist research paradigm as an archetype which views research through natural sciences lenses. According to Rahman (2017) and Du Plooy-Cilliers (2014), positivism encourages the use of natural science methods in research, including in social sciences studies. Bryman (2012) postulates that positivism is a nomothetic research paradigm, where knowledge is obtained through empirical testing, just like in natural sciences. In this regard, valid knowledge is obtained through objective and empirical evidence (Du Plooy-Cilliers, 2014). Essentially, the conceptualisation of reality and findings of the research should be a true reflection of objective reality (Bryman et al., 2014).

The underlying propositions of positivism can be understood from different angles, namely, epistemology and ontology. Epistemology is concerned with what is valid knowledge, whereas the epistemic proposition of positivism is that knowledge is obtained through empirical evidence (Rahman, 2017). For Du Plooy-Cilliers (2014), in the positivist world, knowledge is derived from empirical observation and thus it involves objective observations and hypothesis testing to find evidence for or against assumptions. Epistemologically, empirical evidence is thus central to support assumptions and predictions. The design of this study was empirical, and accordingly, empirical evidence was obtained to explain the relationship between the constructs. In terms of its ontology, positivism asks what reality is and how we know that something is real (Du Plooy-Cilliers, 2014) and notes that there is only one objective and stable physical and social reality (Rahman, 2017; Du Plooy-Cilliers, 2014). As such, it could be deduced that the research in this regard would endeavour to observe and measure reality objectively, which is in tandem with the metatheoretical perspective of positivism. In the end, the apparent association between the positivism paradigm and the quantitative research approach (Rahman, 2017) justifies their adoption in this empirical study.

Population and sampling

The sample for this study comprised 69 tutors who attended the tutor training in 2023 and are currently tutoring in the undergraduate programmes at the selected institution. Permission to conduct the study in this regard was obtained (REF: RD1/03/2020). A purposive sampling strategy was adopted as it allows researchers to select a predetermined sample (De Vos et al., 2011). The sample size was determined using the sample size table espoused by Brynard et al. (2014), given that the population was relatively small and homogenous. Of the 106 tutors, a total of 69 tutors responded to the survey.

Data collection and analysis

Based on the literature on evaluating training in organisations (Cousins & MacDonald, 1998; Kirkpatrick, 1994; Michalski & Cousins, 2000), a five-item Likert scale was developed to investigate the tutors' evaluation of training content to determine the effectiveness of the training. Data were collected through a self-administered structured online questionnaire, which was distributed to tutors who attended the 2023 tutor training programme. A five-point Likert scale questionnaire format was used, where respondents were given the margin to express and rank their views on the impact of tutor training on various constructs ranging from 'Strongly Disagree' to 'Strongly Agree'. The self-administered questionnaire was constructed on Microsoft Forms and sent as a link via email to 106 tutors after attending the training. Out of 106 tutors, 69 completed the survey, which translated to a response rate of 65%. De Vos (1998) aver that a 60% response rate falls within the threshold of an acceptable response rate in research, thus affirming that the response rate of 65% was sufficient. The instrument included the option for participants to either 'agree' to participate or elect 'not' to participate; if a participant selected not to participate, the online survey did not allow them to proceed to the next section.

The quest of analysis was to determine the premise that tutor training is beneficial for tutors in terms of their confidence, and it improves their personal development, communication skills, empathy, academic

skills, organisation and understanding of the dynamics of teaching and learning. The data were analysed using the Statistical Package Software for Social Sciences (SPSS) version 26.0 which provides complex statistical analysis and allows data illustration through histograms, pie charts, bar graphs and scatter plots (Bertram & Christiansen, 2014). The responses were exported into an Excel document and eventually into SPSS for analysis. Before starting the data analysis, it was necessary to determine the normality of the distribution and the homogeneity of variance to decide which statistical techniques to use (Banda, 2018). For this reason, Kurtosis, a measure of the shape or peakedness of a probability distribution, was used and data were distributed normally. The independent samples t-test and Pearson Correlation Coefficient techniques were used in the study. The one-sample t-test was used to compare a sample mean to a hypothesised population mean to see whether the observed difference was statistically different, in other words, whether tutor training is beneficial.

Reliability and validity

The philosophical stance adopted in this study dictates that issues of reliability and validity be outlined succinctly. Reliability is concerned with the extent to which the researcher's data collection techniques or analysis procedures will yield consistent findings (Saunders et al., 2009), while validity dictates that an instrument should measure what it is supposed to measure (Sürücü & Maslakçi, 2020). In other words, concerning validity, the measuring instrument must measure what it claims to yield beneficial results. To satisfy the dictates of reliability, Cronbach's Alpha (α) was used to test the internal consistency of the instrument. According to Saunders et al. (2009, citing Cronbach 1951), a value of 0.7 or more for the Alpha (α) is considered an indicator of consistency and reliability. More precisely, the generally accepted guiding principles indicate that an α of 0.90 and above indicates high reliability, below 0.90 but above 0.80 moderate reliability, and above 0.70 but below 0.80 low reliability. Cronbach's Alpha test was conducted for the tutor training instrument which yielded an alpha coefficient of α =.955 for the 17 items, which is a relatively high internal consistency. Cronbach's alpha of .955 indicates that the items on the scale were very strongly correlated with each other, meaning that they were all measuring the same underlying construct.

FINDINGS

Biographical data

In terms of descriptive statistics for gender, shown in Table 1, the distribution of the genders is almost equal. The depicted data indicate that 47.8% of tutors who participated in the survey were male and 50.7% were female. Per Table 1, there is one missing value, which represents 1.4% of the total participants. The missing value is not included in the cumulative per cent column, as it is not known whether the participant is male or female.

Table 1:
Gender statistics

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Male	33	47.8	48.5	48.5
	Female	35	50.7	51.5	100.0
	Total	68	98.6	100.0	
Missing	System	1	1.4		
Total		69	100.0		

The level of education for tutors who took part in the survey is shown in Table 2. The most common level of education among tutors who participated in the study is a diploma (52.2%) followed by an advanced

diploma (23.2%) and Post Graduate Diploma/Honours (15.9%). This suggests that most tutors have a strong foundation in the subject matter they are tutoring. The relatively small number of tutors with master's (4.3%) or doctoral degrees (2.9%) suggests that there is a demand for tutors with a wide range of educational backgrounds. In this regard, it is worth noting that the institution under study has a limited number of postgraduate programmes, especially at the master's and doctoral levels. It is therefore unsurprising that the majority of tutors have qualifications at the undergraduate level.

Table 2:
Level of study

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Diploma	36	52.2	52.9	52.9
	Advanced Diploma	16	23.2	23.5	76.5
	Post Graduate Diploma/Honours	11	15.9	16.2	92.6
	Masters	3	4.3	4.4	97.1
	PhD/Doctoral	2	2.9	2.9	100.0
	Total	68	98.6	100.0	
Missing	System	1	1.4		
Total		69	100.0		

Results

The results of the one-sample t-test, test statistic (t) along with degrees of freedom (df) and the significance level (p-value) for each factor are reported in this section and depicted in Table 3. Results of the one-sample t-test per Table 3 show that the mean scores for all the variables are significantly different from the hypothesised value of 3. The results suggest that all the factors being tested have a significant impact on the respondent's perceptions, as indicated by the p-values (Sig.) being very low (close to 0). This means there is strong evidence to the perception that the training has a significant and positive effect on tutors, meaning that it could be deduced that tutors perceived the training favourably.

Table 3:
One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Build confidence of tutors	8.502	68	.000	1.159	.89	1.43
Personal development	8.651	68	.000	1.188	.91	1.46
Improves communication	9.741	68	.000	1.246	.99	1.50
Improves empathy	8.529	68	.000	1.145	.88	1.41
Academic skills such as writing and student diversity	8.619	68	.000	1.072	.82	1.32

Improves organisation	6.719	67	.000	.926	.65	1.20
Training assists me to understand the dynamics of teaching and learning	8.675	68	.000	1.174	.90	1.44
Contributes positively to my performance as a tutor	8.670	67	.000	1.176	.91	1.45

The results of the one-sample t-test suggest that the training had a significant impact on the tutors' confidence, personal development, communication skills, empathy, academic skills, organisation and understanding of the dynamics of teaching and learning. As depicted in Table 3, personal development shows a t-statistic score of 8.651, (t=8.502, df=68, p< .00), which was to determine the perceptions of tutors regarding the training on their personal development as tutors. This suggests that tutors felt that the training contributed positively towards personal development. Beyond personal development, communication is also one of the critical skills for tutors as they engage and communicate with students. As such, the construct was included and measured, with a t-statistic score of 9.741 (t=9.741, df=68, p<.000), which shows that tutor communication skills were enhanced, meaning tutors could communicate more effectively with students. Like communication, empathy is considered another core skill for tutors. At a measure of 8.529, (t=8.529, df=68, p<.000), results affirm that the training had a significantly positive impact on tutors' empathy. As such, it can be expected that the tutors, post-training, could develop more empathy for their students. Regarding academic skills such as writing and student diversity, the t-test yielded 8.619, (t=8.619, df=68, p<.000), suggesting a significantly positive view towards the construct, implying that tutors believe the training helped them to improve their academic skills such as writing and understanding student diversity. On whether tutors perceived the training to improve their organisation, the mean score yielded an average of 6.719 (t=6.719, df=67, p<.000). In terms of whether training assists tutors to understand the dynamics of teaching and learning, the mean score on this item was 8.675, suggesting that the tutors believe that the training helped them to understand the dynamics of teaching and learning. With improved organisation and awareness of the dynamics of teaching and learning, tutors can be expected to deliver tutorials more effectively. Lastly, the data in Table 3 indicate a mean score of 8.670 for the contribution of training to tutor performance. Overall, the results suggest that tutors' perceptions towards the training were significantly positive. Specifically, the results suggest a discernible positive influence of the training on facets such as personal development, communication skills, empathy, academic skills, organisation and the tutor's understanding of the dynamics of teaching and learning.

DISCUSSION

This section situates the study's findings in the discourse of tutorship by synthesising findings with the literature in threefold: firstly, concerning literature; secondly, regarding the research philosophy adopted herein; and third, concerning the theoretical framework. The gender of participants is distributed almost equally, while the mean difference for all constructs is significantly greater than the average mean (lowest=.962: highest=1.188). It implies that tutor training can significantly and positively impact tutor development. In line with Layton's (2013) postulation, the results mean that tutors who received training reported feeling more confident, more personally developed, were better communicators, more empathetic and more skilled in academic areas such as writing and student diversity. The training was further perceived to help tutors to understand the dynamics of teaching and learning and to contribute more positively to their work as tutors. These findings suggest that tutor training can effectively improve the quality of tutoring services provided to students as averred by Waltz (2019). Overall, the findings

appear consistent with Faroa's (2017) assertion which affirms that tutors tend to appreciate the value of training. Similar findings include that of Staub and Hunt (1993) and Aladağ and Tezer (2009). Given the significant role of tutors on student academic success (McKay, 2016; Baleni et al., 2016), training is, therefore, necessary (Bennett & Marsh, 2002) to equip tutors with the relevant and requisite knowledge and skills. Layton (2013) emphasises that the importance of tutor training cannot be overstated.

From the results, it can be deduced that tutors who receive training are more likely to acquire certain skills and knowledge, thus being better prepared for their role, and are more likely to use effective tutoring strategies. This deduction reinforces Layton's (2013) emphasis on the importance of tutor training. The results converge at the intersection of positivism and its tenets in that the methodological approaches and techniques employed border quantifiable properties, objectivity (axiology) and empirically (positivist epistemology), underscored by Rahman (2017) and Du Plooy-Cilliers (2014). A litmus test in this regard involves the validity and reliability of the research instrument used in the study of which the reliability analysis yielded a satisfactory score. Thus, ontologically, the views and experiences of the tutors reported in this study can be considered a true reflection of the reality within the context of this study. The same holds metatheoretically, that the tutors' views towards the training can therefore be considered, even axiologically, as 'objective and value free' (du Plooy-Cilliers, 2014: 25).

Given that the views herein were recorded *post facto* training, they can be considered as the tutor's post-training reflections. In this regard, drawing from Collin, Karsenti and Komis (2013) and Leigh and Bailey (2013), tutors are likely to reflect on their practices before and after the training. The results show an overwhelming affirmation of training, which suggests that knowledge and skills gained from the training can, firstly, contribute to the personal and professional growth of tutors and, secondly, affect changes in their tutorial approaches and interactions with students (Collin et al., 2013). Subsequently, tutors can effectively carry out their responsibilities and contribute positively to their performance (Layton, 2013; Waltz, 2019).

CONCLUSIONS AND RECOMMENDATIONS

The purpose of the study was to explore the perceptions of tutors of the tutor training. Through a quantitative endeavour fortified by the positivist research philosophy, the study's findings affirmed the thesis emanating from the literature that tutor training enhances the skills and knowledge of tutors, thus improving their tutorial skills and preparing them for the role. Indeed, the study found that tutors who received training reported favourably regarding the training, as they felt confident in personal development, communication skills, empathy, academic skills and organisation. It is apparent that tutor training is an essential component of a tutoring programme, as tutors who received the were more likely to use effective tutoring strategies and understand the role better. Thus, training should be seen as an essential component of a tutorial programme, as it provides tutors with the knowledge, skills, and confidence they need to be effective in their roles. As such, the main implication for practice emanating herein is that to derive more value out of tutoring programmes, institutions should pay more attention towards tutor training. However, the effectiveness of tutor training can vary depending on several factors, such as the content of the training, the delivery method, and the experience of the tutors.

Limitations and areas for further research

Considering that the study was conducted on a relatively small sample of tutors, this could limit the generalisation of the study. The study also did not measure the actual performance of tutors, as such, it limits understanding as to whether the training led to actual improvement in the performance of tutors. Despite these limitations, the findings of the study provide valuable insights into the value of tutor training programmes, as they can help to inform the development and implementation of more effective tutor training programmes. Future studies could include a larger sample, apply different methodologies and possibly focus on evaluating the actual performance of tutors as a result of training.

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Exploring the downside to student online collaborations[1]

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ABSTRACT

Online learning proponents report that collaboration in online groups has positive effects on the student learning experience, but the literature also refers to a contrasting side, indicating the often overlooked non-productive or undesirable consequences of student online collaborations. To gain a more nuanced and contextual understanding of student online collaborations, a qualitative study was conducted. In-depth interviews and focus groups were used to gather primary data from students at an Open Distance Learning (ODL) university in South Africa. The results revealed a complex range of learning-related outcomes embedded in student online collaborations, including some drawbacks to these liaisons. Relevant literature about online collaborations supports the notion of looking at the potential for non-beneficial student collaborations and directs a call for a differentiated view of student online collaborations. The paper offers design guidelines from a social theory perspective to assist online learning practitioners in finding ways to mitigate negative online collaborations and facilitate constructive forms of student online collaborations in an optimal learning experience. This paper offers directions for future research regarding the complexity of student online collaborations.

Keywords: collaborative learning, learning design, online learning, social capital, student collaborations.

INTRODUCTION

Online learning affords opportunities for instant connection between students and provides inherent learning opportunities in a social space for collaborative learning (Casquero et al., 2013; Adipat, 2021). The growth and inclusion of social media in online learning advances the pedagogical potential of online learning via the means of socialisation and increased communication. The education crisis during the COVID-19 pandemic increased the levels of integrating collaborative online learning in educational spaces (Lei & Medwell, 2021). Existing literature on online learning often hails the advantages of student collaboration and teamwork to increase online participation and build networks of learning (Casal, 2019; Casquero et al., 2013; Öztok et al., 2015). There is also evidence student collaborations enhance students' sense of belonging, accompanying an increase in student retention and motivation to persist with their studies (Means & Neisler, 2021).

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Collaborative learning is progressively utilised in online learning (Capdeferro & Romero, 2012). Online learning evangelists claim that participation and collaboration in online groups have positive effects on the student learning experience (Malan 2020a; Mashau & Nyawo, 2021), and increase student satisfaction with collaborative learning (Biasutti, 2011). While the positive effects of student collaboration on learning are well documented, the literature also refers a contrasting side, representing an often-overlooked facet of student online collaborations. This other side tells us that non-participation may have advantages for students and identifies challenges and disadvantages to online participation and collaborative online learning (Lutz & Hoffmann, 2017; Capdeferro & Romero, 2012). Thus, there is another side to student online collaborations that proponents of online learning may neglect, possibly as a result of normatively affirmative bias (Lutz & Hoffman, 2017).

After a review of relevant publications about the dark or negative side of online participation (Lutz & Hoffmann, 2017; Stephenson, 2010; Clark, 2003; Capdeferro & Romero, 2012; Latif et al., 2019), the paper reviews data gathered during a doctoral study completed in 2017 (Venter, 2017). The study examined the relationship between social capital development and student online collaborations. The results indicated several benefits to student collaborations, but also highlighted a concerning side to social capital development in online learning collaborations in that there is a potential for disadvantages or negative online collaboration experiences.

While the study was concluded before the COVID-19 pandemic, its findings retained their relevance due to the focus on collaborative online learning. By anticipating the important role of collaboration in online learning, the study laid some groundwork for understanding the collaborative aspects that became increasingly crucial during the pandemic-induced shift to remote learning via online technologies. While the pandemic may have accelerated the adoption of online education, the collaborative nature of such learning persists as a cornerstone and the findings offer valuable insights that transcend the immediate crisis.

The paper is not concerned with possible challenges that students experience when they participate in collaborative learning, such as unpreparedness, lack of motivation or technical skills, or connectivity issues. Instead, it attempts to explain the students' self-reports of non-productive experiences while engaging in collaborative learning tasks, focusing on the interpretation of unintended nonproductive or non-beneficial consequences of student online collaborations.

The paper examines the negative consequences of student online collaborations, including instances of passive, negative and non-participation. A closer look at the research regarding the downside of student collaborations shows a potential anomaly and necessitated the development of a differentiated framework for understanding the above various nuances of student collaborations in an online learning environment. An inclusive framework provides scope to consider ways to circumvent possible negative collaborative online learning experiences when designing an optimal online learning experience for students. The paper offers design guidelines for use by online learning practitioners to assist them in mitigating negative online collaborations and facilitate constructive forms of student online collaborations.

LITERATURE REVIEW

The increase of online learning to provide sustainable access and interconnectivity necessitate a fresh look at the learning opportunities embedded in online learning (Prasetyo, Nurtjahjanti & Ardhiani, 2021). The inherent interconnectedness of online learning provides a social space for social interactions between students that enable the potential for students to build a learning network in which information-sharing and collaborative knowledge-building between participants can take place (Greenhow, 2011; Öztok et al., 2015a). The understanding is that learning is not only an arbitrarily individual 'in-the-head

phenomenon' but simultaneously a social process; learning takes place in the community, and in a particular social context (Öztok et al., 2015b; Han & Resta 2020).

The social process of learning provides for a situation of collaborative learning where two or more people learn together (Muuro et al., 2014); and involves a cyclical and multidimensional process during which collective knowledge is generated and shared. The social process of learning rests on the premise that there is an active exchange of ideas between people who are aware of each other and share social ties and reciprocity through the development of trust and a shared value system (Daniel, Schwier & McCalla, 2003). There is evidence that learning is more effective when students join forces, share knowledge, and collectively solve tasks rather than working as an individual (Kreijns, Kirschner & Jochems, 2003; Muuro et al., 2014).

The use of collaborative learning tools in an online learning environment promotes the development of social interaction and ensuing social capital between students in collaborative learning tasks. Such tasks require students to collaborate, share ideas and resources, solve problems as a group, or work on a collaborative project. Online learning pedagogies promote the inclusion of collaborative learning tasks such as participation in collaborative group activities on discussion forums on the Learning Management System (LMS), participation in problem-based projects, co-presentations, online seminars, and review of work done by peers. Such collaborations make it possible that group work may outperform individual learning and it is possible that students can increase understanding and competence by interacting with more advanced peers (Vygotsky, 1978) and include the development of critical thinking, problem-solving, and self-reflection skills (Chiong, Chiong & Jovanovic, 2012), specific professional skills and a larger capacity for self-management (Muuro et al., 2014; Brindley, Walti & Blaschke, 2009).

The literature furthermore indicates that student collaborations are not necessarily symmetrical or fruitful (Capdeferro & Romero, 2012; Muuro et al., 2014). Even though students can develop reciprocity or interdependence, this may result in a negative type of interdependence not conducive to learning (Muuro et al., 2014), giving rise to feelings of frustration among students (Capdeferro & Romero, 2012; Latif et al., 2019) or facilitate asymmetrical levels of participation (Chiong, Chiong & Jovanovic, 2012).

Effective student collaborations are thus not a given in online learning. Reasons include that online learner, who are typically previously unacquainted, are removed in time and place and share a zero history and/or have divergent interests (Öztok et al., 2015a). The absence of relationships may be associated with a form of social disconnectedness which translates into a lack of trust and a limited flow of information. Furthermore, in the absence of spatial-temporal contemporaneity in an online setting, student collaborations have a high probability of sterility or inconclusiveness (Venter, 2017).

So even though student collaborations can be regarded as crucial to an effective online learning environment, student experience indicates levels of ambivalence or frustration with online group work (Capdeferro & Romero, 2012; Clark, 2003). The so-called 'burden of participation' refers to an unexpected or inconvenient demand for quantity and quality of online contributions, which involves more work and effort from the student (Clark, 2003). Online students typically have to manage both the content and the relational sides of their collaborative spaces, in other words, they should give attention to the cognitive side of 'learning together' as well as ensuring that there are meaningful interactions between them (Janssen & Bodemer, 2013). Useful online collaborations require students to invest on various levels to interact meaningfully with their peers.

Online student collaborations are complex, and the challenge is to develop a differentiated understanding of student collaborations in online learning, paying attention to the less desired outcomes of student collaborations. A cautious view of online participation would acknowledge the potential for a positivity bias of viewing active online participation as normatively desirable in nature and would

therefore examine the chance of a downside of online participation. One such study by Lutz and Hoffman (2017) questions the assumption that online participation equates user agency and/or generates social capital and they argue that explicit attention should be given to a differentiated understanding of online participation, for instance looking at non-beneficial participation in online forums. Negative outcomes may include non-, passive, and negative participation in online groups or forums. It is furthermore posited that users may fail to transfer their online social capital or gains to an offline domain (Lutz & Hoffmann, 2017).

The paper describes an overall or more nuanced view of student collaboration to understand what happens between the individual learner and the online learning community, recognising various learning-related outcomes in such a mediated environment. Results of a qualitative study with online students are used to gain a contextual and differentiated understanding of their online learning collaborations. The findings highlighted the importance of acknowledging the negative outcomes of student online collaborations and necessitate finding ways to provide for productive student online interactions to justify the additional online workload for students and provide for the creation of optimal collaborative learning work.

RESEARCH METHODOLOGY

Before conducting the research, full ethical clearance was obtained, and the university granted permission to conduct the research. Throughout the research, appropriate measures were taken to ensure ethical conduct and protect the student participants from any harmful exposure. A qualitative research approach was employed to obtain ideographic data to describe the nature of student online collaborations, and 22 students, from a population of 369 registered students, participated in a series of in-depth interviews and focus group interviews. A case study design was applied to obtain in-depth information about the lived experiences and perceptions of collaborative learning among students in a selected online course at an ODL institution. At the time of the study, instances of collaborative online learning were still rare at this university. This particular online module was selected because the formal assessment strategy included collaborative learning tasks, i.e., compulsory online group work. A narrowed focus on one online course provided for detailed research in one bounded system (Yin, 2014).

The research had a small quantitative dimension relating to using the official academic results of the students and looking at the frequency measures of how students participated in the set online group work assignment. Narrative data were collected through four face-to-face focus group interviews and 12 individual Skype interviews with students. Relevant literature informed the items included in the discussion outline. The initial focus group results informed a slight refining of the discussion outline used for the subsequent individual interviews. Both types of interviews were conducted with purposively selected participants until saturation of the data was achieved. The participants were randomly selected from class lists provided by the university, as provided for by the ethical clearance and permission to conduct the research. Care was taken to make sure that students who passed with distinction, passed, or failed were equally represented. The student participants in the individual interviews were not the same students who participated in the focus group interviews. They were selected during a second round of purposive sampling. All the interviews were recorded and transcribed and then Atlas.ti was used to assemble, code and analyse the data. A thematic analysis was done to identify themes and patterns relevant to the research questions (Flick & Willig, 2014).

The question asked during interviews/ focus groups aimed to gather rich data on what experiences students have when they engage in online collaborations with peers. The open nature of the interview schedule allowed participants to offer their views of both positive and negative experiences and provide information on a wide range of perceptions they had of collaborative learning. The rich data provided the development of an understanding of the full spectrum of collaborative online learning activities. Such

a differentiated view holds promise for deriving good design principles to create and develop meaningful collaborative learning experiences.

FINDINGS

In this section, the findings are presented starting by revealing key findings and justification using verbatim statements made by the students who participated in this research. The findings of this paper revealed that students participated in an extensive range of needs-driven and self-initiated student collaborations and included disadvantageous or non-productive outcomes of their learning-related collaborations.

The downside of student collaborations

The interviews gave insight into contradictory evidence of the perceived learning-related benefits of collaborative learning and included evidence of the other side of student online collaborations, including expressions of ambivalence and/or references to a destructive side to student online group work, including reports about non-, passive and negative participation.

Non-participation

An analysis of the discussion thread on a discussion forum on the LMS (where the online group work had to take place) revealed that many students did not participate in the online group work at all. Several of the participants in the focus group and individual interview also indicated that they declined to participate in the online group work on the LMS. For example, Stian, a male student indicated that he preferred a traditional approach. He explained that the compulsory (collaborative learning) assignment 'irritated' him and he chose not to participate in the discussion. In Stian's own words, 'If there is a problem, then try to sort it out yourself'.

Passive participation

While some students declined to participate in the online group work, others engaged in passive participation in the form of unwilling participation, free-riding, or lurking.

Unwillingness to participate

Some of the students showed resistance to collaborating with peers. Suhi, a female student expressed a form of passivity and unwillingness to participate in the following way:

> So, there were constant assignments, every week you had to work and constantly make the time to be with your computer and connect to the Internet, do your research, and be with your textbooks. Some of the participants found that to be very irritating.

While the unwilling students showed resistance they still did participate, albeit reluctantly. In some cases, this took the form of shallow messages, for instance merely posting non-contributory ideas such as 'I agree'. Several of the more hard-working students made remarks about this type of superficial or insufficient contributions. For example, Leana lamented that there was 'no debate' in her group. Similarly, Omi complained there was a lack of participation in her group and they couldn't come 'to a solid conclusion' because people 'couldn't respond properly'.

Free-riding

Another form of passive participation refers to forms of free-riding where some students did not make any contributions and 'free-rided' on the back of the participating group members. Roxy explained how some group members failed to contribute to the group output and showed up at 'the last minute', in

contrast to contributing students who were 'constantly commenting and updating'. She felt that the free riders compromised the quality of the group work.

Lurking

Another form of passive participation is when lurking in discussion forum postings occurred, for instance, group members just agreed with other group members and did not make any constructive effort. For example, Leana, a female student explained that her online group had '… the silent students; (who would) just listen and take from the other students without contributing'. She explained that 'there is no interaction or a debate on it where you can see what the different people are thinking about'. This is supported by Collen, a male who complained that '… some don't even answer your questions. You question their work, but they don't come back'.

Negative participation

In contrast to the normatively affirmative belief that active participation is desirable (Lutz & Hoffmann 2017), the findings point towards some undesirable outcomes of student online collaborations, possibly unintended.

Excess claims in-group members

The findings reveal that online groups may demand a lot from participants in terms of claims on shared resources. Omi, a female student shared her frustrations with the demands from groups. She explained that the constant interruptions from needy group members caused her to drop that WhatsApp group and she resolved never to work in groups again. Vuyo, a male student, shared this frustration and explained that he would 'turn off' his WhatsApp to silence the group when he needed to direct his attention to his studies.

Constraining personal freedoms

Some of the students indicated that they found the groups to be restraining their personal autonomies and styles. For example, Mattheu decided to abandon his group because he felt it constrained his autonomy and independent way of thinking. In Mattheu's words:

> No, no, no. I tried that, but it didn't work for me because I just find it time-wasting. I know it works for others. I like to read and do things on my own but with other people, you find that… I think my mind works differently.

Downward levelling norms

The findings reveal that active participation in groups may require members to conform to group norms and cultures. For example, Omi, a female student recounted how her group repeatedly engaged in a negative talk which almost resulted in her discontinuing her studies. In her words:

> And then you read all of this and I started panicking and I never panicked and I literally threw in the towel two days before the exam… I threw in the towel which is unlike me, so everything was just too overwhelming.

Inaccurate information

Peer collaborations may bring students in contact with inaccurate information. Conor, a male student, said he would n0t 'just copy there (sic) and submit it. What if it is wrong?' Suhi, a female student, was also apprehensive about the quality of the contributions made by group members. She wanted to make sure that people 'did their research' before she would put her trust in their postings.

Exclusion from groups

Student collaborations in online groups may inadvertently or intentionally exclude others from participation. Some of the students explained that they hesitated or declined to participate in the groups because they felt anxious about the reaction of others. Nelson, a male student, talked about his hesitance to participate in the group because of the rude and arrogant behaviour of other students.

The findings reveal that some students tried to outsmart their group members in an attempt to impress others and the lecturer. For example, Benita, a female student recalled how she was publicly berated and humiliated by another group member, and this caused her to withdraw from the group.

Another dimension of exclusion from groups relates to the tendency of groups with strong ties and shared goals to ostracise non-contributing members. For example, Benita explained that when they suspected someone of 'fishing' for answers and not making frequent contributions to the group, they would ensure that the person does not get a reply but instead will 'get kicked out'.

DISCUSSION

While the literature shows that regular interaction between online students have positive learning results (Mashau & Nyawo, 2021; Malan, 2020b), the paper argues that this is not the whole story; there is also a range of undesirable outcomes. The research paper reports on negative collaborative experiences, that can be labelled as disadvantages or the 'burden' of collaborative learning (Clark, 2003). It is supported by previous research about the adverse consequences of online collaborations (Muuro et al., 2014; Casal, 2019). A theoretical model of online participation is used to distinguish between various forms of undesirable outcomes of student collaborations, namely non-, passive, and negative participation (Lutz & Hoffmann, 2017).

Non-participation

Some students declined to participate in online collaborations, failing to find value in these collective concepts and holding fast to traditional or individualistic concepts. Some novice online students indicated that they prefer a solo or autonomous learner style. This trend is confirmed by previous research that explains that especially students who are new to collaborative online learning students, may have difficulty finding their footing and struggle to develop a sense of interdependency (Capdeferro & Romero 2012).

Non-participation may take the form of absenteeism or seldom contributing students. These students may have a detrimental influence on the other students as their absence or shallow contributions disrupts the development of a community of learners (Nagel, Blignaut & Cronjé 2009).

It should be acknowledged that non-participation does not necessarily suggest a lack of student agency but may express an active and substantiated position by way of boycotts or anonymization to renounce harmful practices or express conscious rejection of a practice (Lutz & Hoffmann, 2017).

Passive participation

Unwillingness to participate

It is possible that some forms of participation be involuntary, and one should not regard all observable forms of online participation as expressions of student agency. Some student activity may be due to being dragged into a discussion, typically being 'tagged' on social media (Lutz & Hoffmann, 2017).

Several students complained about passive participants in the online groups and this is supported by previous research that identified the discontent active students had for absent students or those who made shallow postings. It is explained furthermore that it is also possible for a student to be visible without making useful contributions (Nagel, Blignaut & Cronjé, 2009).

Free riding

Evidence of high levels of free riding was found in discussion groups on the LMS, for example, when students would only harvest the posts or simply post 'I agree'. This is a form of free-riding as these students indicate that they concur with the contributions made by more committed and conscientious students instead of making original contributions. Free-riding is an easy alternative to active participation in an online group (Wasko & Faraj, 2005). The free-riders benefit from the work and shared normative structure of hardworking students by exploiting the sense of obligation that committed members feel towards the group (Portes, 1998; Venter, 2017)

Lurking and loafing

The phenomenon of 'lurking' is almost the same as loafing as a form of passive participation (Rafaeli, Ravid & Soroka, 2004). Lurking and loafing can be described as an inclination to rely on others to achieve the outcomes, making even less of an effort than when doing the work on their own. The common occurrence of loafing or lurking is supported by another study that found that loafers or lurkers may make up over 90% of online groups. Loafing/lurking can be ascribed to students' estimation of a potentially high risk of futile collaborative efforts (Shiue, Chiu & Chang, 2010). It can possibly be explained by low levels of social cohesion or social capital development in the group that could have sanctioned such selfish behaviour. Low stocks of social capital relate to lower levels of positive online group behaviour as the wheels of the group are not sufficiently greased to make it easy for members to collaborate and achieve reciprocity (Daniel, Schwier & McCalla 2003).

Negative participation

Excess claims

Conversely, when a group succeeded in developing social ties, such groups may make claims on group members. The student reports revealed that students from groups with high levels of connection felt a sense of obligation toward their group members. Groups with strong social ties may make excessive claims on members (Portes, 1998). The establishment of connections and social ties between people facilitates the development of cohesion, also called bonding social capital and subsequent social support. Students who share bonding social capital are more likely to help one another and exchange information, even to their detriment.

Constraining personal freedoms

Membership in a group is dependent on conformation to the specific norms and values of that group; the social ties in the group facilitate the exerting of control and the restriction of personal autonomies. It seems that while sociability may have helpful learning results, it may also generate 'socially undesirable ends' by locking members in an exclusive setting and preventing or stifling originality. Group participation depends on a form of social control that calls for conformity and this may result in independent-minded students exiting the groups (Portes, 1998). This may explain the reports by some students about unwelcome restraints on individual autonomies and the wish some expressed to leave their groups.

Downward levelling norms

The literature also supports the experience that some students had of downward levelling norms in groups, resulting in a lowering of the internal standards and limiting personal aspirations. It is argued that groups place a higher premium on group success than on individual success. Therefore, ambitious members may be put into place or forced to leave the group. It is also possible that a group may not have a culture of high performance or subscribe to low standards and when members internalise these norms it may lead to underperformance and leave members demoralised (Portes, 1998). The interest of an individual student may be rejected in the interest of the collective group. It is also possible that a group

may elect, in the interest of time, abilities, and constraints, to target the most likely best-generalized result but not necessarily excellent results (Clark, 2003).

Inaccurate information

Interactions with peers have the risk of receiving misinformation from group members or developing 'half-baked ideas (Greenhow, 2011). Exclusive groups may disadvantage students when they restrict interaction with other groups and limit exposure to alternative ideas. Well-connected members may develop a 'collective blindness' with undesirable results (Nahapiet & Ghoshal, 2009). It becomes evident in the above three instances that high levels of social capital can be accompanied by strong social control, conformity, and conventionalism; all in a negative relation to independent thinking that obstructs innovation or other forms of new knowledge construction (Portes, 1998).

Exclusion from groups

The findings suggest that collaborations among students are not all based on civility. It seems non-participation may not be the first choice but may be the result of fearing the reactions of others, for example dreading exposure to bullying, blasting, or incivility (Lutz & Hoffmann, 2017). The mere existence of social ties implies that others are excluded from the bond and the accompanying benefits. Those who benefit from the exclusion may not recognise the bias and regard the situation as rational (Gauntlet, 2011). Social capital or cohesiveness in groups may have undesirable or disadvantageous outcomes for the out-group.

Design guidelines to provide for productive student collaborations

The above illustrates that collaboration in online learning groups or communities is not innocent and has various downsides, inhibiting the academic project. The non-, passive, and negative patterns of participation among some students mean that they ran the risk of missing out or compromising on sharing the benefits of participation in the online learning community (Nagel, Blignaut & Cronjé, 2009). To answer the second part about the guidelines to be derived from the above insights, some pedagogical suggestions are offered. Departing from the Vygotskian principle of learning as an interactive process (Vygotsky, 1978), a socio-constructivist pedagogical is used to focus on collaborative activity to facilitate constructive student collaborations. A collaborative learning model requires that interaction must be purposefully included in the learning materials. Quality interaction and meaningful collaborations rely on stressing the importance of peer collaborations by including collaborations in the assessment through appropriate scaffolding (Kellogg, Booth & Oliver, 2014; Han & Resta, 2020).

A fitting way to scaffold the learning requires that students work progressively to establish themselves and their collaborative partners in the collaborative learning process. This is particularly important for novice online students who need a gradual path from scanning the new environment to eventually taking the lead in online discussions and providing peer reviews. Mandatory and accessible training initiatives should be instituted to ensure the comprehensive readiness of both lecturers and students to provide for constructive participation in collaborative online learning activities.

Absorption into collaborative learning does not automatically follow when a student registers for the course. The process of becoming an adept collaborative student relies on being socialised into the new way of learning, from being a new resident to internalising the role of a collaborative student (Brett, Lee & Oztok, 2016).

This process can only be supported by providing frequent and diverse collaborative events, with clear guidelines for the students and positive expectations. A variety of synchronous and asynchronous discussion forms can be applied to facilitate a process of student networking (Watson & Gemin, 2008).

Social networking, across formal and informal learning spaces, enables a link between the university LMS and other social spaces. A full discussion of ways of synchronising formal and informal learning is available in another publication (Venter, 2021). Suffice it to say that an intentional range of informal student collaborations feeds the formal collaborative learning process.

The focus should not only be on the cognitive gains from collaborative learning but also on the role of motivation and emotional support. A significant part of the cognitive challenges students face has socio-emotional roots. Collaborative learning challenges are more complex than students just disliking the interaction or being dependent on others. Emotional self-regulation assists students to adjust to the situation and find strategies to deal with challenges. It is possible to extend self-regulation with socially shared regulation of learning in a collaborative environment. It shows promise for students to cooperate in finding ways to let go of distress, break down, or reduce destructive emotional responses. A collaborative learning design should facilitate an ongoing process of socially shared emotional regulation to optimise collaborative learning. One way of doing this is by using the 'flipped classroom'. Students are required to self-manage their learning by studying the content before they start the lesson and then engage in challenging collaborative tasks. Such tasks need to require students to articulate themselves and generate meaning via interactions and joint efforts, including both individual and collaborative learning. During the collaborative work, students may engage in socially shared socio-emotional regulation. Students can also be tested on their knowledge after the group work (Järvenoja et al., 2020).

The above scenario requires the development of collaboration skills as they are critical to success in learning. Unfortunately, the development of collaboration skills is often neglected, and collaborative learning courses may not succeed in their education goals. Collaboration skills and emotional regulations need to be scripted, structured, and integrated into the course with the help of appropriate technologies or apps to target the group's socially shared regulation of learning (Järvenoja et al., 2020). It would be helpful to include purposeful social interaction from the beginning of the course, incrementally providing opportunities for students to develop social presence, useful interaction patterns, and deep relationships (Mehall, 2020).

Collaborative learning affords opportunities for individual students to achieve more by doing less due to a distribution advantage of tasks distributed among group members. However, students need to invest in cognitive and socio-emotional resources to participate in the group. Students will only invest the additional effort if the task is too complex for an individual to carry out. Collaborative learning tasks should therefore be complex and challenging, prompting students to collaborate with peers (Kirschner, 2009).

Collaborative learning projects may have a short lifespan making it difficult for participants to have frequent and enduring contacts to develop social capital via the establishment of trust, cohesion, and a sense of belonging. The development of trust in online learning is a challenge due to the zero history between students and the lack of physical cues. The paradox of trust is that members want to see that there is trust in the group before they trust the group (Smith, 2008). It is crucial that the students have ample opportunities for interaction to work on building trust and fully engage in the group process. It is also important that students do not feel vulnerable or exposed. Students need to have a guarantee that their security and privacy are protected.

Self-regulation is key to both individual and collaborative learning. Essentially, the student should be aware of the need to self-regulate and identify the aim of regulation, whether it is cognitive, emotional, or motivational. Only then the student can select and apply appropriate strategies to manage themselves and their groups (Järvenoja et al., 2020).

Self-regulating plays a major role in helping students to coordinate all the options available to them as online students, for instance finding resources, interacting with the content, making connections, and managing their online relationships across the content and relational spaces (Cho & Shen, 2013). Self-regulated students are pro-active participants who manage their learning goals, relationships, learning tools, and collaborative work across online platforms (Zimmerman, 2000). A heutagogical pedagogical approach supports self-directed student in the 21st century who exercise control over their learning process (Blaschke, 2021). Prudent attention should be devoted to capacitating students to proficiently navigate collaborative spaces on diverse online platforms, cultivating the requisite skills and attitudes for adept management of both content and relational aspects within such environments.

Therefore, learning opportunities for voluntary interactions across various online platforms should be provided, preferably in the absence of a lecturer or tutor. Such an integration of formal and informal learning platforms supports the development of self-directed learning and extensive network formation. It can be likened to students working both on the front stage (in the formal learning environment) and on the backstage (in informal and self-driven learning spaces). This provides for student engagement in both structured learning opportunities and emergent learning moments: engaging in planned activities on the LMS as well as collaborating in social media networks and forums. This usually entails evaluating students' engagement in public discussions on relevant social media platforms, by examining the posts and comments they have made. Furthermore, participation and self-regulation can be promoted via a reflective type of task such as self-reflective journaling, requiring students to submit reviews and assessments of the group members' contributions.

A progressive build-up towards interdependent tasks where students share social regulation tasks include projects that involve considerate postings about individual and collective contributions; award individual grades for group projects and rotate members of groups; award group marks, and require the group to include a report on what the goals of their collaboration were, what they believed they achieved, and how they achieved their goals (Järvenoja et al., 2020).

Informal partnerships beyond the LMS involve engaging with both familiar friends and unfamiliar peers across various platforms and networks, fostering collaborations among students from diverse backgrounds. These instances of spontaneous learning in student collaborations are not subject to surveillance or evaluation by the instructor and hold the potential to promote self-directed learning and social capital development. The combination of the planned and emergent types of learning empowers students to be self-directed and collaborative, leveraging technology to collaborate seamlessly anytime and anywhere. Integrating both formal and informal learning spaces ensures continuity between frontstage and backstage learning activities, fostering the development of various types of social ties with social capital benefits. This integration yields various learning benefits, including heightened mutual support and broadened collaborative learning experiences (Venter, 2021).

Limitations

The research is limited by relying on self-reporting and excluding insights into the overall architecture of student social networking across various groups or networks on a wide range of social media. The research is grounded in an examination of collaborative learning that was observed before the onset of the COVID-19 pandemic. This could potentially weaken the effectiveness of the argument in accurately representing the current educational environment.

While being an explorative and qualitative study, the research did not allow for establishing possible causal links between student interactivity and academic performance. The research did not explore the potential for demographic variances in collaborative learning. The research was limited to one ODL institution in the southern hemisphere.

CONCLUSION

The paper challenges a widely accepted affirmation of student online collaborations by identifying adverse consequences of collaborative learning tasks. It uses qualitative information from a range of interviews with students about their experiences in an online course. The analysis identifies various forms of negative or undesirable forms of student collaborative learning activities, namely non-participation, passive participation, and negative participation. The differentiation is used to derive guidelines for online practitioners to mitigate the negative consequences and design productive collaborative efforts in an optimal learning environment.

Recommendations to key stakeholders

Insights derived from the research, have the following implications for higher education institutions offering online courses to their students. On an institutional level, budget provision should be made to ensure that staff and students have adequate access to relevant devices and internet services. On a policy level, relevant training initiatives should be mandated and made available to ensure that staff and students are motivated and prepared to fully engage with collaborative online learning. Care should be taken to ensure that users are capacitated to effectively use collaborative spaces on online platforms and have the skills and attitudes to manage both the content and relational spaces well.

Directions for future research

The research could be augmented by future research, including social network analysis into the frequency and density, or lack thereof, of student interactions to obtain a full socio-metric view of student interactions. It could furthermore be improved by doing an in-depth follow-up to gain insight into how various demographics relate to diverse student experiences of collaborative online learning. The research could be repeated at different types of higher education institutions in different parts of the world, including residential universities engaging in online learning, to provide insightful comparative analytics. A longitudinal study could also be beneficial for managers, administrators, policymakers and practitioners to design and provide for inclusive and productive student engagements.

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A detection process to create awareness of source-code plagiarism among students using it to pass introductory programming[1]

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ABSTRACT

The COVID-19 pandemic restrained the academic environment and changed the rules of the educational game; contact classes were restricted, and online assessments had to be introduced. This situation opened an opportunity for some students to use source-code plagiarism to pass coding assessments in the Introduction to Programming subject module. The focus of this paper is on making sense of this environment to establish a process to ensure that students obtain the skills they need to build on in subsequent modules. This is necessary to reach the outcomes of a computing course. Four aspects were used in establishing this source-code plagiarism awareness process in focusing on one class of students. Qualitative data were gathered by firstly requesting the class to supply feedback on their understanding of source-code plagiarism, and secondly inviting students identified as guilty of Python source-code plagiarism to start a conversation with the lecturer, which was triangulated with quantitative data regarding the success of the latter group in terms of their pass rate. Although the Measure of Software Similarity tool was instrumental in establishing a source-code plagiarism detection process, it is cumbersome and time consuming. Hence fourthly, it was compared to other available tools to determine their suitability in comparison. A refined source-code plagiarism awareness process is the resultant finding of this paper.

Keywords: introductory programming, source-code plagiarism, source-code plagiarism detection tool, source-code plagiarism awareness, source-code plagiarism categories

INTRODUCTION

Academic misconduct is an ongoing issue, but with the COVID-19 pandemic enforcing restrictions in education, it is difficult to ensure that students are working on their own when they do so without supervision and guidance at their place of residence. In a study, 93% of lecturers perceive that students cheat more in an online environment when compared to contact learning (Newton, 2020). In the context of novice programmers learning to code, cheating is more troublesome than in other environments where text plagiarism is an issue, since students do not learn the skill when a simple problem aiming to facilitate the understanding of a construct is copied and pasted. Therefore, the main objective of this paper is to develop a source-code plagiarism detection process which creates awareness among students who make themselves guilty of source-code plagiarism. This is achieved in this study by determining the class's

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plagiarism awareness, having conversations with students found guilty, and determining whether these students are weakening their chances of passing the module. A secondary objective includes determining whether MOSS should be replaced with another tool in this context. This is important since this step is pivotal in creating awareness, and when it becomes integrated with assessment, student awareness will be ensured. Subsequent sections address the literature applicable to this paper (Section 2), the research methodology used (Section 3), the research design (Section 4), the findings (Section 5), and lastly, concluding the paper (Section 6).

LITERATURE REVIEW

The literature categories of source-code plagiarism (SCP), source-code plagiarism detection (SCPD) tools, Python and its assessment, and extant research on SCP is discussed.

Categories of source-code plagiarism (SCP)

When students start their journey of becoming a programmer, they learn the basic programming concepts; one concept at a time. This involves understanding the problem given and solving it in the context of the programming language; a time-intensive process.

In Table 1, Joy et al. (2010, 2011) categorise SCP. Although categorisation is helpful, not all of the categories are equally applicable to a beginner class of programming. Firstly, in the context of this study, category 3 has the biggest impact; when students struggle to learn the concepts or procrastinate on a potentially difficult task such as writing a program, possibly because they lack the confidence to solve the problem, and then leave it for the last minute with not enough time to solve the problem (Gomes & Mendes, 2007). To complete the assignment in time, such students may revert to copy code from a peer in class – with the solution already available – without learning how to solve the problem (Ngo, 2016). Erkaya (2009) found that lack of motivation, and lack of resources to learn from may be contributing factors.

Table 1:
Six categories of SCP with its impact in the context of this study

Nr.	Category	Explanation	Impact
1	Re-use code as self-plagiarism	Driven by a lack of understanding of how reusing previously submitted coursework might lead to self-plagiarism.	4
2	Using books and other sources	Students using code from a book or another source without giving proper acknowledgements.	2
3	Copying code from peers	Students that copy code from peers, either because they do not know how to solve the problem, or they do not have enough time to complete the coding on their own.	1 (highest)
4	Cooperation with peers	Students working together on an assignment.	3
5	Changing code from one programming language to another	Students find a solution on a program in a different language and then translate it to another language.	4
6	Falsification	Students submit a program or script that does not work the way it should but displays the correct output.	5 (none)

Secondly, students may revert to using books and other sources such as websites (category 2) from which to copy. Zarfsaz and Ahmadi (2017) found that students felt that code obtained from the Internet is well-written and guarantees a good mark, whereas code developed by themselves, would not be as good. This scenario does not provide a readily available solution as in the previous category, and it may be necessary to make changes to the code. Thirdly, cooperating with peers (category 4) is related to category 3, and it is a good way used by students to learn to program (Ngo, 2016). They share ideas and understanding which leads to SCP that students are not aware of, because they are not educated enough on SCP (Maharajh, 2020).

Both re-use of code and using code from another programming language (category 1 and 5) have a limited impact on the students in this context, because of the beginner nature of the course. Falsification (category 6) has no impact in the context of this study, since students only submit .py files, which is run by the assessors to check the output.

Source-code plagiarism detection tools

In the context of a student learning to code, copying code to solve a simple problem defeats the purpose of learning the programming skill. Having said this, it is fair to mention that a student needs to start learning somewhere, and therefore supplied material is seen as *planned plagiarism,* and distinguished from *purposeful plagiarism*, when material outside this realm is copied (Joy et al., 2010).

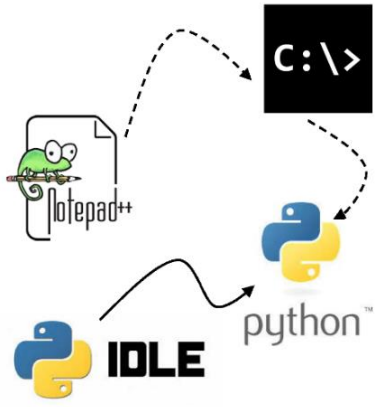
With plagiarism being a long-standing challenge in the academic setting, tools such as Turnitin, Grammarly, and Duplichecker have been used widely in academic writing (Bhosale, 2022). Unfortunately, SCP detection is not done by these tools and a different type of tool is needed to identify copied code. Many SCPD tools are available on the market and examples include: CodeGrade, Codequiry, Measure of Software Similarity (Moss), Unicheck, Plaggie, Sherlock, Marble, and CopyLeaks (Younas, 2021). The SCPD tools use a variety of algorithms to detect SCP in programs. In particular contexts, it may be valuable to have access to tools that can do both text and code plagiarism detection, such as SmallSEOTools.

Although checking the similarity of code is not difficult, finding a culprit is much harder. Many people who copy code will attempt to make some structural changes so that the source-code appears authentic. Therefore, it is very difficult to detect similarity without the help of a proper tool that looks deep into the code (Younas, 2021). The Moss tool was used in 2021 and 2022 at the NWU to identify students guilty of SCP. Since the Moss tool cannot be integrated with the learning management system, can only compare student scripts with one another, is not accessible to students, and is time intensive to use, a list of criteria was compiled to compare SCPD tools – in an attempt to determine how efficient other tools are at detecting SCP in general, and then specifically in a first-year Python assessment context. Tools were then ranked in terms of its effectiveness. It should be emphasized once more that a SCPD tool is not a magic wand, and that a knowledgeable human needs to make a final decision regarding SCP incidents.

Python and its assessment

In the context of this study, Python 3 is the programming language students are using to learn to code. Python is an interpreted language, and one can run simple Python expressions and statements in an interactive programming environment, or the shell. The Integrated DeveLopment Environment (IDLE) is the environment that comes with the Python installation (Lambert, 2018). When launching IDLE, the Python Shell opens to make an editor available – to write a script and access the Python interpreter. In addition, an editor, Notepad++ is made available to students, and they are guided to use the Windows command-line to run Python commands. All the necessary software (Figure 1) is free to download and use.

Figure 1:
Software used



With no automation tool for the assessment of scripts, such as Jype, assessment is a time intensive process, therefore assistants (senior students) are employed to assess the assignments and some tests (Helminen & Malmi, 2010). Assistants responsible for assessments were made aware to look for tell-tale signs giving away SCP. Although a small percentage of students were identified as copying code during the marking of assignments and tests, the large number of students complicated its identification. The fact that online, at-home assessment has been the only option when COVID-19 started, especially in the context of a contact university, made this an unmanageable situation. Students were left to their own devices when studying, although they were in need of a watchful eye - as it were - to keep them learning in a constructive way (Miller, Visser & Staub, 2005).

Source-code plagiarism research

Although source-code plagiarism is only a small part of plagiarism as such, multiple sources indicate that it is a substantial problem, specifically so when it comes to novice students learning to code, and more so during the COVID-19 pandemic. In a study conducted among computing academics in the United Kingdom, Cosma and Joy (2008) determined that *re-using* code, which includes translating code from one programming language to another, as well as utilising code generation software, *obtaining* code, which includes paying another person to write the code, stealing code, and collaborating with peers on individual assignments, and inadequately acknowledging sources by either not listing sources, of fabricating sources, or providing a false reference, constitute SCP. A follow-up study involving students, again in the United Kingdom, Joy et al. (2010) established that SCP is increasingly occurring mostly due to the wealth of online and other resources available to students. In an introductory programming course Karnalim (2017) found that among 400 code pairs suspected of plagiarism, 'modified comment & whitespace' and 'modified identifier names' occurred most frequently, the simplest forms of modifications to be made to copied code. Similar findings were made in a basic programming course, where Maryono, Yuana and Hatta (2019) identified mostly lexical modifications on plagiarised work, which do not require high level programming skills including 'formatting source-code', 'changing comments', 'renaming identifiers', and 'splitting or merging declaration variables'. Lastly, Newton and Essex (2023) posit that the immediacy of the COVID-19 lockdown transition to online assessments challenged the academic environment to put security measures in place, which certainly have increased students' opportunities to make use of SCP to pass programming subjects.

RESEARCH METHODOLOGY

Mainly qualitative data, where the meanings students assigned to their situation, were gathered (Myers, 1997). Firstly, students identified as guilty of Python source-code plagiarism were encouraged to start a conversation with the lecturer. This aspect had the intention to ensure fairness by hearing the student's voice. Secondly, the class was asked to supply feedback on their understanding of source-code plagiarism. The third aspect focused on quantitative data and had the intention of triangulating the success of the group of students guilty of source-code plagiarism in terms of their pass rate with the first two aspects (Thurmond, 2001). Although the Measure of Software Similarity SCPD tool was instrumental in establishing a source-code plagiarism detection process, it had limitations on crucial aspects, and is cumbersome and time consuming to use, and therefore as fourth aspect it was compared to other available tools to determine their suitability in comparison. In this paper, interpretivist content analysis (Erlingsson & Brysiewicz, 2017) is utilised as a qualitative technique to make sense of student feedback and analyse communication with students.

RESEARCH DESIGN

The design of this study involved analysing qualitative feedback received from students who elected to complete an open-ended questionnaire on their experience, the SCP detection process of identifying a sub-set of plagiarism cases where SCP were identified among the class of students and allowing students to state their case by communicating with the lecturer regarding their case(s) - with the purpose of determining the group of students to be penalised for SCP, and tracking the SCP group to determine their quantitative success at the conclusion of the module. Lastly, suitable SCPD tools were investigated using Design Science Research (DSR), a problem-solving approach which increases human understanding through the creation of artefacts or artefact designs. Existing artefacts may be deployed in new ways to facilitate a fresh approach to problems. Results of DSR include new artefacts and design knowledge – to provide better insight (Vom Brocke, Hevner & Maedche, 2020). Due to the extensive process of building cyclic tables of comparison, and it being a lengthy process, only the results are reported on in this paper.

Participants

Across the three North-West University (NWU) campuses and the Open Distance Learning mode, a large number of students from more than 10 courses enrol for the module of which Introduction to Python Programming is part. The Vanderbijlpark Campus, with a subset of the 238 students who enrolled in 2022, is the focus of this paper. A similar, but smaller investigation was done on the data of 2021, and already reported on (Smit, 2022). The student bodies on each campus differ much in terms of computing background and access to resources, and the campus under investigation has a large percentage of students from disadvantaged communities where students typically do not have a background in computing.

The source-code detection process

Each assignment given covered a particular concept taught in the study unit addressed in a particular week. It included up to three problems for which a Python script solution had to be written. Only the scripts where plagiarism were indicated by MOSS and verified by the lecturer, were penalised.
A particular process was followed to identify plagiarism cases:

1. While marking an assignment/test, the marker would pick up SCP in a very small percentage of cases.
2. A list of potential plagiarism cases was compiled by MOSS, by indicating similarity percentages between scripts.
3. The code of each script, compared to a similar script was scrutinised to determine whether a candidate should be categorised as dishonest, and the lecturer made a final decision regarding the

inclusion of a particular case. A list of cases was announced on eFundi (the NWU's LMS). These candidates forfeited the marks for the part of the assignment plagiarised.

4. Students were allowed to state their case. It was, for instance, possible for a student to explain their approach in solving the problem identified as a plagiarism case. In cases where a student convinced the lecturer that the work done was their own work, the mark was reinstated.
5. The eventual plagiarism cases were the students who either did not complain about their status or did not convince the lecturer of their honesty.

Due to the time constraints associated with sit-down formal assessments. it was difficult for students to plagiarise code, and not many plagiarism cases were identified.

Making sense of students' learning journey

The focus of the study reported on in this paper, is on the situation created by COVID-19, specifically in 2022. To accommodate the COVID-19 restrictions, and at the same time afford students new to programming access to the lecturer and tutors, several measures were taken. A weekly theory class was conducted on the Zoom platform, then a weekly practical class focused on the demonstration of the concepts taught were also conducted on Zoom, a practical class was conducted physically in a computer laboratory, and tutor-led midnight and noon question-and-answer-sessions were scheduled on Zoom. In addition, Telegram groups were formed with the purpose to supply continuous support in addition to the interaction allowed on the learning management system (LMS) platform, which afforded access to slides, videos, a custom-made textbook, and all assessments. Due to COVID-19 restrictions, which limited the number of students allowed in a physical venue, students were encouraged to attend only the practical session if they had a pressing need to have a contact class.

The aim of the open-ended questionnaire was to form an understanding of the opinions of computing students on SCP, their programming background, their knowledge of plagiarism, and what caused them to copy code. In all subject modules at the university, the issue of plagiarism is addressed, of which students are made aware. In the context of writing code, the internalisation of its understanding is not as straight forward as when text is involved. The open-ended questionnaire (see Table 2) used, was made available to all students and not only to students who had been identified as dishonest. Participation was voluntary. Questionnaires were answered online, and results were anonymous. A total of 53 students out of 238 (22.3%) enrolments at the peak of the semester answered the questionnaire, which allowed for multiple perspectives.

Table 2:
Open-ended questionnaire used in the study

Section A: Establishing the students' programming background.	
Question 1	What is your programming background?
Section B: Finding out what the participants know about code plagiarism, whether they have been found guilty of code plagiarism and what cause students to copy code.	
Question 1	Your understanding of when one would be guilty of code plagiarism?
Question 2	Was one (or more) of your scripts identified as a plagiarism case?
Question 3	Depending on your answer above, why did you, or did you not copy code?
Question 4	Elaborate on the reason why you copied code or did not copy code?

Establishing the students' programming background reveals that 10 of the 53 participants have a background in programming (18.9%) – either having done it in high school, were self-taught, or did an online programming course. Four of the students out of the 10 (40%) who have a background in programming were identified as plagiarism cases. The remaining 43 participants (81%) have no background in programming and only started programming when starting the introductory course at university. This is a high percentage, and it correlates with the fact that most students from this environment come from schools in disadvantaged communities where they did not have the opportunity to learn to code. Twenty-nine of these students were identified as plagiarism cases (67.4%). This may explain why students who do not have a background in programming, resort to copying code either from a peer or from the other sources – they lack the confidence to code from the knowledge they are accumulating during their lectures. Numbers discussed are reflected in Table 3

Table 3:

Code explanations, response examples and occurrences

Code	Description	Occurrences	Response example(s)	Occurrences	Response example(s)
			Yes		No
PRG_BG	Programming background	10	'I did Information Technology (IT) at school level' 'I am self-taught'	43	'None, I studied programming for the first time in CMPG111'
DIS_CS	Plagiarism case	34	'I did not understand the work and had difficulty learning the concepts' 'I didn't copy code from anyone, we were just going through the assignment as a group and then come up with an idea then we used that idea as a group'	19	'I must do my own work' 'I helped individuals who would come to me, but I now know how to move around that for the future.'
SCP_GLT	I am guilty of copying code	12	'Yes'	40	'No' 'Yes; it was not identified, but I did make use of code plagiarism'

From the question 'understanding of when one would be guilty of code plagiarism?', knowledge on plagiarism was reflected as:

- Ask another person to write code as an answer to an assessment on your behalf, using a peer's code as an answer to an assessment, and submitting it as your own answer.
- Watch a video on the Internet and using the code from the video.
- Find code on the web, or in a textbook (that is not prescribed) and using the code as an answer to an assessment.
- Collaborate with a peer (or a group of peers), coming up with a script as an answer to an assessment, and submitting it as your own answer.

From the responses above, it is evident that students know what plagiarism in this context is. Care is taken to make students aware of plagiarism in all their subject module contexts. This is also the case in the subject module under discussion, where both text and source-code plagiarism are applicable. The researchers elected to disregard a lack of knowledge on plagiarism as a cause of SCP because the students were able to select the most appropriate explanation of what it is, and therefore know what it implies. Another reason to disregard lack of knowledge on plagiarism as a cause of SCP, is because none of the students stated a lack of knowledge on plagiarism as a reason for them to copy code. This is why some of them refrain from SCP – as they do not want to be identified as plagiarism cases, while others use an opportunity to copy code even though they know it is not ethical to do so. It is possible that they think that they will not be identified as dishonest.

The question on whether students had been identified as a plagiarism case revealed that 33 of the 53 students were identified as plagiarism cases (62.3%).

The success of students

Regarding the impact that SCP had on the technical skills of students, the students found guilty of plagiarism during formative assessments - in the process discussed earlier - were tracked to determine their success in the module. Upon analysis of the data, it was found that a total of 133 students out of the 216 students participated in programming assessments, to complete the module, were identified as plagiarism cases (62%). This is a high percentage.

It is important to recognise that the SCP group of students is made up two subgroups. This distinction is supported by the data, where a fairly large number of 97 students passed the module (73%). Further analysis of this first group revealed that seven of these students obtained a mark that is 70% or higher. Twenty-five of the students obtained a mark within the range of 60% and 69%. These results indicate that almost a third of the students that were identified as dishonest were successful in passing the module with an above average mark. These students can be classified as those who allowed peers to copy their work, worked in groups, or assisted other students.

Seventy-one students passed with a mark that is between 50% and 59%. Of these, 16 passed only on their second attempt. After all examination opportunities were conducted, 36 students found to be guilty of SCP, failed the module (27.1%). This is slightly lower than the class rate of around a third. Fourteen of these students did not even qualify to write examinations (38.9%). These students can be classified as those who received help from peers – because they are not comfortable writing their own code. Although students are allowed to continue with follow-up modules in programming with a final mark of 40%, the module still needs to be passed upon a future enrolment.

Source-code plagiarism detection tools

Source-code plagiarism is a long-standing issue in the academic computing realm (Cheers, Lin & Smith, 2021). Although there are many tools available to detect SCP, limitations to each tool, such as the programming languages it is designed for, may be a disqualifying factor. To guide this process, the work of Martins et al. (2014), who developed a set of questions to determine the key characteristics of each tool is used, as shown in Table 4.

Table 4:
Code plagiarism key features (Martins et al., 2014)

Criteria	Question(s) to be answered
Open or closed source	Is the tool free to use or do you need a subscription to use the tool?
Key methods used by the tool	What methods does the tool use – to detect code plagiarism?
Different languages the tool supports	What programming languages does the tool support?
Usability of the tool	Is the tool easy to understand and use?
Online databases scanning	Does the tool make use of online databases to identify code plagiarism?
Code plagiarism report	Is the report given by the tool easy to interpret? Does it show all the necessary information, such as the part of the scripts that was copied from a peer or online source? Does it include additional features, such as … ?

In this section, the aim is to determine the capabilities of SCPD tools in the Python context. As a first cycle, the key features, as indicated above, of several tools are compared, without focusing on its support of Python. As a second cycle, the focus moves to tools supporting Python, and supplying the proof needed in an academic context. Thirdly, the suitability of each tool is used to rank the tools.

Cycle 1: Key features of open-source SCPD tools are that they are free to use, and their source-code is available to scrutinise or use. Martins et al. (2014) found that open-source SCPD tools mostly make use of three methodologies to detect copied code, namely: comparisons based on metrics that is generated from source-code (attribute-based), fingerprints that is created from source-code and then tokenised and hashed (token-based), and an internal intermediate representation created from the original code (structure-based). The open-source tools included in Table 5 are Sherlock, MOSS, and Marble. In contrast, closed-source SCPD tools are subscription-based, and the source-code is hidden to protect the intellectual property of the developer. The latter will typically allow a user to use the tool for a limited period and/or with limited capabilities – for evaluation purposes. Therefore, it is difficult to exactly explain the algorithm used in each of these tools. To explain the different methodologies, two closed SCPD tools, namely CopyLeaks and Codequiry are included in Table 5.

Cycle 2: Of the five SCPD tools listed in Table 5, only Marble does not support Python, 'although /the language-dependent part is the normalisation phase, which can easily be adapted for similar programming languages' (Hage, Rademaker & Vugt, 2010:6). Regarding the reporting focus, the fact that Sherlock and Marble do not supply proof of similarity as part of their functionality and, therefore, need a manual comparison, disqualify them from the subsequent list. This leaves us with MOSS, CopyLeaks and Codequiry.

Cycle 3: Only the subscription-based tools support online databases scanning, which is an important feature in the context of first year programs. So, CopyLeaks and Codequiry have easy-to-use graphical user interfaces (GUIs) and do well at detecting SCP, not only peer-to-peer, but peer-to-online sources as well. With MOSS there is no GUI interface, but it does well at detecting SCP, unfortunately, only peer-to-peer cases. This leaves us with the subscription based SCPD tools ranked above the freeware option.

Table 5:
Cycle 1: Code plagiarism key features on five SCPD tools

SCP detection tool (source)	Developer (year)	Supported programming languages	Methods used to identify code copying	Reporting focus
	open source			
Sherlock (Shahabi, 2012)	University of Warwick (1999)	Limited; Natural language, Java and C++.	Token-based. Algorithm uses incremental comparison. It compares digital signatures of files to each other.	A GUI interface makes its use seamless. Report shows that there is SCP by indicating a similarity percentage, and therefore it cannot show similarities in the code.
Marble (Hage et al., 2010)	Utrecht University (2002)	Java, Perl, C#, PHP, and XSLT.	Structure-based: Makes use of normalisation in two different ways and then compares the normalised files with one another.	Report only shows the percentages of code that is copied (it cannot show similarities in the code).
MOSS (Hage et al., 2010)	Stanford university (1994)	Supports more than 20 programming languages.	Token-based. Uses a fingerprinting technique called winnowing - which makes comparing documents much faster (Yang, 2019).	Report indicates percentages of code that is copied and highlights the code that is similar. Code is compared to code of peers uploaded for comparison.
	closed source			
CopyLeaks (CopyLeaks, 2021)	Yehonatan Bitton (2013)	Supports more than 20 programming languages.	Combines algorithms and artificial intelligence-based technology to detect SCP.	Utilises a GUI interface. Report is in-depth and includes figures showing percentages of code that is copied and where code is copied from (beyond the code of peers).
Codequiry (Codequiry, 2021)	Codequiry (2018)	Supports more than 20 programming languages.	Uses artificial intelligence machine learning on algorithms to detect SCP. The tool learns and adapts to students trying to work their way around the tool.	Utilises a GUI interface. Report is in-depth and supplies figures showing percentages of code that is copied and where code is copied from (beyond the code of peers).

FINDINGS

The four aspects focused on in this paper, are outlined below.

Source-code plagiarism detection process: With this process being time intensive per definition, a few guidelines may streamline the effort:

- Making students aware of the problems associated with SCP from the very start, will help to curb its occurrence
- Ensuring that students only submit the latest .py solution scripts will limit comparisons to only the necessary
- Structuring group work constructively
- Giving immediate feedback on plagiarism cases may convince students to rather spend the time to do their own work.

Eventually SCP needs to be managed, no matter how time intensive the process is, to ensure that students learn constructively to acquire the programming skills they would need in the corporate world. Although students are made aware of plagiarism, allowing them to experience its effects practically contributes much to help them to internalise their understanding. An added benefit is that an opportunity is created to apply the ethical concepts studied in a practical way.

Students' learning journey: When studying the feedback from students, it is clear that the issue of SCP is not black and white but nuanced. It occurs on a spectrum with outright copy-and-paste on the one side, (get) help (from) a peer or working together with peers to make sense of the material and how to tackle problems, to working alone and solving the problems oneself on the other side of the spectrum. The focus of future offerings should be to manage the first two options in such a way that students learn constructively. This will be possible in the post- COVID -19 environment of 2023, where practical classes may be conducted in a way where students work in a controlled environment where they get support while making sense of the work in a practical setting.

The success of students: For people to become good programmers they need to get as much programming practice as possible. When students are guilty of SCP, it means that they are not getting sufficient practice, which implies that they are not able to improve their programming skills. They end up failing programming modules because during formal tests and examinations they are not skilled enough to write programs according to specifications within required time limits. These students should be identified and guided to learn constructively.

Source-code detection tools: The subscription-based tools (CopyLeaks and Codequiry) were rated better than MOSS because of their easy-to-use GUIs, and support of online databases scanning. Unfortunately, with the challenges associated with COVID-19 still new, the NWU does not currently formally employ a tool to combat SCP as part of the repertoire of tools at academics' disposal. Turnitin is subscribed corporately to manage text-based plagiarism, and there is an investigation to determine the options in terms of throwing the plagiarism net wider. This leaves the academics deeming SCP a problem to be managed with MOSS at this point in time. In future the cost structure employed by CopyLeaks and CodeQuery will determine which one will be the best option for utilisation by academics.

CONCLUSION

The nature of this paper allowed the researcher to reflect on the second iteration of teaching Python, a subject module included in the syllabus as recently as 2018. Before the onset of the COVID-19 pandemic, the identification of SCP cases was not prioritised since contact classes and conducting sit-downs for major tests, and examinations did not afford students with opportunities to copy code. COVID-19 caused a large change in the educational environment, and many students saw an opportunity to complete assessments in new ways, among these copying code from peers throughout all opportunities of online (and continuous) assessment.

The outcomes of the research will direct the 2023 offering. The module offering already progressed from being an online continuous assessment module in 2021 to being online with formal sit-down assessments in 2022. The new 2023 offering is planned to be face-to-face, with formal sit-down assessments. Obviously, all the new approaches conducted during COVID-19 will be used to support this conventional approach. In the long run, the aim is to identify source-code plagiarism in the same way that text plagiarism is done, with sophisticated tools that are integrated with the learning management system which automatically warns academics of suspected plagiarism, using either CopyLeaks or Codequery. Also making students aware will assist in facilitating their internalisation of what plagiarism in this context practically means. With tools such as ChatGPT made available recently, this will become a necessity.

Creating awareness of source-code plagiarism by detecting it, is important, and this process is to be refined according to the findings to ensure that students internalise the meaning of plagiarism of code as they learn to code. This process will be facilitated by integrating the software recommended with existing university systems. Based on the knowledge gained on students' understanding of plagiarism when they start the course, amendments to the theoretical material guiding them is needed.

Therefore, future research should include interviewing students found guilty of SCP to determine their point of view and determining whether there are ways that the lecturer can support them to not revert to SCP, establishing the effect of SCP on student progress beyond the initial semester, and the effect of the implementation of improved offerings on SCP. In addition, it is the intention of the researchers to determine the magnitude of SCP across groups on the same campus, and across campuses. To support the identification of SCP, the use of Python script assessment software may be investigated to support both assessors and students. There is also potential for this research to reach beyond junior students, and look at SCP scenarios applicable to senior students, and as such, make academics and students aware of referencing code obtained from a variety of sources.

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Experiences of transformational leaders practising social-emotional learning in a time of crisis[1]

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ABSTRACT

This research focused on investigating how adopting a Social-Emotional Learning (SEL) approach to leadership influenced the learning culture in low-decile Limpopo, South African schools amid the challenges posed by the Coronavirus Disease 2019 (COVID-19) crisis. The study employed the Head, Heart, and Hands Transformational Leadership Model as its theoretical framework. Through workshops with school leaders, the researchers gathered the leaders experiences and insights, revealing the difficulties faced by them during the pandemic and the strategies they employed to ensure continuous learning. The study underscores the significance of SEL in fostering mindfulness, self-mastery, and effective communication and relationship-building skills. The researchers recommend providing SEL training for school leaders and integrating SEL into teacher training programmes. Ultimately, the study contributes to advancing both theory and practice in the realm of SEL leadership, particularly in crises.

Keywords: COVID-19, crisis management, head hearts and hands, ongoing staff training, staff wellbeing, transformational leadership, social-emotional learning

INTRODUCTION AND BACKGROUND

On 25 March 2020, the COVID-19 epidemic in South Africa resulted in a lockdown, due to the high rates of infections and all schools in the province of Limpopo were forced to close (Amnesty International, 2021). This made the role of leaders more difficult, but the principals did not give up and in this time of crisis, they still had hope. Protocols for COVID-19, rotational timetables, concerns about learning losses, inability to cover the curriculum, anxiety, despair, stress and burnout were all evident in schools (Ozamiz-Extebarria, Mondragon & Santamaria, 2021). Even though principals are not psychologists and have to support others while dealing with similar traumas themselves, they were forced to develop social-emotional learning (SEL) plans without any prior training. The SEL approach to leadership that forms the basis for a sustainable culture of learning can only be maintained through a pedagogy of care (Bergmark, 2020). There were few school leaders at the time who were prepared to lead schools through a crisis of this magnitude. At the time, there were no guidelines readily available for principals. The requirement for wellness and psychosocial support for principals and their teams was critical.

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The Sandbox Project reports on school principals' experiences in different schools throughout the Waterberg District using different SEL approaches because of the pandemic. Researchers in Sandbox have been exploring what 'education in a fast-changing world' (Yassim, 2021: 18) could look like in South African public schools. The Sandbox Project aims to conduct more research and share findings with school leaders to offer feedback to the sector and expand the evidence base about education in a rapidly changing world (EDHUB, 2021). In the role of leading schools during a crisis, school leaders were prompted to start looking at their policies and to make amendments, thereby creating opportunities for management, teachers and learners to learn more about SEL. After learning about SEL, it was evident that leaders were more equipped and empowered to manage and sustain a supportive and effective culture of learning.

The study was exploratory in nature since it reports on leadership practices adopted during uncharted times when virtually every aspect of life was threatened (Guterres, 2020). In this study, leaders were approached about the challenges they experienced and the innovations they implemented to guarantee that learning continued throughout the COVID-19 pandemic. The main aim of this study was to identify SEL approaches to leadership that can positively transform the culture of learning in low-decile schools in Limpopo, South Africa. The deliberate focus on low-decile Limpopo schools in this research study was motivated by a commitment to addressing educational challenges in a targeted manner. By concentrating on a specific context, the study aimed to provide nuanced insights and tailored recommendations that directly resonate with the unique circumstances faced by schools in this region. While this focused approach may limit the generalisability of the findings to a broader educational landscape, it simultaneously enhances the study's depth and relevance to the identified context. Acknowledging this specific scope is not a limitation but a strategic choice, ensuring that the research outcomes are rooted in the reality of low-decile Limpopo schools, thereby contributing to more targeted and impactful interventions in similar global settings.

The theoretical perspective below provides the perspective through which the researcher interpreted the experiences and approaches of the school leaders in the study.

THEORETICAL PERSPECTIVE

A Head, Heart, and Hands (HHH) perspective on transformational learning was used in this study as the theoretical lens through which the results were analysed. In this study, leaders were approached about the challenges they experienced and the innovations they implemented to guarantee that learning continued throughout the COVID-19 pandemic. This article explores the experiences of transformational leaders practising SEL in a time of crisis. SEL is the development of mindfulness, self-mastery and the skills to communicate and build relationships with others that are essential to being successful academically as well as in everyday life (Page, 2019). There are many references to SEL, such as 21st-century skills, managing emotions, thinking critically and managing relationships, just to name a few (Jones & Doolittle, 2017).

As part of this holistic approach to understanding the experiences of transformational leaders practising SEL in a time of crisis, the intellectual (head), emotional (heart) and practical aspects (hands) are involved. In this model, mindfulness, belonging, and deep engagement are essential for transformation to occur. The HHH model was needed so that school leaders and teachers could recognise the importance of ensuring that children have access to good education (Singleton, 2015). The HHH transformational model was used as the theoretical frame for this study to uncover and analyse the leadership skills required during times of crisis as well as how efficient leadership prepares for pandemics and other disasters. This model illustrates the holistic nature of transformational experience as it links critical reflection (head), relationship (heart) and engagement (hands) to the learning environment (hands). Figure 1 illustrates the HHH Transformational Model in more detail.

Figure 1:
The HHH Transformational Model (The Head, Heart and Hands Concept Model 2021)

The most important queries stakeholders may have about the strategic transformation process are answered by this model. What are the problems, what needs to change, who is responsible for the change, and how will it be accomplished? As a result, teachers and leaders could gain a deeper understanding of problems and get staff and learners on board with a solution. All stakeholders are encouraged to work towards a common objective by balancing their heads, hearts and hands (The Head, Heart and Hands Concept Model, 2021). This model illustrates the holistic nature of transformational experience as it links critical reflection (head), relationship (heart) and engagement (hands) to the learning environment (hands). Furthermore, incorporating SEL principles into leadership practices not only sheds light on the experiences of school leaders but also emphasises the transformative capacity of SEL in moulding educational environments, as elucidated in the literature review.

LITERATURE REVIEW

The literature review delves deeper into existing scholarly literature and theoretical frameworks related to the role of principals in educational change. It draws on various sources such as the HHH theoretical framework, scholarly articles on leadership in education and studies on the psychological state of teachers during the pandemic.

Transformational leadership as a social-emotional learning leadership approach

The leadership style of principals has a significant impact on the professional well-being of teachers, as the literature indicates that principals' leadership styles impact the professional well-being of teachers. In addition, teachers' well-being has a significant effect on learners' performance. As a result, it is crucial to explore leadership styles and how principals can inspire SEL that will positively impact teachers' well-being and enhance students' performance (Kok, 2018). Principals must be leaders not only in their schools but also in their communities and learning should be encouraged outside of the classroom. Since the role of educational leadership in school performance is seen as one of the most significant factors in enhancing effectiveness in the classroom, good leadership promotes a school's learning culture (Cambridge International Examinations, 2015).

Leaders of learning are likely to consider, study and implement the HHH transformational model as they reflect on the experiences and events of 2020 following the pandemic that is expected to continue into the near future. This article highlights the importance of transformational leadership competencies to be considered for the HHH model described by Anderman and Anderman (2020) since these competencies influence leadership approaches to managing a crisis. Effective leadership is crucial to the maintenance and growth of organisations in extraordinary times. School leaders must be capable of transformational leadership for such leadership to be recognised. Transformational leadership is defined as a situation in

which the management and employees empower and influence each other's behaviour to achieve a common goal (Louw, Muriithi & Radloff, 2018). Efforts by transformational leaders have been shown to generate positive outcomes for the organisation by engaging their workers to support active behaviours (Lai, Tang & Lu, 2020). The language used by Freire challenges us to think about leadership in urban settings in 'terms of love, humility, faith and hope' (Miller, Brown & Hopson, 2016: 1078). Employees under transformational leadership have a higher positive effect on external job satisfaction, according to a study conducted by Lan et al. (2019). The outcome of this study highlights the importance of transformational leadership in improving employees' job atmosphere and as a result, making them more competitive in the education industry. Furthermore, according to the research of Baker (2019), transformational leadership promotes interconnectedness, empathy and engagement. In this sense, school leaders must ensure that transformational leadership is used continuously during and beyond COVID-19 to stay current with changes that will have a long-term influence on our world. In the findings of a research study on the effect of readiness to change and the importance of transformational leadership on employees' performance during the COVID-19 pandemic, it was concluded that transformational leadership has a positive and significant influence on employees' change readiness, pioneering the chance to advance employee readiness in facing the emergence of the industrial era (Zaman et al., 2020).

Transformational leadership's effectiveness in maintaining and sustaining a positive culture of social-emotional learning

Learners must acquire social and emotional skills to form meaningful relationships, make sound decisions, communicate effectively and participate constructively in society. Teachers and school leaders must grasp that the development of resilient, productive and responsible citizens is about much more than academic accomplishment (Millard & McIntosh, 2020). To encourage social-emotional development in the classroom, school leaders must uphold high ethical standards for themselves, learners, teachers and parents. As a result, more meaningful interactions with staff members are likely to form, leading to enhanced SEL practices and outcomes (Bowers, Lemberger-Truelove & Brigman, 2018). Personal change, self-care and self-empowerment are the prerequisites for many changes. If school leaders wish to establish trust and empathy with their personnel, they should examine their communication and decision-making processes (Issah, 2018). According to a study by Sezer and Uzun (2020), SEL leadership behaviours have a favourable impact on teachers' organisational commitment and performance outcomes. It applied to my study since trust and transformation are crucial components of a successful learning environment. Principals can have a strong influence on their school's learning culture by implementing practices that encourage cooperation and transformation as well as adapting leadership styles that foster an environment of care, compassion and emotional attachment (Dinsdale, 2017).

During and after COVID-19, school leaders should widen their professional development horizons. Self-examination in terms of evaluating stress management practices and improving leadership in terms of how they can improve employees' motivation and job satisfaction should all be part of a school principal's leadership development. The role they play can create safe learning environments and encourage cooperative teaching to prepare learners with the skills they need to succeed academically and emotionally (Costa & Ostariz, 2019). Despite the numerous and unmapped challenges presented by the COVID-19 pandemic, this unprecedented period also offers numerous opportunities for transformation to take place from principals which include reviewing, re-evaluating and strengthening their technology integration (head); reflecting on their upward approaches and creating opportunities for social connectedness within and between teachers (heart); and connecting and creating stronger ecosystems of support and partnership with wider institutions (hands) (Bagwell, 2020).

METHODOLOGY

The tools used to conduct research are highlighted in the research design. This study was a qualitative case study that investigated the phenomena of crisis-driven school leadership (in this case the COVID-19 pandemic). Qualitative research is based on the perspectives of the study participants rather than the path in which the literature directs the researcher (Creswell, 2012). This research design allowed for a more in-depth examination of the phenomenon. Phenomenology examines the experience itself as well as how living through that experience or situation affects and changes one's knowledge (Merriam & Tisdell, 2015). Participants in phenomenological research encounter experiences and events differently depending on their perspectives and assumptions (Ary, Jacobs & Sorensen, 2010).

A paradigm is a collection of beliefs, viewpoints or ways of thinking that determine how evidence is interpreted and examined during a research investigation (Kivunja & Kuyini, 2017). The research paradigm is a conceptual lens that unpacks the methodology of the research being conducted. It also directs how the information will be assessed and presented in the conclusions (Kivunja & Kuyini, 2017). This study employed an interpretivist paradigm (Merriam & Tisdell, 2015) which allowed participants to construct meaning from the event through communication between the researcher and the participants (Creswell, 2012). Interpretivism and qualitative research are inextricably linked since one is a methodological approach and the other is a technique for gathering data. Rather than relying on numbers or statistics, researchers that use the interpretivist paradigm and qualitative methodologies frequently seek out individual experiences, understandings and perceptions for their research to discover reality (Thanh & Thanh, 2015).

Purposeful sampling was used to choose the principals for this investigation. This method of sampling was chosen to provide the researcher with access to as many different types of participants as possible, allowing them to gain as much information and insight as feasible (Merriam & Tisdell, 2015). School leaders from poor schools in Limpopo, South Africa were approached as part of this investigation to see how they led their schools and staff members during a time of crisis - COVID-19. For the study, two principals participated in a three-hour online Zoom workshop demonstrating SEL approaches to leadership during COVID-19. Due to time and resource constraints, only two out of a potential four participants were able to participate in the study. The decision to have a sample size of only two participants was made after thoughtful consideration of the research question, methodology and available resources, ensuring that the study remains both feasible and meaningful.

To gather data for the study, participants used visual participatory research instruments (metaphor drawing and photovoice pieces) as part of the workshops. To collect data for this study, the workshops were recorded, and the visual artefacts and discussions were analysed. With a small group of participants, the researcher formed stronger, closer bonds with them which resulted in more natural conversations and better data.

The phenomenological study explored the experiences of school leaders in low-decile schools in Limpopo, South Africa and how they led their schools during and after the global pandemic underpinned by the HHH transformational model. Participant 1 had been the deputy principal at School A for more than 10 years. Participant 2 had been the principal at School B for 33 years. Both participants were female school leaders at low-decile primary schools in Limpopo, South Africa.

Data were collected via a three-hour workshop with the respective staff members, online via Zoom. The workshop included the following activities:

- Welcome and introduction done by the researcher
- Discussion of leader experiences during COVID-19 conducted by the participants
- Metaphor drawings completed by the participants

- Individual discussions of drawings to explore the school leaders' SEL approach to leadership by the participants, researcher and professor who was present in the workshop
- Group consensus from drawing discussions conducted by the participants in collaboration with the researcher and professor present
- Explanation of the photovoice activity required to be submitted to the researcher by a given deadline.

The workshop included open-ended questions as well as the use of metaphor drawings and photovoice activities to gain specific information from each participant's unique perspective and experience (Merriam & Tisdell, 2015). Participants were asked to explain how they viewed and implemented an SEL approach to leadership in their respective schools. Experiences were shared in the discussions about how each participant guided their schools during the COVID-19 pandemic. The school leaders also elaborated on the previous versus the current culture of learning at their schools, their staff members' well-being, and the challenges they were facing in the mammoth task of leading in a crisis.

Photovoice is a participatory research approach that allows participants to describe their environments and practices with a collection of photos or videos. There was a discussion and interpretation of the results to establish an understanding, create awareness and stimulate community change (Hannes & Wang, 2020). Participants were asked to take photographs that had literal and symbolic meanings which represented their individual experiences with SEL approaches from a HHH transformational perspective. Participants took photos of things that resonated with their leadership methods. The participants then provided feedback on their perspectives and narratives.

This study involved multiple forms of data collection. This practice is known as triangulation and increases the reliability of conclusions drawn by the researcher (Portney & Watkins, 2015).–This study employed multiple methods to ensure triangulation which increases the reliability of the conclusions drawn by the researcher. The methods used for triangulation in this study included:

- Metaphor drawings: Participants in the study created metaphor drawings to represent their perspectives and experiences with SEL approaches. These drawings provided one set of data for the study.
- Photovoice activities: Participants were asked to take photographs that had literal and symbolic meanings related to their leadership methods and experiences with SEL approaches. These photographs served as another source of data for the study.
- Online Zoom workshop: The workshop included open-ended questions and discussions with the participants about their views and implementation of SEL approaches in their schools during the COVID-19 pandemic. The verbal feedback and voice notes provided during the workshop acted as important sources of data.
- Transcripts of discussions: The recorded discussions from the online workshop were transcribed and analysed to identify themes and sub-themes related to the experiences of transformational leaders practising SEL in a time of crisis.

By using these different methods of data collection, the study aimed to reduce bias and increase the reliability of the findings.

DATA ANALYSIS

Different data sets were thematically analysed to obtain the themes in relation to the phenomenon – experiences of transformational leaders practising SEL in a time of crisis (Creswell, 2012). The study interpreted this knowledge using the HHH theoretical framework and scholarly literature to determine the role of the principals in this process. The transcripts of the discussions, metaphor drawings and

photovoice activities to formulate relevant codes and themes from the data pertaining to the topic were interpreted (Creswell, 2012).

The researcher evaluated the results by applying labels in the transcripts to identify themes as part of the coding procedure (Creswell, 2012). In addition, the researcher conducted the workshop from a neutral stance to gain information. The researcher made sure that the data decoding was done within the parameters of their intended function, which included understanding the participants' thoughts and protecting their identities as warranted (Sutton & Austin, 2015). Two main themes emerged after the data were analysed, namely (1) Collaborative school culture, and (2) Social and emotional development of staff and students during a crisis. These themes are discussed next.

DISCUSSION AND FINDINGS

The pandemic created significant disruptions to education, introducing a myriad of both logistical and emotional challenges that required urgent attention. The research findings highlight the importance of SEL strategies and the need for school leaders to understand and implement these for effective management during global crises. The research underscores the pivotal role of school leaders in driving change, managing crises and maintaining a culture of learning. The two main themes and insights derived from qualitative data analysis are discussed below.

Theme 1: Collaborative school culture

The data suggest that the leaders of Schools A and B had to apply transformational leadership principles to gain the commitment of their staff to such a degree that high levels of accomplishment could become a moral imperative. Both participants explained the importance of involving all stakeholders to understand the changes that the COVID-19 pandemic has brought to the schools.
Participant 1 stated the following:

> You know, putting all these changes in place is with the help of educators, the help of the SMT, the help of the department – everybody is putting a hand and that is why it is easier.

Photovoice Piece 1 'Sharing and Collaborating' – Participant 1

Sharing and Collaborating	
I attended training, where now I realised that you know, caring for an individual, collaboration, sharing ideas, togetherness; that is where you can do good. At School A, our teachers respond with being hands-on; they help whenever they can.	***Photograph and narrative by Participant 1***

Participant 2 in agreement with Participant 1 gave the following explanation in one of the photovoice pieces:

Photovoice Piece 1 'Collaboration' – Participant 2

Collaboration	
We hold an SMT meeting to learn some of the challenges we are going to face during the COVID-19 pandemic. Allocation of duties was done. We moved out from traditional timetable to rotational timetable. We attend a visual meeting to get the curriculum from the department. Teachers show relationship skills by working together as a team. Shared ideas among the SMT, teachers and learners.	 *Photograph and narrative by Participant 2*

The study revealed that a transformative leadership strategy should involve all stakeholders supporting SEL. The goals of leaders and followers should converge to the point where it is reasonable to expect a happy relationship and genuine convergence leading to agreed-upon solutions (Coll, 2018). The HHH framework highlights the holistic character of transformative experiences by integrating the intellectual (head) into deep thought, the emotion (heart) into factors in the development and the physical aspect (hands), to commitment to collaboration during challenging times (Singleton, 2015). The HHH model encapsulates the multi-faceted character of transformative processes as well as the relevance of the learning context. The environment of the educational setting provides a framework of real-world experience for deeper reflection, feelings of connectedness and stimulus control, all of which operate as motivators for the close connection and collaboration crucial for transformation, especially during and after something like a global pandemic (Quinlan, 2014). School leaders and teachers have a responsibility and an opportunity to broaden their understanding of transformational leadership to provide a more comprehensive view of the HHH Transformational Leadership Model.

During the COVID-19 crisis, transformational leadership became the general reaction, necessitating more educational leaders and managers to engage, communicate, discuss and navigate their way through the difficulties (Harris, Azorin & Jones, 2021). Effective school leadership is nowadays interconnected, cooperative, creative and adaptable by demand rather than by planning. Transformational leadership has respective underlying value-based styles of guidance. This leadership style has a noteworthy existing value system and when implemented correctly, it can increase team effectiveness and promote good governance.

Social support and interaction are included as important elements of a positive organisational culture that leads to improved organisational readiness for change – meaning that positive influences can facilitate an environment more encouraging to individual willingness and openness for an organisation's change involvement and supportiveness (Madsen, Miller & John, 2015). Key people's readiness for change (such as the school's management team) will act as a mediator in the relationship between employees' perceptions of cultural orientation and their subsequent implementation of the new standard operating procedures.

Both participants agreed that at the beginning of the pandemic, they did not know much about the outbreak, stigmatisation and all the new protocols required. The sub-theme of creating a supportive and effective culture of learning was therefore divided into two separate points of discussion. Firstly, school leaders had to identify the need for professional experts to educate them as well as their teachers and learners about the Coronavirus itself.

Social-emotional learning (SEL) is demonstrably important in academic achievement in schools, universities, employment and beyond, according to research. A growing number of schools and districts around the world appreciate the significance of SEL, but many are unsure where it belongs – whether as an intervention programme or as a supplement to already overburdened academic content. Hood (2020) argues that the difference with SEL is that most professionals have not taken emotional intelligence classes or participated in programmes designed to improve their social-emotional skills. This creates a divide and makes implementation much more difficult, as many teachers and leaders are not confident in their own ability to represent, promote and present the information to others. If schools and districts are serious about putting SEL first in the classroom, they will have to figure out how to put it first in staff meetings, SMT meetings and throughout the organisation. Adults, such as school leaders are the first to benefit from SEL. This is not something we simply hand out to students. Furthermore, the school principals had to find out how to avoid stigmatisation and build supportive relationships with each other. The following photovoice segment and metaphorical drawing depict the assistance and contributions that schools used.

Photovoice Piece 2 'Getting professional support and guidance' – Participant 1

Getting Professional Support and Guidance	
We also invited psychologists who can help with the educators. The psychologists were the ones sitting there talking to the educators, to make them aware you know, mentally because they were affected mentally and emotionally. This just helped to bring them back to the school environment. To say you're one of us, you belong somewhere, don't feel alone. The psychologists spoke to all teachers and then the stigma was removed.	 ***Photograph and narrative by Participant 1***

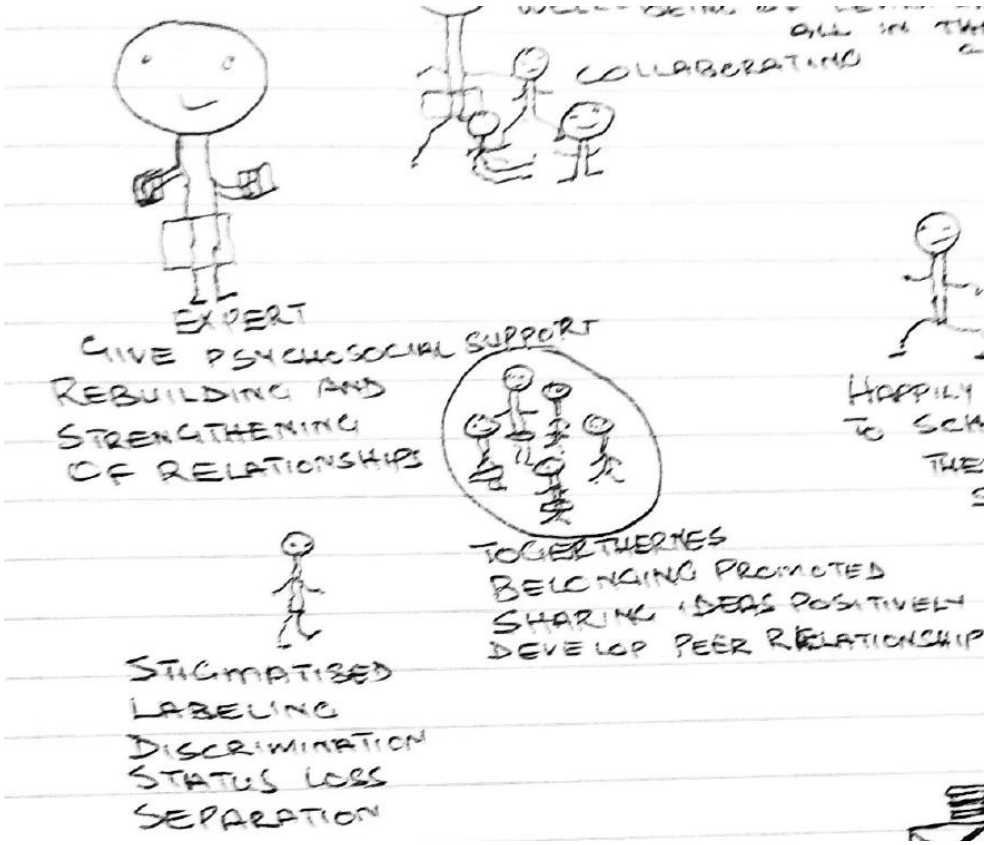
Participant 2 corroborated the importance of ongoing professional support and training regarding COVID-19 protocols for people to understand and implement the rules (workshop lines 233 – 236):

> People are still holding on to the old mentality to say even go to, you know, a field where somebody passed on due to COVID, then you'll also get sick. But now we got PPE, sanitisers, and protocols to protect us. They give us an idea that you know, you must not run away.

Participant 1 passionately reiterated collaboration:

> It is important to share one mind; one goal – it makes it easier for people when we spread the same vision to everyone. I think if these experts can do more talks, the community and South Africa will be a better place for everyone. For example, the community is so afraid that they can't even come to the funeral because they think they'll get sick you know. I think it is important for the information to be spread to all the people around us. I think then we will be able to do a lot to minimise the stigma and stuff.

Participant 1: Metaphor Drawing: 'Expert help'



Secondly, the findings of the study also revealed that school leaders had to familiarise themselves with all standard operating procedures which led them to realise that they must be extra strict with discipline and supervision as necessary steps to mitigate any harmful factors. Wangaard, Elias and Fink (2014) state that we must acknowledge more than just the head component of the academic offering to meet the demands placed on the educational system. According to their research, the heart and head elements must be included to achieve the best educational practices. Within these networks, school leaders must empower communities to form relationships with one another (heart) and to develop a high standard of behavioural competence (hand). The holistic education of learners' heads, hearts and hands, it is concluded, would result in genuine preparation for school and life success. The lack of including SEL pre-COVID was exposed in this study. The participants, however, acknowledged that they found the means to support their staff and offer them the required training, as highlighted previously. The most responsible approach to accomplish substantial results is a strategic approach to execute the intended goals of moral education, SEL and holistic development by engaging the HHH of our teachers and learners (Shaikh & Lachman, 2021), which leads to transformation. The next theme involves an exploration of strategies and initiatives aimed at fostering the emotional intelligence, interpersonal skills and overall well-being of both educators and learners within an educational setting. This foundational approach recognises the critical role that social and emotional competencies play in creating a positive and conducive learning environment.

Theme 2: Social and emotional development of staff and students during a crisis

The findings of the study revealed that a crisis provides an opportunity for school leaders to reflect and learn to create something better within a school or organisation going forward. Effective learning can only take place in a safe environment (Joubert, 2017). For this reason, safety orientation was a priority

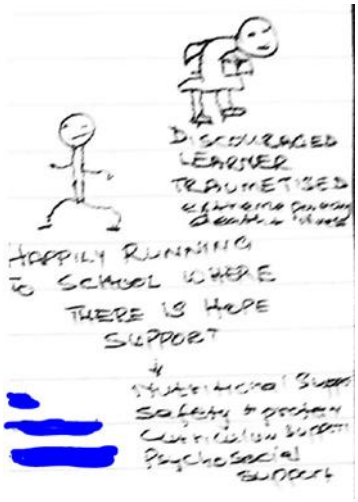
at schools. Participants responded with a variety of rules and protocols they have at their schools to create as safe an environment as possible.
Schools in Limpopo, South Africa needed to build learning structures that would pay special attention to social and emotional components, in addition to obtaining expert guidance and assistance in terms of personal protective equipment and COVID-19 standard operating procedures (Magampa et al., 2018). It is critical to consider the reality of unequal opportunities which was highlighted in the government's measures in South Africa (conducting classes via online platforms; radio and television not being accessible to all learners across the country); these inequalities should aid in re-evaluating how crisis education preparation can be inclusive across all provinces and socio-economic backgrounds (Kamga, 2020).

Participants agreed that being isolated with restricted resources, along with the fear of developing COVID-19, negatively affected learners and teachers mentally.

In Figure 1, Participant 1 explained (workshop lines 112–127):

> There comes a learner who is very much discouraged. The learner was traumatised. The learner comes from extreme poverty and illnesses that the learners need to be attended to. By the leadership at school, educators and everybody here – they must empathise with him. You'll see, he is running happily to school where is support and nutritional support. He runs to a place where safety is seen as protection given in curriculum support and psychosocial support. The child will be happy to be away from home where there is no hope. A parent might have died or have the illness, or they know someone who is very ill due to the coronavirus. But the child will need to go to a place where there are people who can sympathise. To hold their hand and give him support. And then that child who is never interested in schoolwork; now know that to remain or stay at home is not effective; because he knows that he suffered but that he can get help from the school he is attending. In School A, we practice togetherness.

Figure 1:
Metaphor Drawing: 'Discouraged learner getting support results in a happy and motivated learner' – Participant 1

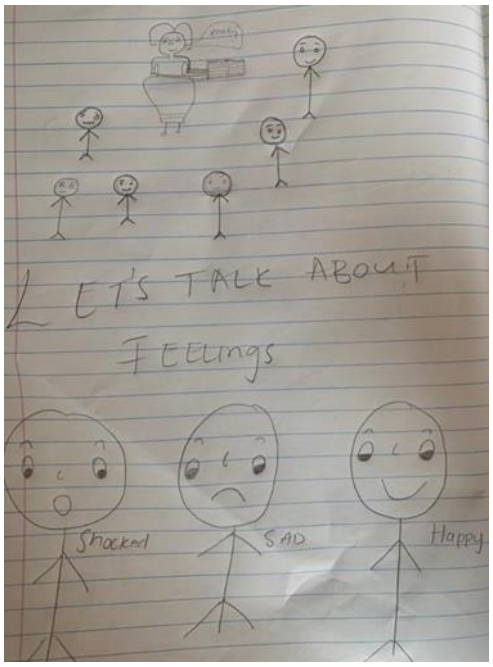


In agreement with Participant 1, Participant 2 confirmed that emotional learning is very important. She elaborated on her metaphor drawing (Figure 2) in workshop lines 345–354:

> The first one you see is learners with me. As a leader, I'm conducting research based on the challenges we are in contact with during this difficult time. As per the picture, learners are sharing

their views on how COVID-19 has impacted them emotionally. Due to COVID-19, some learners were able to build positive relationships such as working in teams and dealing with conflict effectively. Even the educators are showing understanding and empathy to each other as each, and understand every learner has their challenges and emotions. As per the picture, a discussion was made regarding this decision-making. Stories were shared among these learners. Problems were identified and is part of emotional learning.

Figure 2:
Metaphor Drawing: 'Let's talk about feelings' – Participant 2



Specifically, the pandemic's ambiguity and imperceptibility generated an adverse reaction among both learners and teachers. The South African government, therefore, needs to act rapidly to make online learning a reality for future crises, particularly for rural learners who would require assistance in accessing and benefiting from this relatively new learning experience. Schools and colleges should also be given resources so that they may design SEL programmes that are motivated by context-specific needs (Landa, Zhou & Marongwe, 2021) which would result in transformed organisations. While this study aims to contribute valuable insights to the field, it is essential to recognise and address certain limitations inherent in the research design. Both researchers and readers need to be aware of the constraints discussed next as they shape the boundaries within which the study's conclusions can be applied and interpreted.

LIMITATIONS OF THE STUDY

The participants were working unprecedented hours to facilitate learning during the pandemic, and they were not available during the academic school term to participate in the online Zoom workshop. The workshop session then had to be scheduled during the school holiday, which resulted in the original planning of having two respective workshops combined into only one session. Consequently, the participants were asked to complete the photovoice activity by a certain deadline. They were asked to submit their photos and voice notes to explain the meaning of each photo. One of the participants was overwhelmed with commitments and often had a delayed response time regarding her photovoice pieces because of unplanned power outages. In South Africa, when a power station is unable to meet the demand for electricity, certain parts of the grid experience power cuts as a protective measure for power-generating assets, a practice known as loadshedding. The heightened frequency of loadshedding

sessions in South Africa posed resource and time constraints and contributed to limited contact opportunities with the participants. The COVID-19 pandemic is not over (during the time of writing this paper); therefore, the full social and emotional effects on learners, teachers and school leaders cannot be fully comprehended or quantified yet. A phenomenon such as post-traumatic stress disorder can only be studied when the pandemic has passed and school leaders who are living through this crisis have passed through all the changes resulting from the effects of the pandemic. The study focused on low-decile primary schools in Limpopo Province, South Africa and the findings are limited to these schools.

RECOMMENDATIONS

While schools have various policies in place, such as health and safety, curriculum aspects and human resources, among others, the principals in these low-decile primary schools in Limpopo, South Africa were not fully aware of what an SEL policy requires in terms of a transformational approach when leading during a changing world, such as was the case with COVID-19. This led to the following two recommendations.

Recommendation 1

The Limpopo Province Department of Education policies for teacher training should include guidelines on counselling and psychosocial difficulties. Schools in Limpopo, South Africa should also develop and implement learning systems that promote social and emotional development. In addition, principals should get additional training on the skills teachers need to regulate their own emotions and effectively deal with the stress that will come with their responsibilities. The Limpopo Province Department of Education should include counselling in their teacher training programme and an example is the healing circles which can be implemented at school, circuit and district levels.

Recommendation 2

Principals should be allowed to undergo SEL training as a leadership approach and this should become a requirement for all school principals. This blueprint of crisis management from an SEL perspective will assist school leaders with their preparedness during a crisis, as they will have the skills to manage and communicate in extreme circumstances. The training can be provided by professional experts, such as trauma counsellors, psychologists and social workers. Training can be done at the school management level as well as with teachers and learners. This could lead to school leaders and teachers who will be better equipped with resilience and transformational skills to manage trauma and crises better.

SUGGESTIONS: AREAS FOR FURTHER RESEARCH

Some potential avenues for future research on SEL leadership during crises could include:

- Examining the long-term effects of SEL leadership during crises: Research could investigate the lasting impact of SEL approaches on the mental health and well-being of learners, staff and school leaders even after a crisis has passed.
- Exploring the evolution of SEL frameworks post-crisis: Research could explore how SEL approaches may need to be adapted or modified considering the lessons learnt during a crisis. This could involve examining whether the same theoretical frameworks and strategies are still applicable or if new approaches are needed.
- Developing an SEL blueprint for future crises: Research could focus on creating a comprehensive SEL blueprint that can serve as a reference for school leaders in managing and leading during future crises. This blueprint could apply to both private and public institutions and guide effective SEL strategies and interventions.

- Exploring contrasting views and challenges experienced by school leaders during the implementation of SEL strategies during and after a crisis period.

CONTRIBUTION OF THE STUDY TO THE DEVELOPMENT OF THEORY AND PRACTICE

This study contributes to the development of theory and practice in the field of SEL leadership during crises in several ways:

- The study highlights the importance of SEL approaches in leadership during a crisis such as the COVID-19 pandemic. It emphasises the need for leaders to be compassionate, communicative and empathic in building relationships with learners and participating in ongoing training on SEL and staff well-being.
- The study introduces the HHH Transformational Leadership Model as a theoretical framework for understanding and implementing SEL approaches during crises. This model emphasises mindfulness, belonging and deep engagement as essential elements for transformation to occur.
- The study provides insights into the challenges faced by school leaders during the COVID-19 pandemic and the innovative solutions they implemented to ensure that learning continued. It highlights the role of SEL in supporting and sustaining a supportive and effective culture of learning during crises.
- The study offers recommendations for policy and practice, such as including guidelines on counselling and psychosocial difficulties in teacher training programmes, implementing learning systems that promote social and emotional development and providing SEL training for school principals.
- Overall, this study contributes to the understanding of how SEL leadership can positively impact the learning culture during crises and provides practical recommendations for implementing SEL approaches in educational settings.

CONCLUSION

The purpose of this study was to highlight some of the challenges faced and solutions implemented by school leaders as they led their institutions through the COVID-19 pandemic. In the role of leading schools during a crisis, school leaders were prompted to start looking at their policies and to make amendments to opportunities for management, teachers and learners to learn more about SEL. When acquiring social-emotional skills, it was evident that leaders were more equipped and empowered to manage and sustain a supportive and effective culture of learning. It is hoped that this study has highlighted some of the challenges that school leaders encountered and the solutions they realised in response to these challenges while leading with their hearts, heads and hands in rural primary schools during the COVID-19 pandemic. Collaboration among educators, the school management team and the education department were crucial in implementing the necessary changes. The study highlighted the importance of creating a supportive and empowering environment for teachers and staff. This included providing resources, training and emotional support to navigate the challenges of the pandemic. Effective communication and clear guidance from school leaders were also essential in ensuring a smooth transition and maintaining a sense of purpose and motivation among the staff.

The implications of these findings suggest that during times of crisis, such as the COVID-19 pandemic, school leaders need to adopt a transformational leadership approach and prioritise collaboration and support. By involving all stakeholders and creating a conducive environment, leaders can effectively navigate challenges and ensure the well-being and success of their schools.

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Lecturers' stories of teaching: understanding hidden curriculum enactment in a private higher education institution[1]

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ABSTRACT

The hidden curriculum is embedded in all levels of education, and an integral part of higher education. However, the hidden curriculum remains a challenging concept to understand and define. The focus of this study was to gain insight into the lecturer dimension of the hidden curriculum, as research on the lecturer dimension of the hidden curriculum is limited, even more so in private higher education. A narrative approach was adopted and provided valuable stories and reflections from lecturers regarding the main areas that they enact the hidden curriculum in their classroom (developing graduate competencies, supplementing the formal curriculum, enhancing the student learning experience), the importance of lecturer reflection, and the relevance of the private nature of the higher education institutions. This study contributes to a more holistic understanding of the enactment of the hidden curriculum by lecturers in private higher education, and what lecturers experience the hidden curriculum to be.

Keywords: hidden curriculum, teaching, narrative study, graduate competencies, private higher education

INTRODUCTION

> *The hidden curriculum is that set of implicit messages relating to knowledge, values, norms of behaviour and attitudes that students experience in and through educational processes. These messages may be contradictory, non-linear, and punctuational and each student mediates the message in her/his own way* (Skelton, 1997:188).

The hidden curriculum has proven to be subjective and situational (Martin, 1976; Oztok, 2013 making it a highly flexible system. The meaning of the hidden curriculum can differ, depending on the institution and the kind of students it serves (Margolis, 2001; Thielsch, 2017). The hidden curriculum is referred to per institution seeing as that institutions function in a specific place and time, and within a specific setting (Kujawska-Lis & Lis-Kujawski, 2005). It follows that the structure and institutional goals of a private higher education institution might differ from those of public institutions (where the majority of published studies on the hidden curriculum are situated). There is currently limited literature on the hidden curriculum in specifically private higher education institutions (Kujawska-Lis & Lis-Kujawski, 2005).

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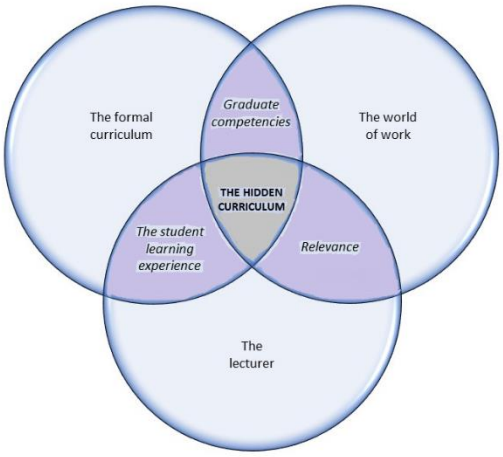
Lecturers play a crucial role in the manifestation of the hidden curriculum (Peters, 1966; Knowles, 1973; Bitzer & Botha, 2011; Tyson, 2014; Li, 2019). Yet current literature focuses more on the student experience of the hidden curriculum (Ahola, 2000; Pitts, 2003; Lempp & Seale, 2004; Blasco, 2012; Winter & Cotton, 2012; Çengel & Türkoğlu, 2016; Koutsouris, Mountford-Zimdars & Dingwall, 2021), even though the teaching element represents a crucial dimension of the hidden curriculum. Furthermore, many lecturers are not aware that the hidden curriculum exists, and the potential it can therefore bring to the classroom (Pitts, 2003; Bitzer & Botha, 2011; Orón Semper & Blasco, 2018). Lecturers' storied experiences of teaching in a private higher education institution formed the unit of analysis in this study. Allowing lecturers to reflect on their teaching through storytelling enabled a consideration as to how the hidden curriculum manifested in their teaching. The question that guided the study is: How do lecturers' stories of teaching deepen our understanding of the hidden curriculum in a private higher education institution?

Conceptual background

A conceptual framework of the hidden curriculum in private higher education was developed (see Rossouw & Frick, 2023) and adopted for this study (refer to figure 1 below).

Figure 1:
A conceptual framework of the hidden curriculum (Rossouw & Frick, 2023)



As can be seen from figure 1, the *hidden curriculum* is an irreplaceable element in the enactment of the curriculum, and a valuable resource in teaching and learning. The lecturer forms an integral part of the enactment of the curriculum. Furthermore, the world of work requires students to learn relevant skills and competencies. These skills and competencies can be demonstrated and incorporated into the classroom through hidden curriculum teaching. This illustrates the need to place the hidden curriculum in greater focus in higher education and make the hidden curriculum more explicit within higher education so that the hidden curriculum can be used more deliberately and effectively. Outward of the *hidden curriculum*, the shape that is formed between *graduate competencies*, *relevance*, and *the student learning experience* make up the student or student development in higher education. The *formal curriculum* refers to skills and knowledge that students should attain. These skills and knowledge should aid in the holistic development of students, be relevant, and foster lifelong learning. *The world of work* is a valuable tool in ascertaining the skills and knowledge that are crucial graduate competencies that students need to successfully enter the workplace. The world of work influences the relevance and responsiveness of the curriculum. There is an identified gap between the world of work and the curriculum, and the hidden curriculum can be used to bridge that gap. *The lecturer* demonstrates the important role that the lecturer

plays, over and above that of the formal curriculum. Lecturers with industry experience are able to identify, demonstrate and teach relevant skills to students through the hidden curriculum. The lecturer forms a central part of the social relationships in the classroom, the 'the principle of experience' and overall student development. Lecturers are valuable agents in the teaching of relevant competencies that students require to be professionally and personally fulfilled (Rossouw & Frick, 2023).

The framework (figure 1) illustrates the dynamic, relational and reciprocal nature of the hidden curriculum. The framework furthermore pointed out that the hidden curriculum is situational and subjective (Martin, 1976; Oztok, 2013), confirming the need to conduct empirical research in a specific contextual setting (a private higher education institution in this study).

Lecturer conduct is one of the key factors that determine the hidden curriculum (Peters, 1966; Knowles, 1973; Bitzer & Botha, 2011; Li, 2019). 'It is the teacher who teaches, not the official documents' (Orón Semper & Blasco, 2018: 490). The hidden curriculum contributes to a holistic learning experience, and it is confirmed to be a concept that is *taught* by the lecturer (Tyson, 2014; Li, 2019; Rossouw & Frick, 2023). Making it explicit through the mission and vision statement of the institution is not enough (Orón Semper & Blasco, 2018). Margolis (2001) and Yüksel (2005) confirm the importance of lecturers as a factor of the hidden curriculum, and this supports the value that lecturer input on the hidden curriculum experience can make.

Furthermore, necessary preparation for the world of work is demonstrated as an outcome of the lecturer enactment of the hidden curriculum (Rossouw & Frick, 2023). James (2018), although writing from the school perspective, provides valuable insight into the *teaching* of the hidden curriculum and that it is essential in developing the necessary graduate competencies. Employers require soft skills such as grit, resilience, self-mastery, communication, and emotional intelligence. Teaching social, emotional, and behavioural skills through the hidden curriculum (Margolis, 2001) can provide students with the competencies that they need to be professionally (and personally) fulfilled in the future (James, 2018).

Smith-Han (2013) illustrates how the hidden curriculum can be uncovered and be made more explicit to the lecturer. Reflection allows lecturers to think about what they are communicating to their students about their values and beliefs about their research, subject, students, and teaching (Kane, Sandretto & Heath, 2004; Smith-Han, 2013; Thielsch, 2017). Ahola (2000) provides some feedback from students on lessons learnt from their lecturers. Students mention (hidden curriculum) skills such as curiosity, willingness to learn, critical thinking, self-control, perseverance, time management, and the ability to tolerate stress. These skills still form part of crucial graduate competencies in more recent times (Gray, 2016; James, 2018), and demonstrates the importance of the lecturer dimension of the hidden curriculum.

METHODOLOGY

Skelton's (1997) definition of the hidden curriculum guides towards a personal research approach, acquiring insight into 'messages' that are conveyed in the classroom. A narrative inquiry was therefore appropriate in creating an understanding of lecturers' experiences of the hidden curriculum (Clandinin, Caine, Murphy & Steeves, 2015; O' Grady, Clandinin & O' Toole, 2018), as the literature reviewed earlier illustrated, lecturer reflection can contribute to an increased understanding of the hidden (Smith-Han, 2013). Increased understanding of the hidden curriculum can furthermore assist in it being utilised more deliberately and effectively in higher education.

Dewey's principle of experience (1938) (that underpins the concept of the hidden curriculum) is central to narrative inquiries as it allows for a three-dimensional narrative inquiry space (Clandinin, 2006; Clandinin et al., 2015) because it can use narratives to conceptualise experience. Clandinin and Huber (2010) describe 'stories' as a portal through which a person enters the world, and by which their experience of the world is interpreted and made meaningful. Narrative inquiry offers reflective, creative,

and emancipatory possibilities within educational settings and therefore allowed participants to freely share their understanding and experiences (O'Grady et al., 2018).

Ten lecturers[2] shared their stories and reflected (often for the first time) about their hidden curriculum teaching. An overview was sent to each participant prior to the interview that outlined what they would be asked to share/reflect on. The aim of the open-ended interviews was to give a voice to the participants and allow them to share their experiences rather than just answering questions.[3] The notion of a narrative study is that knowledge originates from the participants' true life subjective experiences (as discussed above), and this is what gives it authenticity, depth and value. The conceptual framework of the hidden curriculum (Rossouw & Frick, 2023) (as discussed above) and the research question guided this narrative study (Creswell, 2007), which framed the process of re-storying and links amongst ideas mentioned by the participants.

The interviews were analysed to make meaning of the stories through narrative analysis to look for themes that emerged (Creswell, 2007; Fouché, Strydom & Roestenburg, 2021). Transcriptions were read, re-read and then handwritten mind maps were drawn up to make sense of the data. Certain key ideas mentioned by participants were summarised, and it was realised that there were distinct overlaps between participants' narratives, from where other mind maps were drawn – one for significant quotes/ideas from participants that illustrated their experiences, and another where main themes emerging from the narratives were presented. This process was refined until four main themes were identified (connected by certain key ideas/experiences from participants). The four themes were later reduced to three themes, to make the findings more presentable and to align with literature. The transcripts were utilised throughout typing up the data analysis, to ensure the focus was kept on the participants' views and experiences, and to never lose sight that *their* voices should be heard in the results of the study (Maree et al, 2016).

RESULTS AND DISCUSSION

The 10 participants'[4] experience of lecturing in private higher education ranged between six and 20 years, with four having lectured at public higher education institutions as well. Nine of the participants had worked in a professional environment before becoming a lecturer in their area of expertise. The participant group was made up of five males and five females ranging between 40 and 70 years of age. They taught in various modules in the fields of Education, English and Communication, Research Theory, and Economic and Management disciplines.

The process of data analysis by listening, re-listening, and mind mapping the participants' stories indicated three main themes regarding the manifestation of the hidden curriculum as discussed below.[5] In addition to the three themes (the development of graduate competencies to prepare students for the world of work; the hidden curriculum supplements the formal curriculum; the student learning experience (academic skills and holistic development), a further three aspects emerged from data analysis that are worth discussing. Firstly, the value of the storytelling process became evident in that it allowed lecturers to reflect on (and realise) what they have been doing in the classroom which underlines the benefit of

[2] Lecturers had to have at least five years of teaching experience in private higher education to partake in the study. They were purposively sampled. All 10 participants signed consent forms. Institutional permission was granted by the institution within which the study took place. Ethical clearance was obtained from the institution where the study originated.

[3] The concept of 'hidden curriculum' was not referred to during the interview, as the aim was not to test the participants' understanding of the concept, but rather their enactment of it.

[4] Pseudonyms were given to participants to protect their identity, and to enhance the personal nature of their experiences.

[5] The themes are discussed separately but during the analysis process, it was realised they do not stand in isolation from one another.

lecturer reflection (Kane et al., 2004). Secondly, the private nature of the higher education institution proved to be a relevant factor, aligning with earlier discussions on the differing institutional goals of private higher education (Kujawska-Lis & Lis-Kujawski, 2005).

Lastly, it is relevant to note that there were no references made to specific modules during the interviews, however, all the participants referred to the modules that they lecture during the interview, to provide *'necessary background'* (David). During storytelling, there were universal hidden curriculum elements that were discussed by the participants, however, all the participants related skills and examples back to the specific modules they teach. Given that various modules proved relevant to consider confirms the literature regarding the diverse (and unique) skills that the hidden curriculum enabled within different areas of study in higher education (McCabe & Trevino, 1995; Lempp & Seale, 2004; Yüksel, 2005; Hafferty & Castellani, 2009; Blasco, 2012; Ssebunnya, 2013; Martimianakis et al., 2015).

Theme 1: The development of graduate competencies to prepare students for the world of work

The hidden curriculum is essential for the development of graduate competencies (Gray, 2016; James, 2018). The conceptual framework (Rossouw & Frick, 2023) also demonstrated the interplay between the hidden curriculum, the lecturer and the world of work. Nine participants referred to 'the post-university world' and preparing students for 'the world out there'. These nine participants either had current or previous experience working in industry. Brandon specifically mentioned that he tries to develop students who will be disciplined, hardworking employees or business owners,

> But I think the level of student that we try to cultivate, I would hope that they would leave university with a couple of life lessons that they have learnt. I think our role as lecturers to a point, is to navigate or help some students prepare themselves for the fact that it's hard out there…if you don't put the hard work into master your skills, just like we do with their modules, they're going to battle to develop any type of competitive edge in a very competitive world.

Hannah mentioned the importance of tact in the professional world, and through leading by example, she tries to instil a culture of accountability and responsibility in her classroom. These are skills that, according to Hannah, are important in the professional work environment. Penny referred to her industry experience quite often during the interview to draw on skills that she teaches her students:

> You know I worked in (industry) for many years, and I worked for a real monster and the one thing she taught me… that no matter what's happening around you, you know the show must go on, so just that type of resilience…at the end of the day in a work environment, nobody actually cares. You need to get the job done. You need to pass the exam, whether you like it or not.

The essence of the hidden curriculum, according to David, is *'moving beyond the theory',* into a state of *'thinking and being'*. Simon believes the hidden curriculum provides students with the tools to *remove blinkers*, *push boundaries* and *ask questions* – competencies that are needed in the real world, to enable students to contribute and make a difference in society. Aloha (2000) mention skills such as curiosity and a willingness to learn.

Thomas is responsible for a work-integrated learning (WIL) module that aims to prepare students for industry through real-life case studies.

> So often in (WIL) modules, I will actually refer to the hidden curriculum, I will say to students: … 'there are lots of things that you're going to learn inadvertently, and you may not even realise it, but when you look back…you would realise you have learned other skills like communication in a group, negotiation, leadership skills and so on.' So, I would specifically mention that WIL is a nice module to put on their CV for those specific reasons… (and when they are) in an interview

> with someone…they will be able to talk about it (and)…be able to reflect on the skills that they've learned.

The conceptual framework of the hidden curriculum (Rossouw & Frick, 2023) is that there is a relationship between the 'world of work' and the 'hidden curriculum'. It was stated that the hidden curriculum is crucial in developing graduate competencies, to adequately prepare students for the 'world of work'. Three participants specifically addressed the knowledge and skills they acquired from industry as relevant when teaching the hidden curriculum. The 'world of work' and skills needed in industry, can, therefore, inform the teaching (and understanding) of the hidden curriculum. Furthermore, it is evident that lecturers with industry experience are valuable agents in developing and teaching students the skills required to enter the workplace. The hidden curriculum, therefore, is an important element in developing graduate competencies (Gray, 2016; James, 2018; Orón Semper & Blasco, 2018). Participants' stories illustrated the importance of the teaching (lecturer element) of the hidden curriculum in preparing students for the world after higher education. The literature illustrated (Margolis, 2001; Yüksel, 2005; Smith-Han, 2013; Li, 2019) and the interviews confirmed that the lecturer has the potential to utilise the hidden curriculum to equip students with relevant knowledge and to develop much-needed graduate competencies to prepare them for life and enabling them to become contributing citizens to society.

Theme 2: The hidden curriculum supplements the formal curriculum

Four participants specifically mentioned certain aspects they teach their students to supplement the formal curriculum. Incorporating these aspects that are lacking from the formal curriculum, forms part of what the participants understand to be the teaching of a hidden curriculum. The hidden curriculum enables a more wholesome curriculum and has been illustrated as an important dimension of a curriculum (Bitzer & Botha, 2011). The main areas that were identified regarding 'supplementing' the formal curriculum were reading, writing and computer literacy skills, referencing skills, engagement, and practically implementing the theoretical concepts that were taught.

Ursula, teaching an English literature module, told me that her most important aim was to teach students how to write properly.

> So, my focus has always been on teaching students writing skills. I believe it is very important and lacking in the curriculum. Writing skills are very important, not just reading skills…students tend to think doing a BA and doing English as a module is about liking to read, and enjoying books, but it is also about writing and how to work with the literature. Students really battle with this.

Nicole lectures education students, and for her, the practical element of *how to teach* and *how to transfer knowledge* is missing from the curriculum.

> They (the students) have the theory, but they don't have the practical way of transferring that information over in a class. They haven't had the opportunity to practice that in a class…the first year I taught it, they (the students) said to me that there is a lack, they feel there's a huge gap in their knowledge, on didactically how to teach, and so I changed the way (I teach)…I give them advice and I show them different ways of engaging and teaching, (also) class discipline, ideas on how to engage with their students, how to win over their students so that they have good discipline within their classroom.

The hidden curriculum incorporates elements into the classroom that the formal curriculum often overlooks (Bitzer & Botha, 2011). The conceptual framework (Rossouw & Frick, 2023) also demonstrated the hidden curriculum manifests where the curriculum and the lecturer meet. This meeting furthermore gives rise to the student learning experience being cultivated (see theme 3 below). Participants' stories demonstrated that the hidden curriculum can be utilised to supplement the formal curriculum, in areas

where lecturers feel their formal curriculum is lacking. It furthermore emphasizes the hidden curriculum as an irreplaceable and valuable resource in how the curriculum plays out in the classroom (Li, 2019).

Theme 3: The student learning experience (academic skills and holistic development)

All 10 participants discussed the importance of the student learning experience – developing students both academically and holistically. The hidden curriculum contributes to a holistic learning experience (Orón Semper & Blasco, 2018). In discussing student development, a few participants mentioned the phrases *growing as a person* (Zara), *wholesome education* (Penny), and *holistic development* (Nicole). Some participants discussed academic development while addressing shortcomings in the formal curriculum, and some connected the academic and holistic development as part of preparing students for the world of work. However, not all participants integrated the abovementioned themes, and during analysis, it emerged as a separate theme. Specific skills regarding academic development mentioned were: knowledge contextualisation, reading and writing abilities, comprehension, work etiquette, and the ability to think critically, analyse, evaluate and problem-solve. The main areas that participants addressed when discussing the holistic development of students are confidence, respect, worldviews, punctuality, time management, resilience, a culture of joy, and being an ethical person and good citizen. Participants also provided valuable examples of how they try to instil and develop these in their students. These skills overlap with skills mentioned by students when asked what they learnt from their lecturers through the hidden curriculum (Aloha, 2000).

Contextualisation was a concept that four participants regarded as important when teaching their modules. Ursula contextualises the curriculum, by educating students regarding the surrounding political background and history and reminding students that books do not exist in isolation. Lucas and Penny hoped that students would be able to view work done in class in a broader context.

> I hope that they can see work-related things in a broader context. So not just 'oh this is marketing, oh this is finance' … to look at the bigger picture… (Penny)

Simon spoke more broadly about contextualising knowledge:

> By making concepts come alive to the students, they bridge the conceptual gap between theory and the real world. I think the problem with a lot of educational processes is the inability for us as educational institutions in general, to be able to say this is the theory, and it doesn't always work like that in practice … there's only X number of examples you can have in a textbook … the world is alive with different scenarios, consistent different scenarios.

David realises that reading and writing skills are crucial for students to master in the module that he teaches:

> The problem is that students need those skills of reading and writing...so that aspect of the hidden curriculum, is therefore something I'm very aware of, this idea that it's about reading and writing. These are skills that students don't necessarily enjoy…so, with that in mind, when I was designing a course… it's always a matter of getting the students to <u>do</u> something…and that <u>doing</u> aspect is, of course, the reading aspect and the writing aspect.

Reading and approaching questions correctly was mentioned by Penny and Thomas

> There are lots of discussions around what a good answer looks like. Never mind what the question is. What does a good answer look like? What do you need to bring into that answer? So, for me, that is the hidden curriculum, the approach or way of going about trying to solve the problem and to get to a good answer. (Thomas)

True understanding and comprehension are aspects that were specifically addressed by Brandon and Lucas. They both stressed the fact they do not just want students to *'parrot study'* (Brandon) or rote learn the work, they emphasise truly grasping the relevance of the work that students are doing.

For Penny and Brandon, work etiquette and commitment are important skills for students to be successful in their studies.

> Look…things don't fall in your lap, and there is no such thing as a free lunch. So, you need to put the work in. I must be honest … in academics, trying to study, there is not much room for laziness. You are not going to get away forever. So, I try to motivate them to do more than just sort of the bare minimum. (Penny)

> I always start my very first lecture of the semester and I'll say to the students: 'If you're not willing to put in 200 hours of practice into the examples and the questions we're going to do, then consider yourself under pressure to pass this module, not to get 80%, but even to pass it'…the amount of work you put in will determine your final mark and it's as simple as that. I always say there are no shortcuts. You either do the work, and there's no excuse for you not to do it. Or you can look at your marks at the end of the semester and say, 'I should have….' (Brandon)

Critical thinking skills of problem-solving, analysis, and evaluation were competencies that five participants aim to teach their students. Lucas and David addressed the 'problem-solving' element by referring to the importance of students using feedback effectively to enable them to find their own solutions. Simon, Brandon, and Thomas emphasised the ability to evaluate and critically analyse information.

> I think what we're doing in teaching and linking to real-life problems allows them to expand their own critical thinking analysis. Because we're here to teach students to critically think and analyse. These theories are good, and you can always learn a theory in a rote learn fashion, but if you can't apply it, you can't critically analyse things. Then I think we haven't done our job and I think an implied component of this hidden curriculum is the ability to give those students critical analysis or analytical framework. (Simon)

Brandon and Simon furthermore explained their goal at the end of the semester is that students have the ability to ask 'why questions'. Brandon, teaching quantitative modules, explains:

> I think we are very quick to throw the textbook at a student. We are very quick to justify why the answer in the textbook is A, B, and C. But the essence that we want the student to walk away with at the end of the semester (and with a degree), is why?…(using a tax module as an example) Why do we calculate income tax? etc. Instead of just teaching them a calculation…And the same goes for (other modules). So, every number, I will say, tells a story of a particular important relevance in relation to business.

Zara and Hannah highlighted the importance of cultivating a 'safe space' environment in their classroom to enable the holistic development of their students.

> I make it clear to them that I'm here to help and everything that I do is to support them. And that we need to create a safe space. And yeah, I'm not sure everyone will do that, but I assume I think that's my personality. But I want my students to know it is OK to talk to me. (Zara)

David promotes a culture of *trial and error*, and *it is ok to be wrong*.

> … This is something I also tell the students when they're doing research … it's OK to make a mistake. That is why I am here. The book cannot tell you if you're making a mistake, but as a lecturer, I can tell you what you are doing, and point you to where you are wrong. They (the students) are terrified of being wrong. And … education is not about being right, it is about

> learning what you **don't** know…that ability to understand that being wrong is not bad, and making a mistake is not a failure.

Five participants discussed the importance of developing confidence in students and the importance of students' ability to articulate their ideas. Lucas mentioned the learning and growth path in re-doing something and the confidence gained in learning from your mistakes.

Hannah and Zara promote confidence through public speaking in their classrooms.

> I make sure to tell them that the educational space is a space for them to try things out. This is where they can showcase what they know without being reprimanded. You know, this is where you do your trial and error, and we need to give each other the space for that trial and error. (Hannah)

> I make them go and stand in the front (of the class)…they have to start feeling confident about getting their message out there, having a voice. To me, probably the most important thing is public speaking in their class… I want them to go out in the world and really contribute to society and feel confident with who they are as a person. (Zara)

Nicole shared a moving story about one of her students and the confidence skills that he gained from her teaching:

> I had a student from Angola who could barely speak English, and he had to do an oral in the classroom and he said to me: 'I can't do this oral in front of the classroom'…and he really struggled, but he did well, and he managed to stumble through it. (This was quite a couple of years ago), and this year he contacted me … he said: 'You remember that time you made me speak in front of the class? So, you know I was so scared, but I just want to tell you part of my job now is I have to do public speaking … and the way that you dealt with me that time and explained to me how important it is to be able to do public speaking …' So that was the biggest reward, this student came back out of nowhere and came and told me that I had helped him. That is something that I am passionate about, is to develop each student's confidence in themselves.

Respect is an aspect that Hannah, Simon, and Zara regard as important in their classroom. Zara discussed respect together with cultivating a culture of inclusivity, equality, and dignity in her classroom:

> I want them to show respect…to themselves, to their peers, to the environment…so respect, diversity. Having respect for other people, gender issues, cultural differences…I don't just want to teach them book knowledge. I want them to be good citizens of the world and caring people.

Simon extended the notion of respect in the classroom by referring to perspectives. Bergenhenegouwen (1987) referred to worldview as one aspect of the hidden curriculum. Simon emphasized that we have limited perspectives, and we have our perceptions, backgrounds, and experiences that should be kept in mind when communicating with students:

> …respect for your students in the way you deal with them in terms of questions…students come from a variety of heterogeneous backgrounds. And one thing I have learned (that I try to show students) is that one's own background is only a very narrow stratum or sliver of the world out there.

Ursula and Thomas referred to perspectives to illustrate to students that there are different viewpoints, and multiple perspectives to consider when they are developing an argument.

> If I'm approaching any kind of situation (in life), I need to maybe just take a step back and look at it and go OK, well, how should I try and solve this problem? Should I only rely on maybe one viewpoint for example? (Thomas)

Time management, planning, and accountability are aspects that were focused on by Simon, Brandon, Thomas, and Penny. Hannah illustrated the importance of time management and accountability by sharing a story about illustrating responsibility and accountability to a student who missed an appointment and failed to inform her. Thomas shared Hannah's views:

> I always tell students… if you want to be successful, I don't think you essentially have to be incredibly smart or intelligent, but you definitely have to work hard and be diligent in terms of what you're doing, and…(then) your chance of being successful and passing and even getting a very high mark is very, very high in my opinion.

Penny referred to grit and resilience as necessary attributes.

> You have to have resilience, motivation…because you can't give in to your despair…whether you are having a (bad) day or a good day, it actually doesn't matter. You still put on your PR face and you get on with it. That's what it's about.

Hannah and Penny attempt to cultivate a culture of joy, fun, and embracing life in their classrooms. Nicole places a focus on ethics with her education students:

> …it's also about being an ethical person. I find it sometimes a little bit of a challenge for them to understand. The ethics around dealing with other people. I keep on trying to get them to understand that you are not only just working with the academics of a child, but you are working with the whole child.

Participants' stories regarding the student learning experience provided depth to the understanding of the lecturer enactment of the hidden curriculum. Lecturers demonstrate the hidden curriculum through messages conveyed to students (Portelli, 1993; Yüksel, 2005). Literature furthermore illustrated that attributes such as confidence, intellectual reasoning, ethics, motivation, and commitment are developed through the hidden curriculum (Ahola, 2000; Li, 2019). The participants' stories confirmed the importance of the hidden curriculum in the student learning experience to enable academic and holistic development and provided valuable insight into how lecturers cultivate it in their classrooms.

The relevance of private higher education

It is practice for the private higher education institution within which this study was situated, to employ lecturers with industry experience. Four participants mentioned their industry experience as an important dimension when discussing and reflecting on their teaching of the hidden curriculum. Simon has taught in both private and public higher education institutions (for the last 14 years), as well as working in the corporate sector for more than 20 years. He believes private higher education institutions are ahead of public institutions in the sense that lecturers bring skills into the classroom from their formal job (industry).[6] His experience is that *we can link theory to practice better*, and that *we can make the theory come alive* by connecting the work to real-world examples that the lecturer has experienced.

> But also, as a part of the hidden curriculum, I suspect will be the way that you can flesh out a theoretical concept or framework with real-life problems that become so real and tangible to

[6] It is relevant to note that this is Simon's viewpoint from working in both public and private higher education institutions, and his views are related to the subject discipline that he lectures.

> them that they can start linking and hanging concepts in terms of what you're telling them. And that is where I think that a private tertiary institution often is ahead of the curve from the publics.[7] (Simon)

Penny and Brandon shared Simon's views regarding the experience that lecturers bring into the classroom that bridges the gap between higher education and the world of work. Penny, with 15 years of teaching experience in private higher education, mentioned an important dimension that she brings to the classroom: *What I bring is work experience … I can kind of convert (the theory) into real-life experiences.* It is evident that the hidden curriculum in the private higher education institution is influenced by industry-experienced lecturers who have the ability to bring industry skills to the classroom and use examples to make the theory 'real'.

The public or private nature of institutions was not referred to during the interviews,[8] yet it became clear that the nature of the institution was relevant to consider. For Hannah, the nature of private higher education institutions was relevant to consider,

> …also, who are we kidding here? This is a private institution, so it's not cheap to study. So, to milk it for what it's worth. To have my students get in there and really get something out of it besides the actual content that they have to go through.

Nicole, having taught in both public and private higher education institutions, believes that the smaller class sizes in private higher education institutions aid the transferral of her hidden curriculum teaching because she can provide her students with more individual attention and feedback.

The reflection and storytelling experience

Four lecturers mentioned that the reflection and storytelling process was valuable to them. Simon mentioned how reflecting on his teaching made him realise:

> My own pushing of the boundaries was now initially instituted by you asking me to reflect on an implied curriculum. I've never thought about it, so I've never realised how what I've done was implied…As a lecturer, who enjoys what they're doing, you do try your best, but you don't realise that there's actually a framework of implied action behind those things, so this had allowed me to reflect on it. And to think that 'yes, there is some important stuff that I haven't got right' and now I can try at least be more aware of it and use it more efficiently.

David realised how much 'confidence students gained in being wrong and then learning from their mistakes', *which is something I've actually never thought about (until now).* Hannah and Simon came to a similar realisation, that reflection on the hidden curriculum of their teaching will assist them to adapt, develop and improve their teaching of the hidden curriculum.

The participants' stories confirmed the notion in literature (Pitts, 2003; Smith-Han, 2013) that the hidden curriculum is shaped and informed by lecturer reflection, and lecturer reflection on the hidden curriculum influences our understanding of the hidden curriculum. The participants' stories made it evident that reflection is a valuable experience (Kane et al., 2004). Telling their stories allowed participants the

[7] This furthermore highlights the role that institutional contexts plays in our understanding of the hidden curriculum and serves as justification to research the hidden curriculum in other contexts (such as public institutions) to ascertain how it might be different from private higher education institutions.

[8] The study did not want to influence the participants' narratives by referring to the nature of the institution because the interview questions guided the participants in that direction (that might have caused them to draw a comparison between public and private higher education institutions). Instead, the study wanted the participants' experiences and narratives to come across freely. Furthermore, private higher education forms part of the participants' status quo. It was interesting to see however, that the nature of private higher education was still a dimension worthy of discussing when the participants reflected on the hidden curriculum.

opportunity to reflect on their practice, and identify the areas that they can adapt, develop, and improve their hidden curriculum teaching.

CONCLUSION

The process of reflection and storytelling by lecturers enabled an enhanced understanding regarding their experience of the hidden curriculum in their classroom. Through telling their stories, lecturers were able to provide valuable insight into their understanding of the hidden curriculum and the skills that it can develop in students, as well as their experience in teaching these skills and competencies to students. Storytelling proved to be a valuable experience to enable reflection by lecturers to increase awareness and understanding of the hidden curriculum. The study enables a more holistic understanding of the hidden curriculum as the lecturer's view has been a dimension that is lacking in current research. The areas identified by lecturers provide valuable information regarding the enactment of the hidden curriculum and highlight the potential of utilising the hidden curriculum in higher education. Increased awareness and understanding of the hidden curriculum can aid in increased efficiency of the teaching of skills and competencies that lecturers aim to develop through the hidden curriculum. It was discussed earlier that literature pointed to the hidden curriculum being highly flexible, subjective, and situational, and this was confirmed to be the case in the results of the study, as it was clear that the nature of the institution, the module taught, the individual lecturer's beliefs and experiences all played a role in how they understood the hidden curriculum.

More studies with empirical research on the hidden curriculum within specifically private higher education institutions are necessary to understand the enactment of the hidden curriculum in a different type of institution with different institutional goals. It would also be valuable to conduct studies on the hidden curriculum within specific academic disciplines, to gain a further understanding of how the hidden curriculum manifests within different areas of study.

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An overview of the causes of dyscalculia and its impact on learners' arithmetic ability[1]

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ABSTRACT

Some children experience severe struggles in understanding mathematical concepts. A condition called 'dyscalculia' impairs learners' capacity and limits their ability to perform and comprehend a mathematical concept. This study identifies factors that contribute to the weak academic performance by learners in mathematics. An empirical approach was used to gather data from a mainstream school and a special school. Interviews were conducted with teachers, occupational therapists, and learners. Virtual interviews included doctors and educational psychologists. The study revealed that learners' ability to learn and comprehend mathematics is influenced by medical, biological, psychological, and environmental factors. The consociate of the factors responsible for mathematical learning could raise awareness and provision to tackle the difficulties of mathematics teaching and learning. The study proposes further research around the development of mathematics curriculum underpinned by teaching and learning materials that accommodate the learning capabilities of learners with dyscalculia.

Keywords: dyscalculia, mathematics comprehension, medical, psychological, environmental factors.

INTRODUCTION

In the South African education system, mathematics is a central learning course for learners from grades R-12. The bare minimum of arithmetic grading in grades 1-12 is a moderate achievement of 40%-49% (level 3) indicating arithmetic competence. However, some learners are unsuccessful in attaining the minimum requirement because they severely struggle with learning the basic components of math, for example, reading, and writing numbers correctly, using the 4-math operations (+, -, x, ÷). Learners encountering stumbling blocks in acquiring mathematics often achieve below the minimum requirement. The elementary achievement of 0-39% (levels 1-2) indicates that learners have no understanding of the basic element of mathematics, hence they attain lower in mathematics criteria.

Dowker (2004) explains how learners battling with mathematics would have almost certainly not comprehended one or more of the numeracy components. For example, counting, estimating, matching, script integers, and executing the four main math operations. The complexity of arithmetical learning has created challenges for the South African education system. Analyses of the cross-national assessments of

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educational achievement have indicated that the South African education system is the worst when compared to other countries (Spaull, 2013). South African schools have been challenged with learners' performance in mathematics in the foundation phase. Studies have reported that 5-8% of learners encounter obstacles that disturb their grasp of mathematical concepts or procedures (Fuchs et al., 2010).

Literature suggests a variety of factors that influence arithmetic ability such as the velocity of cognitive processing, poor working memory, and concentration span (Temple & Sherwood, 2002). This paper proposes that it is important to know the factors that impact the acquisition of arithmetic skills in young children. There are several factors that attribute to learners' inability to acquire mathematical concepts and among them is dyscalculia. The ability to learn mathematical concepts is impaired by a condition called 'dyscalculia'. Dyscalculia is a learning disability that limits learners from understanding the fundamental number concepts necessary to understand mathematics (Sudha & Shalini, 2014). Learners who have dyscalculia have difficulty developing the fundamental number concepts that are necessary to understand mathematics due to this learning challenge. This study aims to provide a documented account of the basic causes of dyscalculia among children in the foundation phase.

Malmer (2000) mentioned poor intellectual progression, lack of mathematical vocabulary, neuro complications such as minor brain injury, and attention disorder as elements that impact learners' math understanding. This study will explore factors that cause the acquisition of mathematics in young children and their effect on learners' mathematical performance. This study will further discuss possible intervention strategies and suggest some avenues for further research. This study believes that understanding the causes of dyscalculia will aid in assessing the mediation plan and launching diagnoses.

The difficulties of teaching and learning mathematics in the Foundation Phase.

Studies have revealed that early years of mathematics competency can have a robust anticipating ability for future educational attainment (Duncan et al., 2007; Sinay & Nahornick, 2016). The vast differences in opportunities children have in their homes, and their early childhood environment contribute more to the differences in numeracy skills they have in schools. The difficulty of learning mathematics is a moral universal concern (Kunwar, 2021). Luneta (2023) asserts that almost all classrooms in South Africa are multilingual and the language of instruction is often not suitable for majority of the learners. The dilemma of learning and teaching mathematics in the foundation stage is that while mathematics is a language in its own right, teachers are required to teach in multilanguage classrooms where the language of instruction is in most cases different from most children home Language (Dicker, 2015). This poses difficulties in the teaching and learning of mathematics at the foundation level. The difficulty of delivering mathematics content effectively comes from language and communication barriers, attitude problems (for both the teachers and the learners) and school environment factors such as deficiency of access to basic facilities, poverty at home (Machaba & Lenyai, 2014). The lack of provisions for teaching aids can also well attributed to the difficulties in teaching and learning mathematics in the foundation phase learners' classroom. Learners revealed that teaching aids have progressive consequences on teaching mathematics even in fewer than best environments that is, below-resourced, rural, second-language classrooms (Maduna, 2002).

Absence of parental gratitude and participation, disabilities, and deficiency of resources improvement policies (Machaba & Lenyai, 2014). Initial identification of learners who encounter learning difficulties is of importance not merely to support them in making improvement, but also develop contributing memberships of the society (Groark et al., 2006). Furthermore, it is essential to recognize learners who encounter learning difficulties very early so that the educators can lessen or eradicate the learning difficulties on time. But on the other hand, it is also imperative to shun engaging destructive labels on younger children that could lead them to have lower expectation for success.

If learners who experience difficulties to learning mathematics can be detected at an early phase of development, they will have a better opportunity to be successful provided the difficult will be activated (Machaba & Lenyai, 2014). However, among the issues which place learners at danger of failure are unsuitable and insufficient provision of support facility, deficiency of supporting and protective regulation and policy.

RESEARCH PROBLEM

There is sufficient research that documents the performance of most learners from elementary school to tertiary in mathematics is below the expected levels (Norath & Luneta, 2015; Bethel, 2016). Teachers of mathematics have always been concerned about learners' low performance in mathematics especially at the elementary level, most especially learners that grapple with basic mathematical operations, numbers, number names and counting (Carlson, 2005). Teachers assume that all learners in a classroom understand their traditional instructional approaches despite the diverse learning strategies and intellectual abilities learners bring to class (Catania, 2020). For successful content delivery, mathematics educators should have knowledge of the diversity of learners with regards to teaching and learning mathematics (Machaba & Lenyai, 2014). Reasons behind some learners' weak performance can be explained from several factors but are mainly due to a basic learning disability. This study explores the causes of dyscalculia as a learning disability that affects how learners learn mathematics. When learners have difficulty grasping math concepts, their behaviour is regarded as abnormal (Catania, 2020). This study further explores factors that make it difficult for teachers to deliver mathematics content effectively.

LITERATURE REVIEW

Causes of dyscalculia

For our contemporary, educated society, it is crucial to comprehend how mathematical and arithmetic skills develop and the factors that are responsible for dyscalculia. According to research, mathematical difficulties can be caused by a variety of circumstances. Literature presents the following causes of dyscalculia: genetic, cognitive deficits, and brain differences.

Dyscalculia is a genetic condition

Studies indicate that dyscalculia is a genetic condition, which is genetically inherited from one of the alleles from a parent who has dyscalculia. Using the pedigree analysis to learn the inheritance of genes in children shows that a child inherits two alleles, one from the mother and one from the father. The genetic factor of dyscalculia derives from pedigree analysis of Mendelian segregation. However, research shows a lack of pure appearance of dyscalculia from the Mendelian pedigree because they are uncommon (Von Aster & Shalev, 2007). The conclusion on dyscalculia as a genetic condition is based on the relationship between the brain and behaviour and how it influences the nervous system (Von Aster & Shalev, 2007). However, the genetic factor for the prevalence of dyscalculia is limited to the phenotype.

Research shows that phenotype is driven by internal factors (emotional & cognitive) and external factors like environmental influences (socioeconomic, ethnicity, and language). Then the pedigree analysis is irrelevant because the phenotype is moderately heritable. The genetic molecular study is regarded as relevant for assessing inherited disorders. A study conducted on family aggregation (clusters of diseases in a family) depicted the prevalence of dyscalculia. The trial included 39 dyscalculic children and the results reported a prevalence of dyscalculia of 66% from the mother and 40% from the father while siblings scored 53% and extended family members scored 44% (Von Aster & Shalev, 2007).

The molecular genetic study for dyscalculia is limited by the cognitive heterogeneity that is common in some phenotypes (Von Aster & Shalev, 2007). Heterogeneity suggests that people may have the same phenotype (dyscalculia behaviour) but different genetic architecture (how genetic factors and environment combine); for example, a learner who has dyscalculia due to chromosomal deletion and a learner who

has dyscalculia due to other environmental factors (Von Aster & Shalev, 2007). Research indicated that families with the phenotype (dyscalculia symptoms) were rare to identify as compared to the dyslexia gene because dyscalculia involves various endophenotypes (Von Aster & Shalev, 2007).

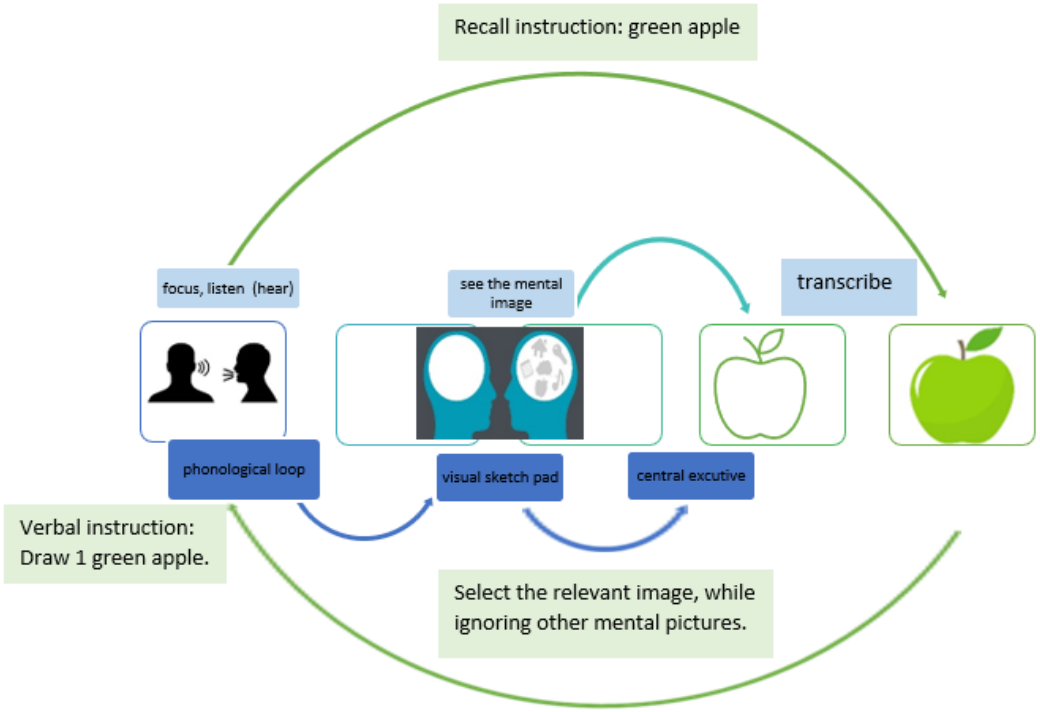
Lack of cognitive efficiency

A working memory cannot be classified as a separate structure, different components compose the working memory. The ultimate element of mathematics competence is the acquisition of basic arithmetic skills that entails the interaction of the three primary components of the working memory (phonological loop, visual sketch pad, and central executive). However, the functional component of the working memory is intricate when it comes to number processing (Szűcs & Goswami, 2013). Research indicates that learners with dyscalculia lack visual-spatial capability (Szucs et al., 2013). The ability of children's working memory is vital in the procurement of arithmetic skills.

The context signifies children's ability to execute control measures (central executive) to select the part to be executed and hold the action plan while processing the phonological loop (auditory) information and visual sketch pad (visuospatial) information (Chemerisova & Martynova, 2019). Lack of visuospatial, phonological ability and executive ability impact the cognitive ability to process numbers. Figure 1 below present illustrations of working memory components (Phonological loop, Visual sketch pad, Central executive) that respectively influence the capacity to solve math problems.

- **Phonological loop:** Verbal mathematics tasks were used to assess the capacity of the phonological loop (Chemerisova & Martynova, 2019). Learners with dyscalculia exhibit an inability to apply the phonological loop as a part of working memory through listening and understanding verbal instruction. The task of the phonological loop is to encode and store verbal information in temporary storage, however, there is a delay in the process of phonological analysis (Chemerisova & Martynova, 2019).
- **Visual sketch pad:** The spatial properties serve a central role in visuospatial working memory because it impacts the mathematic ability. The visuospatial sketchpad is an important foundation that grants temporary storage and rehearsal of visual and spatial information to the development of math skills that enable children to solve math problems (Liang et al., 2022). Children who have dyscalculia display a deficiency in spatial working memory tasks, in cooperation with visual spatial-simultaneous, and spatial-sequential working memory tasks (Mammarella et al., 2018). Spatial problems involve the reversal of numbers, struggle to comprehend before and after, cannot position objects, and rearranging things in order.
- **Central executive:** The central executive system directs the attention system that coordinates the other above-mentioned components. For successful execution of a task, there needs to be a good capacity of working memory to store transitional information. Thereafter, the application of long-term memory to execute the temporary stored information. Dyscalculia learners struggle to reject minimal disturbance while directing attention or focus to designated tasks; or example, they cannot do well when asked to choose a picture of a big animal in reality (Szucs et al., 2013).

Figure 1:
Interrelationship between working memory components (adopted from Szucs et al. 2013)



Brain alterations

Mathematical understanding requires various interactions of neurons which are key elements of the brain and nervous system to obtain stimuli. One of the key stimuli for mathematical competence is number sense which requires an efficient bilateral parietal lobe. Parietal lobe is responsible for the space or image information processing. Arithmetic processing uses the visuospatial working memory located at the (bilateral parietal and occipital lobes) and the left inferior frontal gyrus (speech system) (Xiang, Sun & Fu, 2016). Research indicates that dyscalculia is triggered by irregularities in the right parietal lobe (Kadosh et al., 2007). In a study conducted using neuro-navigated transcranial magnetic stimulation (TMS) to model the brain.

The study reported that TMS-induced neuronal action indicated disturbances in the right intraparietal sulcus which is responsible for number processing. (Kadosh et al., 2007). One study revealed that dyscalculia is linked with decreased grey matter and white matter volumes in areas of the brain connected to numbers (McCaskey et al., 2020).

METHODOLOGY

This paper responds to the research question: What are the factors that influence learners' mathematical learning? This study implemented a qualitative approach to collect data from the field. The information was collected through personal interviews. The interviews were conducted with people who have knowledge and experience on the topic. The responses were recorded and analyzed to draw conclusions (Kothari, 2004).

Sampling

Two schools were purposively selected to be part of the study, a mainstream school, and a special school that had learners with special needs to provide relevant information related to dyscalculia. We interacted with a modest number of foundation Phase teachers per grade from grades 1-3 at each school to obtain full perspectives of their pupils' mathematics learning difficulties and how environmental factors affect learners learning and what cognitive skills were needed to acquire and understand mathematics. From

the special school, we purposefully chose the participants because of their knowledge and experience in special education and teaching learners with learning disabilities.

Furthermore, we interviewed a doctor, specifically a pediatrician who deals with young children to get their intensive view on what could be the biological or medical reasons for the brain development of a child. We interviewed educational psychologists and occupational therapists who diagnose and assist learners with educational barriers. Data were collected from six teachers, 15 learners, one doctor, one educational psychologist, and one occupational therapist.

Table 1:
Summary of participants and their codes

School	Participants	Grade	Codes
Mainstream school	Educator 1	1	ME1
	Educator 2	2	ME2
	Educator 3	3	ME3
Special school	Educator 1	1	SE1
	Educator 2	2	SE2
	Educator 3	3	SE3
	Learners	Grade 1-3	L1-L9
	1 educational psychologist		PSY
	1 Occupational Therapist		OT
	1 Doctor		DR

Data analysis

The theme, development process, is the main data analytical process applied at the commencement of data interpretation and findings (Vaismoradi et al., 2016). It is an inductive approach to working with data that allows researchers to identify themes and categorize them. We began by attending to the teacher's audio-recorded interview, transliterating, and editing the information to prompt unwritten or unspoken movements such as nodding of heads and giggles. Inductive analysis demonstrates the method of thoroughly and thematically ordering teachers, psychologists, doctors, and learners' data from transcript by allocating codes to appealing data and then group the data into topics and themes. Coding refers to marking and classifying transcript to construct narrative and expand themes in the records.

During the analysis process were able to identify both similar and contrasting text. By analyzing the questions asked during the interviews and the responses received, we were able to identify patterns in the data. This helped us to determine which aspects were more relevant to the analysis of the learner's difficulties in acquiring arithmetic information. After conducting interviews, we analyzed the collected data by comparing it with the documents, literature, and the theoretical framework. This helped us to identify the themes that were relevant to the research question. Based on the analysis, we categorized the data and identified several key factors that contribute to the acquisition and retention of mathematical

knowledge by learners. To protect the participants' anonymity and confidentiality, assigned unique identifiers.

FINDINGS AND DISCUSSION

The following themes arose from participant's data analysis: (1) The brain developmental process of young children; (2) The key mechanisms of effective early childhood learning; (3) Learners' and teachers' psychological approach towards mathematics. The themes are encompassed by subthemes. The themes are inextricable as one depiction of a theme can correspond to another theme. These themes refer to the initial outcome or result of data analysis that generated actual outcomes of the research question. These themes are a result of the data collected from the interviews, classroom observations, and the questionnaire. Below is the table of the themes and subthemes.

Theme 1: The brain developmental process of young children

This study presents findings on learners' math acquisition based on their distinct capacity and incapacity from normal functional brains and brain irregularities. Mathematics learning requires a functional brain system to comprehend arithmetic information (Ren & Libertus, 2023). This study believes that teachers have minimal knowledge about disorders that impair the brain system. As a result, a doctor was included in the study to divulge her insight into the impact of the brain system and its influence to learning.

Pre & post-development of a child's brain

Data revealed that doctors, educators, educational psychologists, and occupational therapists understand the eccentric brain of learners and how it impacts learning. The doctor indicated that special learners are discretely unique like other learners, and, that some of their brain exhibits all symptoms in variable condition, while others may exhibit numerous of these symptoms, others may demonstrate only one symptom. The injury of the brain before, during and after birth has been associated with genetic or other developmental factors (Boardman et al., 2014).

Table 2:
Themes and Subthemes

Theme 1: The brain developmental process of young children	
Subthemes	1.1 The pre & post-development of a child's brain. 2. Cognitive differences of learners. 3. Diagnostic process of intellectual cognitive barriers.
Theme 2: The key mechanisms of effective early childhood learning	
Subthemes	1. The education setting. 2. The syllabus and instructional approach.
Theme 3: Learners' and teachers' psychological approach towards mathematics.	
Subthemes	3.1 Learners' emotional & behavioural attitude towards mathematics.

The doctor mentioned that some of the reasons children perform poorly are due to brain abnormalities.

Dr: There are conditions where for unknown reasons the children's brains are just not normal, a part of the brain is not functioning properly, or a different part of the brain that is missing like corpus callosum. Brain variances may be due to various things. For example, genetic disorders like downs syndrome. An infection that the mom had during pregnancy if a mom abuses alcohol or she's addicted to certain drugs or any medication, whether it's just the side effect of a medication that's supposed to be a good medication that can make the brain be affected and can develop

abnormally, so like children with fetal alcohol syndrome, they are also a small brain. Or complication during delivery takes long to get the baby out and the baby suffers from not having enough oxygen during birth. If it's bad the baby can start having fits and seizures. Or abnormal development of the brain during development while it's still an embryo those are the different things that can make a baby's brain to be abnormal.

The doctor's view about the complication during delivery that could result in the baby having fits and seizures concurs with the studies of Aldenkamp et al., (1990) and Gross-Tsur, Manor & Shalev (1993) that state epilepsy (brain-syndrome of regular seizures) as one neurological disease that increases the likelihood of development dyscalculia among children. Several studies assert that a number of children's poor academic performance is attributed to epilepsy (Aldenkamp et al., 1990; Scatolini, Zanni & Pfeifer, 2017).

The occupational therapist stated that some of the difficulties in learning may be linked to the formation of the brain.

OT: There could be a genetic problem like there could be a medical diagnosis. For instance, the child has hydrocephalus or some medical diagnosis. Some children have fetal alcohol syndromes. They have a smaller brain. Some children have an autistic brain, so the reason is their medical diagnosis.

The occupational therapist view corresponds with those of Landerl, Göbel and Moll, (2013), Shalev, Auerbach and Gross-Tsur, (1995) and Spencer, Stahl and Stefansson (2014) that is usual for dyscalculia to co-occur with autism spectrum disorder and language impairment. The occupational therapist and the doctor mentioned that prenatal alcohol exposure could be a reason some children are born with brain problems. Their statement concurs with Howel et al., (2006) that prenatal exposure to alcohol limits the intellectual ability of a child and impacts their ability to learn math.

This occupational therapist mentioned that some learning difficulties stem from genes. This indicates that some of the problems learners have been a result of genetic reasons while others are due to medical reasons. The doctor indicated that an abnormal brain could limit a child to learning, however, it depends on certain conditions.

Dr: … but not all learners. It depends on what the condition is that's affected the brain and how bad it is. But invariably it does limit them because the brain is the primary organ of learning. With any condition there is what we call a spectrum, meaning that we can grade it from 1- 10, 1 being very, very mild and 10 being severe and 10 being a child who can't speak, talk, or walk. then 1 is a child who might have minor learning disabilities or maybe a delay in achieving certain milestones, but then they still learn, OK. At school.

The doctor's reference shows that any effect on the brain may affect the child's capacity to learn but that depends on the seriousness of the condition. The doctor's comment agrees with Fouracre's (1958) study that when the brain is disturbed, some parts of the brain will not perform as normal, but the level of interruption may only be slight in some areas, and it varies with individuals.

Cognitive differences of learners

The children with dyscalculia show deficits in visual-spatial memory. Schuchardt, Maehler and Hasselhorn (2008) agree that spatial perception, memory, verbal ability, and intelligence are some of the factors that have been associated with understanding mathematics. Previous assumption on arithmetic disability regard perceptual skills as core skills to arithmetic learning (Eksteen, 2014; McLeod & Crump, 1978). Additionally, lack of visuospatial organization has been associated with difficulty learning mathematics (Barnes & Raghubar, 2014; Fouracre, 1958). One of the reasons that a child has poor numerical processing is because of their visuospatial skill and working memory. Children with abnormal brain have

perceptual disorders and struggle to see a whole, in its place, their mindset is only focused on one front-part that they see instead of a back and side part of a whole (Barnes & Raghubar, 2014; Fouracre, 1958). As a result, the perceptual ability of an abnormal brainchild is substandard and is prone to be affected. If the cognitive is malfunctioning the child will not connect perceptual experience and understand them in a natural way (Barnes & Raghubar, 2014; Fouracre, 1958).

Participants were asked what the reasons children have poor numerical processing. This inquiry presented participants with a chance to communicate their viewpoints on the subject matter. The occupational therapist and special educator mentioned that visual perceptual skill is an important component of learning.

OT: Poor visual perceptual skill and poor auditory perceptual skills are the basis why children can't do math because if they understand the spatial relations then they will be able to say, OK, the 5 goes like this and like that. And the 2 don't go like that. The two go that way. And if they know the 2 shapes, then they will know, OK 2 then it's permanent in their brain. They can then they can say, OK, 2 standing alone is a 2, but if you put a 1 in front then you have tens and units. Then it becomes 12. But if they don't have the basics of visual perception and auditory perception. They can't learn.

SE2: …it can be visual memory and visual discrimination. Like the 2, the 3, the 8 closure they don't see the 3 or they don't see the 8, they see half a number they think it's a 3. Or reversal that is also Visual discrimination reversal of 7 and 4, the 9 and the 6 swapping them top to bottom.

The occupational therapist and special educator 2 comments agree that dyscalculia learners exhibit a lack of direction/ orientation, difficulty understanding spatial orientation, and confusion over left and right leading to difficulties following direction. The occupational therapist supported the special educator 2 view's by saying.

OT: Some children have visual confusion when they see the letters reversed and not distorted and their spatial orientation of the letter isn't correct.

Special educator 2 (SE2) alluded to this by narrating a story of a boy by the name of Aden who has dyslexia, the boy struggles to remember the letter 'n' in his name when doing spelling, even when told that 'n' is at the end of his name, he will go letter by letter trying to trace the letter 'n'. Special educator 2 (SE2) further explained that the boy does the same with math.

SE2: The same with numbers whenever I ask him a number like when I say point to 7 at the number chart. I will first establish where I am on, then I go down to the bigger numbers. So, if I say to him point to 7, he goes like 1 2 3 4 5 6 7 if I say 27, he still counts 1 2 3 4 5 6 7, he just done 7. And I say 27 to get the point of referral he still does again the second time 1 2 3 4 5 6 7 and then he knows I go down to 10 20. Now while he remembers that maybe practice, I don't know. But then he would say 'Ma'am is that the number ma'am?' then I say yes, it's a 7 27 where is the 7? 1 2 3 4 5 6 7, he repeats it constantly. You would think if you have done it a 100x you should know it's a 7. For some reason he doesn't remember, each time he sums numbers his got to find the number each time again. I think it has to do with memory visual perception, something just doesn't click.

Special educator 2 (SE2) viewpoint corresponds to Landerl and Moll (2010) that children with dyscalculia also present signs of dyslexia. Dyslexia and dyscalculia are regarded specific learning disabilities because some children do not show early symptoms (Peters, de Beeck & De Smedt, 2020; Williams, 2013).

Literature indicates that the key element of learning is being focused and being an attentive listener. Lack of attention has been associated with dyscalculia. Gross-Tsur, Manor and Shalev (1996), Üstün et al.,

(2021) and Capano et al. (2008) revealed that individuals who have dyscalculia also have ADHD. The doctor indicated that some children struggle to concentrate because of nutritional reactions.

Dr: …if a child has vitamin B or iron deficiency that can also make it difficult for a child to concentrate or learn. If they're hungry like children who go to school without having eaten, they won't be able to concentrate.

One of the reasons children go to school without consuming any food is because of their social circumstances, therefore the doctor's comment is in support of (Shalev, Manor & Gross-Tsur, 2005) that socioeconomic status could be a factor linked with dyscalculia.

Teachers mentioned that children struggle to concentrate for a long period, they get distracted by internal and external things. Mainstream educator 2 states:

ME2: Noises from outside, interruptions when someone else comes into the class, Having too many children in the class. All the obstacles, things on the tables, the pencil cases, children around them, the tables, the chairs, there's a lot of things that can distract their attention, their concentration. They can be other things as well. If their mind they have like an emotional problem, things going on at home disturbing them, their mind is busy somewhere else. Playfulness, if they're too young, they struggle to concentrate because their mind is still thinking of playing. Where are my friends? I'm tired. I want to sleep. I want to play.

The special schoolteachers mentioned that learners perform better in the morning, they participate well especially if they are on medication (Risperidone or Ritalin). However, a doctor can only prescribe the medication.

Diagnostic process of intellectual cognitive barriers

It is firstly important for teachers to understand what dyscalculia is to effectively support the learners. When teachers understand what dyscalculia is and what causes it, it will be easy to diagnose or refer children to relevant people to get support. There is a lack of detection and diagnosis of dyscalculia, notwithstanding the information that the behavioral descriptions of dyscalculia are well outlined and known (Williams, 2013). A study revealed that lack of knowledge on dyscalculia leads to learners not being checked, evaluated and treated (Williams, 2013).

Appropriate intervention for learners with dyscalculia necessitates both teachers and parents to have a virtuous knowledge of the condition. The special schoolteacher mentioned that some parents lack knowledge of their child's learning disability and expect their child to perform normally like other children. The doctor noted that any concerns regarding children's academic issues are identified when the child starts formal school.

Dr: Usually learning concerns are picked up once the child is going to school. Unless at a young age where the child is at creche or home and they can't talk, crawl, or walk. There are special tests, Griffin tests and other special neurodevelopmental tests that doctors use to check a child's development if it is appropriate. If is a speech deficit or the hearing deficit isn't an autistic spectrum disorder. If they can hear or can see, they can speak but they have a sensory issue or whatever. I think those are sort of the things that we would do if we got a complaint that a child is not coping at school.

During the interview, teachers were asked what dyscalculia is and how they identify children with dyscalculia. Their response illustrated a lack of knowledge about this condition. Teachers mentioned that they use a screening form for early identification in grade 1 for learners at risk. Thereafter, they fill in an SNA form and refer the learner to a psychologist for diagnostic assessment.

The educational psychologist mentioned that she uses formative assessments or summative assessments and observations to diagnose children for learning disability but not dyscalculia. Educational psychologists play a major role in education by assessing how children learn and remember knowledge. The educational psychologist explained the screening process that she follows to assess learning barriers she said:

Psy: I use formative assessments or summative assessments and Observations. I will observe the students during tasks. When you give the student tasks, you will observe their understanding and if they're able to discuss the question using words and I will go through the student's work samples.

On the other hand, the occupational therapist mentioned that she knows about dyslexia but lacks knowledge about dyscalculia. She mentioned that dyscalculia needs specialists to diagnose it like the Red Apple dyslexia association or Star Griffin Dyslexia Association, and its usually people who have money who go for it as at the government school, they do not always even have the resources to diagnose.

OT: I use visual perception tests now and in your visual perceptual tests you can see that a lot of the children have problems with letter reversals or number reversals and spatial relations. However, with dyscalculia it needs specialists to diagnose it like Red Apple dyslexia association or Star Griffin Dyslexia Association, and its usually people who have money. You can do it, and it's usually for high functioning kids. Because we at the government school we don't always even have the resources to diagnose. Because an organization that does it, it is a private practice, and it costs a lot of money. problems with it and ultimately the psychologist in the GDF also are limited and the parents don't have the funds to go private and like I said that at government schools it's difficult to diagnose it because it isn't funded. You'll see that the child struggles with math's and you try all the learning, learning, teaching support material, but it doesn't work.

This signifies a lack of instruments to diagnose dyscalculia at schools, especially at public government schools. Teachers' lack of knowledge about this condition is in support with Williams (2013) that the underprivileged identification of dyscalculia drifts from government to educators, and the community (Williams, 2013). This lack of proper identification and diagnosis has resulted in a lack of support for learners with dyscalculia. Children are labeled for their incapacity to perform well and are not formally diagnosed to receive proper support and intervention.

Theme 2: The key mechanisms of effective early childhood learning

The education setting.

The learning environment is a major component of effective teaching and learning. However, teachers have indicated that the learning environment may impose a challenge to the productivity of mathematics instruction. Mainstream teachers indicated that the biggest problem they encounter is the large number of learners in the classroom and the curriculum that restricts them from delivering effective content.

ME3: I really think that is a barrier immediately if you have many children in the class, it's something impossible. I've had 47 learners at one stage. I just think that if the classes are a little bit smaller, they are more manageable. I would love my ideal class to be of 32 learners. I think the class of 32 is my ultimate goal a class of 32 makes, for instance, I can have eight children, eight children, eight children, eight children. And then I've got space. And I've got days where I can have things like a sandbox and shapes and models and a computer too.

ME2: Having too many kids in the classroom makes it difficult for the teacher to get to everyone to make sure they learn the basic skills of counting and number recognition. Having a lot of children means you have a lot more minds, and a lot more creativity going on. While you think you're learning one concept, someone else is doing something else, and then you need to attend to

that, and then even the teacher loses concentration because she must attend to another child. So having many children can be the challenge.

This indicates that the number of learners in the classroom plays a big role in how a teacher engages with learners. While on the other hand, a teacher from a special school expressed how convenient it is to have less learners in a class.

SE1: Because of the few learners that I have, it's easy to identify learners who are struggling because you are involved so you can quickly see.

SE2: Learners with learning disability constantly need help. I've got 15-16 while the other classes are like 8 or 9 and that's ideal. Because you can work one-on-one. But with 15 or 16 it's very difficult and also very exhausting because you've got to constantly think of each child, what they are thinking and family circumstances.

Mathematics is socially discovered by learners before formal education. A home is regarded as an informal education setting for the child. Teachers mentioned that some children lack early exposure to numbers. They were not exposed to numbers when they were young, they stayed at home and did not attend preschool or grade R where they get an opportunity to learn a bit of perceptual and number recognition before, they get to school formal work.

ME3: I think barriers start already when a child is a toddler and running around at home. When we were small, our mothers used to be at home. We didn't go to nursery schools. You needed to be well off to send your child to nursery school. You will work with your mother and your mother will say 'mommy is doing washing', and she will say quickly help me sort out the clothes put the red clothes together. So, that is already where number sense starts, because now mommy will say, how many socks do you have? pair up all the socks. All those things are used eventually for math's concepts.

The teacher mentioned another factor that contributes to the delay in the acquisition of math knowledge. Some children spend too much time on their phones, and they do not engage with their parents because the parents are too busy, and children miss the opportunity to learn accidental skills.

ME2: Children sit and watch TV, more tablets, phones, they play more games than they did. A few years back children were running outside climbing trees, and that's mathematical skills with life skills combined. I think even the parents are too busy to pay attention to them. A simple thing like how many white cars drive past us today. That's counting and color recognition. I think the parents are too busy, life is too rushed and too busy for children to learn any incidental skills.

Teachers suggest that education should not start when a child starts formal education, however, it should start at home when a child is still a baby. However, teachers suggest that their other reasons that restrict children to that opportunity such as not affording daycare or parents being too busy to engage in math through play with their children. This indicates the important role of a domestic and community setting in shaping youngsters' number knowledge; however, the occupational therapist believes that the economic status of the family also has an impact to the cognitive development of a child she said:

OT: Other kids have socio-economic problems. So, you'll find bright children. But their socio-economic background is so poor that these children are neglected. The parents are so poor, they move from school to school. They don't have stability, so these children are clever, but they have missed out on the basics of school and education and then they have a backlog because of that because they've never had a stable house and stable school every week, they are absent at least three days or two days, they miss four. I think social and economic background can be a factor.

Teachers mentioned that barriers start when children are still small at home and helping around to sort laundry and when parents teach children to show their age using fingers from the age of two growing up when they learn extra numbers automatically. However, the teachers noted that some children struggle to use fingers; eight years old battle to get to three and keep the two fingers down. Therefore, that could be a physical problem or muscle tone.

SE2: If it's not a physical disability, mental brain, cognitive problem. I think not being exposed to numbers, letters, and counting.

Teachers view support Gerstmann's (1930) finger agnosia that some children struggle to distinguish and separate their fingers to solve math problems.

The syllabus and instructional approach

Both the special school and the mainstream school follow the CAPS Curriculum (Curriculum Assessment Policy Statement) using ATP (Annual Teaching Plan) that determines which content should be taught, the timeframe for each content, and what should be assessed. Though at the special school, they try to adapt to the curriculum, they still encounter challenges. The teachers from both institutions expressed concerns regarding the curriculum as a key factor in weak teaching and learning of mathematics.

SE3: The curriculum is a rush. It's a total rush with teaching math. Math needs to be learned in steps. If you skip one step somewhere, somehow there will be a problem further.

SE2: I think the people that aren't knowledgeable with kids with learning disabilities don't know what's good for the child. Like child friendly they don't keep the child's disability in mind when planning the curriculum. Because, we must follow the CAPS curriculum and we have to keep up with the curriculum, sometimes I think they shoot a bit too high, normal kids can do it, but our kids can't, you've got to pressure them, and push them because although they've got a disability, they've got to keep up.

SE1: They couldn't cope with mainstream curriculum; however, we also do mainstream curriculum but the fact that we have smaller classes and the fact that we have different resource and therapist available it's easy for the learners to do mainstream curriculum. We adapt the curriculum, but we still look at the ATP and we do the assessment like the department wants us to do. We adapt and we use more visual and we do visual stuff, we do individual assessments, there is like a whole holistic approach. I think that's what makes us different.

Educator 2 from the special school emphasized how they should keep up and ensure that most curriculum content is covered. This shows that they face the same challenges of the curriculum when it comes to things they are expected to cover in the curriculum. While educator 1 from special school explained one of the reasons learners are referred to special schools and the benefits of being in the special schools.

This indicates that some learners struggle with the curriculum expectation from mainstream because of many learners in the classroom. Then they perform better when moved to special school considering that special school have less learners in the class. Contrary to that, ST2 believes that the curriculum needs to be adapted to cater for learners with disability she said:

SE2: Normal kids that got learning disability over the year I found you've got to try to do the basic of the curriculum so that they can at least learn it and understand it and make it their own, so that when they get older, they can be able to adapt and learn other methods, because to teach a grade 2 child 5 different methods it's just mixing them up because they don't understand it, it's too mixed up, they need structure. If they have dyscalculia or dyslexia, you can't follow the normal CAPS because they can't, it's a disability if something is not clicking somewhere it's not functioning.

SE2 views that the curriculum is structured in such a way that most of the content should be covered over a specific period and earners with dyscalculia or dyslexia grapple with different sets of content. Fouracre (1958) in this over 50 years old seminal article state that learners with brain disorder get confused if instruction and therefore learning is prepended not properly structured. Schollar, (2015) further asserts that over 80% of children with dyscalculia achieve lower grades when scored for mathematical understanding of the stream curriculum. Teacher 1 explained some of the challenges faced by mainstream teachers and said:

SE1: …at the mainstream if they teach the kids to add and subtract on the number line it will be like that throughout. While if our children struggle with that, we try to implement it, but we don't put the focus on that and we don't use that as the main method. We would rather use counters.

SE2: …inspectors should understand that we don't use that method because it's not applicable to our kids. Sometimes when you get an inspection, they would complain that you haven't covered the whole curriculum. I think the people that aren't knowledgeable with kids with learning disabilities don't know what's good for the child. Like child friendly they must keep the child's disability in mind. Again, we follow the curriculum, but we try and adapt it and make it child friendly for the learning disability. We want every child to succeed, it doesn't help the child being a failure or feeling as a failure one time we want them to succeed in something.

ME3: If you are out, you just give like the curriculum writers, they are outside and say they say this will work. But they don't understand why we spend time singing math songs or why we spend time playing. Because this kind of things you cannot capture in the books and it's this kind of thing that's developing the math's.

ME2: I think with the curriculum if they could make it a bit easier for learning disability teachers, to get the easy easiest method to stick to, so that the learners could use, instead of coming and say but you haven't used this and that method.

ME2: I feel like the people in the department is giving us work which won't really fit in the system because they don't know what's really going on in the classrooms. They want us to work according to a textbook, but in real life, that's not possible. Yes, it's easy for them to sit in their offices and do the ATP's and then expect us to comply. But it doesn't work like that. There are many challenges we have in the classrooms, weather, electricity, sick children. Admin staff. I think the people upstairs must come downstairs and come visit us so that they can see what's really happening in the classrooms and then they will get a better understanding of what they expect of us and that it can't work always the way they want.

ME3: There's no time because they want to see written work, they want the DBE books to be completed. They want to see evidence of written work in the books you are rushing through your work to get done so that you don't get in trouble when they come for inspection. They must come and come see how we teach in the class, come give advice They don't want to see what practical I am doing. Don't judge me on my written work. come and judge me on how I'm teaching, and if the ATP can just be like the DBE book and correlates with the ATP that we start from the front instead of jumping around the DBE book.

The teachers' viewpoints concur with Butterworth, Varma and Laurillard (2011) and Shalev, Manor and Gross-Tsur (2005) that these hitches appear to be a main barrier to succeeding in the math curriculum.

Theme 3: Learners' and teachers' psychological approach towards mathematics.

Learners' emotional & behavioral anxiety

Learners with incapacity in mathematical computation may exhibit impulsive and possibly antisocial behavior (Badian & Ghublikian, 1983). Teachers mentioned that some children do not enjoy learning math, they lose interest because they do not understand it. The teachers mentioned that the reasons could

be that they do not understand English, and they lack vocabulary, they did not grow up with math at home the parents did not engage with them, for example, to send them to get two cups. Therefore, they lack confidence in doing it. Teachers also mentioned that learners may have a fear of the teacher, because some teachers have limited patience and get agitated when learners do not understand. Then learners pick that up and become anxious to try, they are afraid to make mistakes.

ME1: Some children enjoy math more than others, especially the cleverer ones. While others lose interest because they don't understand either they don't understand English or the concept, or they just don't like it. I think there's always a positive and a negative, so there's always children enjoying learning math, willing to learn, willing to do more. The extra step, the next step, the next level, and there's others that don't care. They don't like it. They don't want it. They don't enjoy it. It's just more work.

This statement indicates that math anxiety is built is not something with which learners are born. Their lack of interest in learning math is due to their previous experiences with numbers. The teacher suggests that language is another factor to math anxiety, because if the child does not understand the symbolic language of math, it will be difficult to engage and solve math problem. If they had hardship before learning math, they psychologically build a negative attitude because they do not enjoy it.

ME2: Children have no interest in math. They didn't grow up with math. They don't know where it's coming from, or they have a Brain disorder. They're not confident in doing math. Some of them might only experience mathematics at school. No mathematics at home. Mommy doesn't ask questions like go get me two cups, one cup or give me three toys, then this is the only place that they get in contact with math. Maybe this is the only time they do and then they maybe get a fear because they don't know this, or the vocabulary will also be they don't understand.

The teacher suggests that lack of prior experience with math may be a factor to learners not having the interest and confidence to learn math: Because they never had math experiences before at home when they were toddlers, they only learn math at school, and then they develop fear because they lack understanding of the subject.

ME3: It's fear for the teacher because teachers only have a certain patience as well, and after the third, fourth time, we all don't always have the resources and time to reteach, and then the children also get anxious. There's always a few crying because they don't know what to do and the teacher is getting agitated. I think it's the teacher's attitude as well if the teacher makes it fun for them. If teachers change their attitude make it fun for them make it learner appropriate, learners will also change their attitude.

The statement made by the teacher also suggests that the teacher's attitude towards learners when they struggle with math is what leads learners to be afraid of making mistake. The teacher notes that some teachers lack patience to repeat when learners do not understand, therefore they get irritated when they get some answers wrong.

SE2: When children have learning disabilities at the mainstream schools and they come to us, those children have been through so much failure, ridicule, aggression frustration, peers not understanding and there are many factors other than being cool you know brain capacity or disturbance in the brain there's lots of diet textures smells they so much involved in a learning disability is not just oh he can't read, he can't write. There is so much burgage around them. This is a child people always laugh and the child doesn't only have a learning disability in class, the disability carries through at home and your friends at the shops in the mall on the beach at a restaurant at a holiday resort.

SE2: The first week of school leaners were counting dots and writing the number. This boy was soothing and crying and I said, what happened? Did you get hurt, the tears squirt. His tears were squirting. What's wrong? He said 'I think I've got this wrong. I think this is addition and I might be wrong' and I said, 'well, number one, it's not addition you're just counting the dots and let's check, you're not wrong. You're Right'. He said, 'thank you I thought I was wrong. mustn't make a mistake' and I said 'you can make a mistake; you've got an eraser to erase and fix it'. He was in such a physically noxious state.

It's important for a teacher to attend to the child's learning discomfort because when a child struggles with mathematics normally they develop anxiety which forces them to lose focus and not pay attention to the subject matter. The teacher explained the root of math anxiety she said:

SE2: Anxiety comes from adults from home into school. Adults would say 'if you don't have math's at high school, you not going to be able to have any future. You can't study anything. You can't have a career'. They make kids anxious and scared that they build up a mental block.

The teacher's comment points to community stereotype regarding mathematics as being a challenging subject. Those who are competent at mathematics are seen as being a genius. Teachers are then faced with a huge responsibility to reassure learners that math has different content and clarify that arithmetic is just a single piece of mathematics and some pieces do not involve arithmetic (Williams, 2013).

SE2: Parents and community hold a belief that you've got to perform. You've got to be a doctor. You've got to be something great to be a person. I tell my learners to just do your best and that's our motto: 'Be the best not first'. Do your best, don't be first to finish. Do it slowly if you're wrong, we erase it. We help each other, and that is why we don't move on if not all of us understand. I think it's pressure everybody around us and not even math, reading and writing you've got to perform performing.

The teacher reveals that math anxiety is so predominant in the community from both parents and teachers. Parents mostly instill their undesirable spirits or attitude to their children (Sparks, 2011). Therefore, a teacher should make less effort to make the learners feel intelligent and restrict themselves from asking questions when they do not understand. The classroom should stimulate learners to feel safe to make mistakes and learn to the best of their ability.

ST3: More of the behavior change from somebody that's sweet. You find that a child when it's math time there's stomach aches, there's headaches, there's whatever ache. After that, the child is fine. Or before that the child is fine. Also, behavior problems start when you get somebody that's fine when you notice that it's makes this person. And sometimes it's just because they don't want to do math, so they now want to distract you. There was one child he was in my class in Grade 3 after break. He ran, there was a teacher standing there. He ran from there. He just pulled the teacher's skirt down. When you talk and talk and talk, because this child is not like that, but now he wants us to waste more time here instead of going to class and do math.

Children who struggle in math tend to be disruptive and avoid participating during teaching and learning. They develop an undesirable attitude and react by displaying unsuitable behavior in the classroom (Williams, 2013). The teacher's comment concurs with William (2013) that learners with math learning disability exhibit undesirable attitude and act out of line.

Learners on the other hand expressed that math is a difficult and confusing subject because of its complexity with number patterns, which makes numbers not to be in order, the mathematics operation that involves multiplication, division, subtraction, and addition when solving bigger numbers and counting in patterns using a number chart.

Table 3:
Ns Learners' overall response on mathematics learning

Grade 1	**L1: got 6 + 7. He got 18, he says he used a number chart to get the answer. He said: '*it's difficult and math is the hardest difficult thing*'**
	L2: '*Dividing and plus. times Eight 8 x 8 x 8 is difficult for me it's difficult because it's long division.*'
	L3: '*Dividing and plus. 1000 x 1000 is difficult*'
Grade 2	L4: '*Because it's about numbers and it's difficult for me because sometimes I always get confused.*'
	L5: ;*Times and dividing. It's difficult* when there's a multiplication like 70. I mean 27 + 1 = 27 + 2 + 5. I don't know the answer, so I give the random number.'
	L6: '*I cannot. I'm not good at counting force 20 times.*'
Grade 3	L7: '*Because I'm struggling, and my fingers are not…. I cannot count properly.*'
	L8: '*It's when I see divide and multiplication, it's really hard to and sometimes I get confused which one is multiplication and which ones dividing. I think when we do times when it's like a test and we need to do times on our own, it's really difficult for me.*'
	L9: '*I can't count till two hundred. My fingers are not good I get confused, and I lose which number I'm at, so I go all the way the back and start all over.*'

Table 3 shows that learners experience mathematical difficulties at all levels of learning, but that those grappling with dyscalculia are in a more severe state of comprehending and tacking mathematical problems.

CONCLUSION

In conclusion, both the study and the literature has delineated that children with dyscalculia are mainly due to genes, brain abnormality, and cognitive deficit. Most of these children remain unidentified and undiagnosed due to lack of diagnostic tools even when referred to special schools. This study has further shown that mathematical difficulties can be caused by medical conditions such as brain abnormalities and certain disorders. Learners' perceptions of mathematics are influenced psychologically by their parents and teachers. The government's lack of recognition of this condition limits individuals from receiving the appropriate support. The privatization of dyscalculia associations or institutions disadvantages learners from poor backgrounds. The government should consider providing support to individuals who cannot afford to get private assistance due to socioeconomic status by de-privatization and providing funds to special schoolteachers, and educational psychologists to receive proper training and tools to diagnose children with dyscalculia.

There are both internal and external factors that impinge on impair learners' ability to acquire mathematics knowledge within the learning environment, such as large number of learners in the classrooms, teachers' attitude towards mathematics, the curriculum and multilingual classrooms and disenable learners from being taught in mother tongue. These factors worsen the condition and deprive learners with dyscalculic from opportunities to receive appropriate support. In the classroom, the curriculum has been found to be one of the major factors that contribute to poor mathematics instruction and learning, especially for learners with learning disabilities, since it has been designed for learners with less cognitive disabilities such as dyscalculia who can acquire mathematical skills as a given pace and level of difficulty. Children with dyscalculia need a differentiated curriculum that will be suitable for

them to learn basic mathematics. Teachers' methods of teaching that are mostly acquired at teachers training institutions are predominantly for learners without dyscalculia or any other cognitive impairment. Learners with dyscalculic require teachers who understand their condition and provide differentiated instruction for them, rather than expecting them to perform at the same level and pace as the rest of the children. The teachers' inappropriate instructional approaches, limited resources and the indifferent curricula means that learners with dyscalculia will always be left behind and uncatered for both in schools and communities.

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Practitioners' Corner

Parents' views on teaching comprehensive sexuality education to their young children in Zimbabwean schools[1]

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ABSTRACT

There is an increase in child sexual abuse among young learners in Zimbabwe (Mahoso, 2020), therefore, there is an urgent need for comprehensive sexuality education to be implemented. This study aimed to establish the views of parents on teaching comprehensive sexuality education (CSE) to young children in primary schools. Most schools in Zimbabwe are avoiding teaching topics on CSE. This resulted in young learners being deprived of age appropriate CSE knowledge and their rights and responsibilities informed by the ecological theoretical framework. A qualitative approach within the interpretivist paradigm was applied with a case study design. Data were gathered using a semi-structured interview schedule. Purposive sampling was used to select 10 parents. The study revealed that parents' cultural and religious beliefs impacted their views. Parents believed that sexuality education content is taboo and against their norms and values. They indicated that CSE content would encourage sexual activities among children. The study recommended continuous education on the importance of CSE and intensive advocacy campaigns to be initiated by all stakeholders. Parents should become involved in the development of a CSE curriculum framework for primary schools. Parents and teachers should work together to support the teaching of CSE to children.

Keywords: comprehensive sexuality education, parents, learners, child sexual abuse

INTRODUCTION

Africa is the continent with the highest rate of child sexual abuse globally (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2023). In Africa, the United Nations International Children's Emergency Fund [UNICEF] (2014) estimates that almost 95 million children experience abuse annually. According to the Guest Editorial in the South African Medical Journal (2018), the Optimus Study of SA revealed that sexual abuse of children is widespread with 36.8% of boys and 33.9% of girls reporting some form of abuse. Child abuse is one of foremost public health challenges currently facing many African countries and therefore the authors believe there is a need for an intervention programme to minimise child sexual abuse. According to the United Nations Population Fund [UNFPA] (2015), this continent has the most significant number of new HIV infections which has been increasing as a result of inappropriate knowledge and understanding of comprehensive sexuality education (CSE). There is a

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definite need for a nationwide campaign to curb this phenomenon and education appears to be a suitable means of knowledge and empowerment (Venketsamy & Kinnear, 2020). Therefore, the authors argue there is a need for a comprehensive sexuality education to be implemented across the African continent. According to UNESCO (2015b), most African countries have been gaining support to teach CSE from the United Nations Integrated Task Team (UNITT). These countries are continuously being supported to develop a CSE curriculum that is contextualised, age-appropriate and meets the needs of the community (Venketsamy & Kinnear, 2020).

According to Venketsamy (2018), Nyamanhindi (2015) and Muridzo and Malianga (2015), child sexual abuse is escalating phenomenally in Zimbabwe. On average, 13 children are raped daily (Mugabe, Chingombe & Chinyoka, 2016) and hundreds of young girls are sexually abused (Nyamanhindi, 2015). Sexual abuse is not isolated to young females alone. Boys are also victims of sexual abuse in Zimbabwe, and the abuse rate matches that of girls (Mugabe et al., 2016). Childline (2015) and Muridzo, Chikadzi and Kaseke (2018) has indicated that children as young as two weeks have been victims of sexual abuse in Zimbabwe, and the numbers are increasing daily. Feltoe (2017) cites the lack of knowledge and education regarding sexual abuse as the leading cause in Zimbabwe. Tshabalala and Khosa (2014) agree that young children in Zimbabwe are unaware of abuse and do not report the incident to their parents. For this reason, the authors agree with Nkoy, Venketsamy and Sing (2022) that the introduction of CSE in the school curriculum will empower young children to make decisions and communicate abuse taking place against them.

Tshabalala and Khosa (2014) state that in Zimbabwe, most parents lack the knowledge and understanding to explain sexuality education content to their young children. Furthermore, their cultural beliefs and value system impact their philosophy on the teaching of sexuality education content (Mugabe et al., 2016). According to Luko and Van Dyk (2015), another challenge is that teachers need more knowledge and understanding of content to teach CSE content to young children, thus avoiding any topic relating to CSE. Mugabe et al. (2016) argue that if CSE content is age-appropriate and consented by parents, young children will become aware of sexual abuse and unwarranted inappropriate behaviours. Childline (2015) believes that awareness and education will encourage young children to make decisions about their bodies and report incidents to trusting adults.

AIM OF THE STUDY

This study aimed to investigate the views of Zimbabwean parents regarding teaching CSE to their young children. The objective of this study was to help determine strategies that could be employed to encourage parents in Zimbabwe to support the teaching of CSE to their young children. This paper also envisages to contribute towards eradicating child sexual abuse by empowering young children with the appropriate knowledge and skills through educations, such as communication (inform an parents or adults if they are being abused), assertiveness (learn to say no, if they are uncomfortable around people) and decision-making (they can decide to protect their bodies by seeking help).

LITERATURE STUDY

Comprehensive Sexuality Education

Comprehensive Sexuality Education (CSE) focuses on the holistic education of children, especially the emotional, cognitive, physical, and social dimensions of sexuality (World Health Organisation [WHO], 2010). It was introduced in 2000 into the school curriculum to minimise learners and students receiving confusing and misleading information on sex, sexuality, gender, and relationship (Kirby, 2011). Comprehensive Sexuality Education is described as a curriculum-based process of teaching and learning (Kinnear, 2018). CSE focuses on what knowledge children need to know. It also recognises the need for the development of skills, values and attitudes that will empower them to (i) understand and ensure the

protection of their rights throughout their lives, (ii) consider their choices and how these will affect their well-being, (iii) realise their health, well-being and dignity and (iv) develop respectful social and sexual relationships later in their lives (UNESCO, 2018).

CSE further aims to help children develop respectful social relationships, consider other people's rights, and value gender equality (Swedish International Development Cooperation Agency [SIDA], 2016; UNFPA, 2014). It is based on scientific evidence; hence, it provides medically accurate information to learners in a way that matches their age (Ketting & Ivanona, 2018; UNESCO, 2014).

CSE is cognisant of learners' culture and is also called abstinence-plus education (UNFPA, 2014; UNESCO, 2018) because it goes beyond teaching children about abstinence-only to include teaching about rights and gender disparity (UNESCO, 2023; Khau, 2012). It is taught to young learners to develop communication and critical thinking skills, leading to assertiveness and good decision-making skills (UNFPA, 2014). All these competencies are expected to help children avoid being sexually abused or sexually exploited (Kinnear, 2018). Kirby (2011) states that CSE also envisages empowering learners and students with the knowledge, attitudes, skills and values to make independent, appropriate and healthy choices in their sexual lives.

Kinnear (2018) and Venketsamy (2018) state that sexuality education is a life-long process of acquiring information and forming beliefs, values and attitudes. It aims to contribute to behaviour change, including reducing unprotected and unwanted sex and reducing harmful behaviour, including sexual offences such as assault and abuse. UNESCO (2009) posits that sexuality education is rights-based, culturally-influenced, age-appropriate and scientific information needs to be curriculum-based.

The need for CSE in Zimbabwean schools

Child abuse is rife in Zimbabwe, according to the University of Edinburgh (2016), a report from Childline Zimbabwe stated there was a total of 15446 reports of child abuse. Fifty-four (54%) were about abuse to children and their need for help. The statistics revealed 39% children were sexually abused, 25% neglect, 22% physical abuse and 12% suffered emotional abuse (University of Edinburgh, 2016). For this reason, the authors believe that CSE in Zimbabwe has become a necessity due to increased child sexual abuse (Mahoso, 2020). Muridzo and Malianga (2015) state that child sexual abuse refers to any sexual act that involves children. According to the Criminal Law (Sexual Offences and Related Matters) Amendment Act, 2007 (Parliament of South Africa, 2007), Maviya (2019) and Childline (2015) agree that child sexual abuse also includes exposing children to pornography, having sexual activities in the presence of children or making sexual remarks to a child. Hall and Hall (2011) state that the escalating rate of child sexual abuse in Zimbabwe should not be ignored because it negatively impacts the development of children. Maviya (2019) believes that this increase is due to myths about being cured of HIV/AIDS if infected individuals engage in sexual activities with young virgins. Despite this myth of being cured of HIV/AIDS when an infected person engages in sexual activities with a young virgin, Mhlanga (2016) state that these perpetrators infect young innocent victims, and they are never cured of HIV/AIDS.

When young children are abused, they are often unaware that they are being abused. Therefore, CSE should be taught so that children become aware of 'good touch' and 'bad touch'. According to the Department of Basic Education [DBE] (2016) in South Africa all children should be taught CSE content to be equipped with knowledge, skills and attitudes that are pivotal in protecting themselves, thereby preventing them from contracting HIV/AIDS infections, sexually transmitted disease and delay sexual debut to prevent teen pregnancy. Mhlanga (2016) states that it should be noted that Zimbabwe is replete with cultural beliefs that promote child sexual abuse; hence, the need for CSE to empower and make young children aware of the need to be protected. Bowman and Brundige (2014) highlight the following myths in Zimbabwe, it is believed that sex with a virgin can boost animal fertility and other forms of

wealth, such as acquiring more money, and that it can promote plenteous harvest to crop farmers. These myths and false beliefs that incite people to abuse young children to gain prosperity (Mahoso, 2020).

Mhlanga (2016) maintains that Zimbabwean parents have a culture of not reporting sexual abuse. Such cases are swept under the carpet (Feltoe, 2017) because victims may be stigmatised if it is brought to public knowledge; hence, out-of-court settlements have been opted. For these reasons, the researcher believes there is a need for the implementation of CSE in Zimbabwean schools. If young children are made aware and given appropriate knowledge of the abuse, they should be encouraged to report these incidents.

The situation of children in Zimbabwe concerning child sexual abuse is worsened because most children do not know what sexual abuse involves. According to Feltoe (2017) and Mhlanga (2016), most children are unaware they are being abused and do not report these incidents for fear and punishment. Furthermore, Feltoe (2017) argues that these children do not know where and to whom these incidents should be reported. Mhlanga (2016) and Mahoso (2020) further state that most children are abused by their custodians whom they trust. Due to fear, these young children do not report the abuse.

Venketsamy (2018), Feltoe (2017) and Mugabe et al. (2016) agree that most teachers and parents are ignorant of sexual abuse among young children. Mahoso (2020) found that those who are aware are afraid to report these incidents. In their research, Mugabe et al. (2016) and Nkoy et al. (2022) found that some parents and teachers cannot identify signs and symptoms of sexual abuse. This further widens the vulnerability gap of children to sexual abuse. Failure to report sexual abuse means that the victimised early-grade children are never tested for HIV after being sexually abused, yet some perpetrators are HIV positive (Mugabe et al., 2016).

Deb (2018) and Mhlanga (2016) agree that all parents must protect their children within a community. However, times have changed, and some adults have become nonchalant about children being abused. He further states that these adults in the community do not attempt to report the incident or take responsibility to protect these children (Mhlanga, 2016). Feltoe (2017) states that, unlike in South Africa, in Zimbabwe, child sexual abuse often goes unreported, thus allowing perpetrators to continue abusing children. This reveals that young children are given little or no protections against sexual abuse in Zimbabwe (Bowman & Brundige, 2014); therefore, the authors believe that children need to be educated on the issue regarding CSE content.

Although Zimbabwe has laws that criminalise child sexual abuse, these laws are not effectively implemented, thus creating gaps that perpetrators of child sexual abuse capitalise upon (Mantula & Saloojee, 2016; Mhlanga, 2016). One of the challenges is the lack of proper training of police officers to deal with child sexual abuse (Mhlanga, 2016). Police officers in Zimbabwe lack knowledge and understanding of the appropriate actions to be taken (Mhlanga, 2016). According to Mantula and Saloojee (2016), policy implementation is also stifled by financial constraints in Zimbabwe and a lack of material resources to implement these policies. For example, child sexual abuse awareness campaigns require vehicles, posters, keynote speakers, and other resources to reach out to every child to make them aware of sexual abuse. However, due to financial constraints and a lack of commodities, these campaigns cannot materialise; thus, young children in rural areas are kept uninformed (Mantula & Saloojee, 2016).

Another reason for introducing CSE in Zimbabwe is to curb forced child marriages (Muridzo & Malianga, 2015). Mahoso (2020) and Mushohwe (2018) state that most young children are forced into cultural marriages at a very tender age in most rural communities in Zimbabwe. Furthermore, in the Zimbabwean culture, those individuals caught abusing young children are required to marry these children. Often, these children are forced to enter a loveless marriage with their abuser (Mushohwe, 2018). These young children are expected to stay in an unhappy marriage for the rest of their lives, enduring a traumatic lifestyle (Muridzo & Malianga, 2015).

Furthermore, in Zimbabwe, child marriage is coupled with a tolerance of child prostitution (Mushohwe, 2018). The tolerance of child prostitution is due to the lack of clear policies in Zimbabwe, according to the findings by Mahoso (2020). It is believed that children engage in sexual activities due to poverty (Muridzo & Malianga, 2015). Katsande (2012) states that in Zimbabwe, many children are vulnerable to sexual abuse due to a lack of parental guidance and support on sexuality education. Kurebwa and Kurebwa (2014) found that most abused children are from child-headed households. These children have lost their parents to HIV/AIDs, or their parents have emigrated to other countries to pursue better job opportunities due to the economic recession in Zimbabwe. Children from child-headed families lack education on sexuality and are exposed to abuse by their caregivers (Kurebwa & Kurebwa, 2015). Katsande (2012) states that perpetrators usually target children from child-headed families since they are defenceless due to the lack of an adult in this family to protect them. If CSE is provided to them, they will become knowledgeable and skilled, and this will empower them to protect themselves since they will know to whom and how to report their abuse (DBE, 2016). Another cause of child sexual abuse is the media and the internet.

Some children in Zimbabwe have access to the internet through modern technology such as laptops and cell phones that they navigate and access pornography (Simuforosa & Rosemary, 2015). After watching, children develop misconceptions that may lead them to abuse each other. This justifies the need for CSE for these young children in Zimbabwe. Simuforosa (2015) found that some children are abused by adults who are authority figures to them. Such people as teachers and guardians to these children take advantage of their positions to abuse children sexually.

Parental resistance to the provision of CSE to early-grade children

In most African nations, parents do not want CSE to be offered to their young children due to cultural prohibitions. It is viewed as taboo to teach young children about sexuality (Browes, 2015; Khau, 2012). This belief also exists among parents in Zimbabwe (Mugweni & Gwirayi, 2011). If any attempt is made by anyone, especially teachers to teach CSE to young children, parents in Zimbabwe intercept it, similar to other parents in Africa and beyond (Khau, 2014; Nyarko et al., 2014). In Zimbabwe, CSE content is supposed to be taught in upper grades and secondary schools under the subject Guidance and Counselling. However, teachers avoid teaching topics related to sexuality education because of cultural prohibitions (Gudyanga, De Lange & Khau., 2019).

Gudyanga et al. (2019) advise that most parents in Zimbabwe are uncomfortable to hear that their children are taught sexuality education content. These parents claim that they were not taught about CSE when they were young, and consequently, they expect the same for their young children. They believe that CSE will defile children's thinking about sex and sexuality education (Lukolo & van Dyk, 2015). Kinnear (2018) found that when a child asks a question about sexuality, parents respond by discouraging the child from asking questions of that nature or responding by providing unclear answers. They respond this way because they believe it is taboo to talk about sexuality with young children (Nyarko et al., 2014); hence, they are unwilling to allow anyone to do what is taboo to their culture and value system. Simuforosa and Rosemary (2015) claim that some parents in Zimbabwe were victims of sexual abuse when they were young; hence, they view child sexual abuse as normative behaviour. Consequently, such people do not see the need to intercept child sexual abuse, and as a result, the parents become perpetrators of child sexual abuse too.

Besides viewing CSE to young children as taboo, some parents in Zimbabwe believe that CSE encourages young children to experiment with sex (Nyarko et al., 2014). UNESCO (2015b) argues against this view. CSE is about empowering young people in their holistic development. According to Ketting and Ivanova (2018), this is a myth because several research-based pieces of evidence indicate that CSE is efficacious in controlling child sexual abuse and promoting good health among young children. According to DBE

(2016), knowledge of CSE is an awareness of avoiding sexual abuse, thus minimising the chances of contracting sexually transmitted infection and HIV/AIDS.

Khau (2012) states that in Zimbabwe, some teachers claim that parents prohibit them from teaching sensitive CSE topics in the early grades. They believe sensitive topics should be taught when children are much older and in higher grades, universities and colleges. As a result, there is a high incidence of non-teaching of CSE content in the early grades in Zimbabwean schools. Nyarko et al. (2014) state that if teachers attempt to teach CSE content, they are often reprimanded and taken to task by parents, community and religious leaders. Teachers are often threatened with unemployment or with their lives if they teach CSE content (Khau, 2012). Nyarko et al. (2014) agree that teachers are caught in a problematic situation regarding teaching CSE to their young learners in schools. These issues widen the gap between continuous child abuse and young children's lack of empowerment and knowledge.

Role of parents in the protection of children

Parents are the ones who bring children into existence (Giddens, 2009; Haralambos & Holborn, 2010); hence, it is their responsibility to protect them as stipulated by the United Nations Conventions on the Rights and Welfare of the Child (UNCRC). According to UNCRC, all children have the right to be protected from all forms of abuse (Child Welfare Information Gateway, 2016). Parents need to take cognisance of their child and their rights to be protected. According to the African Charter on the Rights and Welfare of the Child (ACRWC) (Child Welfare Information Gateway, 2016), every parent is obligated and responsible to ensure their children are safe and protected from harm or abuse. Deb (2018) argues that it is the parent's responsibility to protect their children. The researcher agrees with Kirby (2011), who argues for implementing CSE into the curriculum in the early grades. Knowledge and age-appropriate content will help protect children from abuse. It will empower them with the necessary skills, namely decision-making (to report the incident or not), communication skills (to talk to an adult about the abuse), assertive skills (to be able to say 'no' to the perpetrator) and interpersonal skill (to share their experience with a trusting adult.

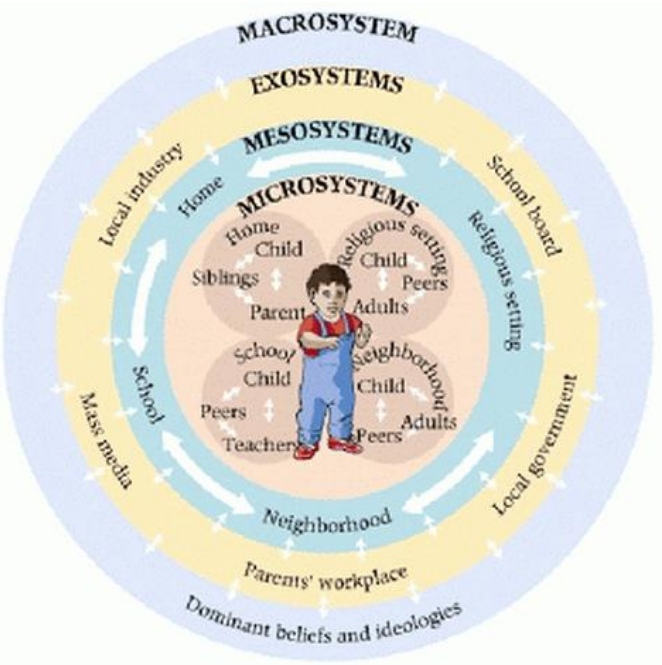
Lukolo and van Dyk (2015) view parents as the primary agents of socialisation for their children. Consequently, they take the teaching of CSE to these children and intervention in sexual problems of their children as the primary responsibility of these parents. Gudyanga et al. (2019) also agree that parents should be responsible for working collaboratively with teachers to provide CSE to their children. However, Lukolo and Dyk (2015) state that most parents and teachers lack the knowledge and understanding to advise on or teach CSE content. The ability to provide accurate information on CSE demands a sound knowledge of the biological functioning of the human body (Kirby, 2011). Mahoso (2020) states that most parents in Zimbabwe do not possess the appropriate knowledge and understanding to explain basic sexuality education to their young children. However, both Deb (2018), and Kinnear (2018) agree that due to the lack of knowledge about sexuality education parents fail or avoid communication with their children on issues of CSE.

THEORETICAL FRAMEWORK

Bronfenbrenner's ecological theory informed this study. According to this theory, human beings are influenced by their ecological systems. Bronfenbrenner identifies five ecological systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Paquette & Ryan, 2015). For this study, the microsystem is the focus (Figure 1). This system includes the home, parents, siblings, peers, school values system, and religious values. Parents are the primary caregivers of their children and are therefore responsible for their care and protection (Deb, 2018). Young children belong to a family (microsystem), encompassing the family's belief system, norms, values and religion. It is within this system that children are expected to be safeguarded and protected. Essa (2014) agrees that parents are indispensable stakeholders in their children's education. Young children interact and learn from their parents and

siblings within this microsystem. They begin to adhere to the norms and values their parents, teachers, and others instilled. Bronfenbrenner argues that if this system is based on mutual trust and acceptance, young children will grow into responsible adults without fear or intimidation. Morrison (2015) states that the microsystem is significant when it comes to the teaching of CSE in schools. Parents play a significant role in accepting or refusing to allow their children to learn age-appropriate content on CSE. He further states that parents' perceptions, beliefs and values regarding CSE influence their decisions over protecting their children from abuse.

Figure 1:
Bronfenbrenner's ecological model
Source: Knapp, Losert, Malmrose, Mullins et al., (n.d)
http://education-portal.com/academy/lesson/urie-bronfenbrenner-biography-theory-quiz.html



METHODOLOGY

The qualitative research approach located within the interpretivist paradigm was applied to elicit participants' views on teaching CSE in the early grades in Zimbabwean schools (Edrisingha, 2018). This method offered an opportunity to explore and make meaning of the participants' views, beliefs, values and motives for their attitudes towards teaching CSE in the early grades (Bryman, 2012). Purposive sampling was used to select only parents with young learners in the early grade classes (Grades R, 1-3) in Zimbabwean schools (Bryman, 2012; Maree, 2015). Although the researcher sent out fifteen (15) consent forms to parents, only six (6) parents voluntarily consented to participate in the study (Maree, 2015). The case study design was chosen because it allowed for an in-depth study, which was crucial in understanding the phenomena (Yin, 2011). It accommodated the use of semi-structured interviews, which enabled participants to elicit the required information easily. It satisfied the subjective nature of interpretivism (Maree, 2015).

Semi-structured interview

The semi-structured interview suited this study because of the sensitivity of CSE issues. It allowed the researcher to interact personally with participants, one at a time, creating an atmosphere of privacy.

Consequently, trust prevailed, which led to the elicitation of the required information from each participant (Maree, 2015; Yin, 2011). The semi-structured interview also enabled the researcher to solicit details from participants. Interviewees were also able to ask for clarifications to the questions.

Data Analysis

Data analysis was inductive. The recordings made during the individual interviews assisted in inductive analysis (Bloor et al., 2002). The data were analysed using the thematic approach (Guest et al., 2012; Creswell, 2009; Boyatizis, 1998). Multiple data sources such as interviews and documents were compared to search for common themes to ensure trustworthiness (Mncube & Dube, 2019; Creswell, 2009).

Ethical considerations

The participants obtained informed consent for the ethics code of conduct. The researchers guaranteed participants' anonymity, confidentiality, and privacy. The researcher applied for ethical clearance to undertake the study from the Faculty of Education's Ethical Committee of the University of Pretoria and the Ministry of Primary and Secondary Education in Zimbabwe. Participants were not forced or coerced to participate in the study. Participation was voluntary, and confidentiality was guaranteed. Informed consent was sought from each participant in writing. They were informed that they could withdraw from the study at any given time without explaining themselves or their reasons. The researcher used pseudonyms to report the findings. The codes P1-P6 refer to parent 1, parent 2, to parent 6.

DISCUSSION OF FINDINGS

The analysis of data that were collected led to the emergence of the following themes:

- Parents' knowledge and understanding of CSE
- Factors that prohibit the teaching of CSE to children in early grades
- Views of parents regarding teaching CSE in the early grade

Parent's knowledge and understanding of CSE

During the interview, the researcher asked parents to explain their understanding of CSE. This question aimed to gain an in-depth knowledge of parents' understanding of the concept. This question helped to reveal what parents knew and understood about CSE. Their knowledge and understanding are reflected in the quotes below. Most parents indicated that

> They have not heard about comprehensive sexuality education. However, they all heard of sexuality education. Therefore, according to them, comprehensive sexuality education is about sex education and teaching young children about sex. This would mean that their young children will learn how sex activities and how to 'make babies'.
>
> We don't want our children to learn about sex education because they will want to experiment with sex. We can't let them fall pregnant when they are so small.
>
> Our children are very small, and they must first learn to read and write instead of learning about sex education. When they grow up, they can learn about that. This is not the time for them to learn about sex when they are so small.

From the above response, there is evidence that most parents did not have a clear understanding of CSE and that CSE is not only about sexuality education. According to SIDA (2016) and UNFPA (2014), CSE is described as a curriculum-based teaching and learning process that focuses on the emotional, cognitive, physical and social dimensions or aspects of sexuality. It further encompasses the process of teaching

and learning about aspects of sexuality education to help learners acquire knowledge, skills, attitudes and values that can enable one to recognise health, well-being and self-respect.

The researcher took the opportunity to explain to parents that CSE is not about teaching only sex education and reproduction. It is more than sexuality education. Some of the topics in the CSE curriculum, as outlined in the International Technical Guidance on Sexuality Education, are focused on the overall well-being of learners. These topics include relationships, family, my body, healthy eating, bullying and age-appropriate sexuality education (UNESCO, 2009). To gain clarity on participant's understanding of CSE, parents shared the following sentiments:

> Oh, so CSE is not only about sex education and having sex. It is more about the health of our children and how to make friends. It is not about making love and having sex.
>
> CSE is about helping our children to learn about their bodies and how to take care of their bodies like bathing, eating healthy foods, exercising and making sure that they can take care of themselves.
>
> Now I understand what CSE is about, it is about helping our children to protect themselves. It is also about our children telling us if anything bad happens to them.

Through the process of probing, the researcher was able to provide some understanding of CSE to parents, which was greatly appreciated. This sentiment was echoed by P2, who said:

> Thank you, sir, for making this so clear to me. All the time, I thought it was about sex education, and I was really scared and worried. Now I know CSE is not only about sex education, and if the teacher is going to teach my child CSE content, then they will take into consideration my child's age and understanding.

According to Paquette and Ryan (2015) in the microsystem of Bronfenbrenner's theory, parents and children interact with each other within a safe space. Young children feel protected and safe around their parents and immediate caregivers. The authors believe that for this reason, parents must empower themselves with knowledge of CSE so that they can protect their children against harm and ensure their safety at all times.

Factors that prohibit the teaching of CSE to young children in Zimbabwe

The second question the research probed into was the factors that prohibited parents from agreeing to implement CSE content in the early grade curriculum. To this question, most parents fervently articulated their beliefs on what CSE entails and their cultural, religious and moral values as factors impacting their agreement. In the theoretical framework, religious factors are essential to the microsystem. Parents usually educate their children according to religious and cultural values. For this reason, it is evident that parents ardently adhere to the teachings of their religious leaders. They further indicated that they were highly influenced by their religious leaders and the doctrines of their religion. The quotes below articulate the views of parents regarding the factors that motivated them to disagree with implementing CSE in the curriculum (Venketsamy & Kinnear, 2020).

Three parents, P2, P3 and P6, indicated that their belief system did not allow them to agree to the implementation of CSE in the early grades:

> We grew up in a culture where talking about sex education to young children is taboo. Sex is only spoken by adults who are married. Our culture does not allow us to talk about sex. When children are older, then they can learn about sex. We believe from our parents and ancestors that it is wrong to talk about 'private matters' – the reference is to sex education.

Regarding sex talk, P1 stated:

> At our church, the leader or pastor is very strict. He does not like us to talk or bring up the topic of sex education. He tells us that it is wrong for parents to talk about sex education to their young children.

In her response, P4 indicated:

> My pastor says that only he can talk to the youth about sex education. It is wrong for schools to start telling children about sex education in the early grades. They are too small. It is for this reason that I don't agree that my child should learn about sex education. My pastor says it is morally wrong for teachers and parents to talk to their children about sex. It is not proper in the African culture and I may ask the parents not to attend the church anymore.

In her response, P5 stated:

> In our culture, sexuality education is regarded as education for adults. Whenever people want to talk about it, children are asked to go and play away from adults. Even in churches, when adults want to talk about anything that relates to sexuality, the junior Sunday school teachers are asked to take children out of the church and entertain them with other things.

From the above discussion and the participants' voices, there is evidence that the Zimbabwean culture does not allow teaching CSE to young learners. Furthermore, Mahoso (2018) found that due to religious and cultural beliefs in Zimbabwe, parents do not discuss sexuality education with their children. Nkoy et al. (2022) found that in most cultures, 'sex talk' is for adults only. Giddens (2009) states that in Zimbabwe, if any parents go against the cultural and religious norms and values, these parents are not welcomed into their religious gatherings. For fear of being ousted, most parents are complacent and abide by their elders' and religious leaders' rules and conditions (Venketsamy, 2018). According to the meso-level in the ecological model, religious leaders have a great influence on parents. Mahoso (2018) states that in Zimbabwe, it must be recognised that the socio-cultural and religious values of the community would influence how CSE can be implemented since the very concept of CSE is taboo among community leaders. UNESCO (2023: 9) reports that

> CSE content must respond appropriately to the specific context and needs of young people to be effective. This adaptability is central to culturally relevant programming and includes understanding cultures' messages about gender, sex and sexuality.

Another issue raised by parents is the 'cultural church convention' that significantly influences parents and their views on implementing CSE in schools. The participant mentioned that children are driven away from adults whenever church members want to deliberate on issues that relate to sexuality. Muridzo and Malianga (2015) state that churches have much control over the Zimbabwe community and the children's education. They have a significant influence on parents and the decisions they must make. As a result of the steadfast doctrines and belief, the implementation of CSE is a far cry in Zimbabwe. Therefore, the authors believe that child sexual abuse will continue to rise due to allegiance to the church rather than protecting their children.

Views of parents regarding the teaching of CSE in schools

In the final question to parents, the researcher asked parents their views about teaching CSE in schools. Their initial reaction was that of surprise, reluctance and apathy. After a lengthy discussion on what CSE entails and a clear understanding, the participants realised that CSE is not only about sex education but also about the holistic development of young children's well-being and this statement aligns with UNESCO (2015b) which articulates that CSE is a holistic and comprehensive approach to the teaching of sexuality education. Most parents agreed that

> If the content is not only about sex education but the well-being of our children, then we do not have a problem. What we would like to do is to become part of the school that is developing the

> lessons for the children. As parents, we would like to know what the teachers are teaching our children. We don't want them to teach them about having sex, but rather how to take care of their bodies, make friends, eat healthily, exercise and stop bullying others in school.

Parent 2 stated:

> I don't mind my child learning CSE content so long as this will help my child to know when they are being abused. They must be able to know the difference between good touch and bad touch.

Parent 5 stated:

> If CSE is about teaching our children to speak out, tell someone that they are being abused, and learn to say 'no' when they don't like how they are being touched, then this will be a good lesson for them to learn. However, if they are going to teach about sex and having sex, then I am not going to allow my child to learn.

The views shared by most of these parents present a very positive view towards teaching CSE. Simuforosa (2015) agrees that parents must become educational partners and be consulted regarding CSE content. Kirby (2011) concurs that for each grade, the CSE content must be age-appropriate, contextually relevant, and address current issues. Both Venketsamy and Kinnear (2020) conclude that countries that intend to implement CSE must develop policy guidelines and detailed scripted lesson plans for teachers so that they teach what is scripted and relevant for a particular grade. Kirby (2011) argues that CSE can only be successfully taught with the consent of parents and other stakeholders. All stakeholders must become involved in the conceptualisation of the programme before it is implemented. DBE (2016) articulates that all policies and programmes aligned to CSE must be appropriately advocated, teachers must be capacitated, and parents and other stakeholders must be consulted so that there is uniform acceptance for implementation.

RECOMMENDATIONS

This study found several challenges among the people of Zimbabwe regarding teaching CSE to young learners in schools. Some of the challenges cited by the participants were religious factors, culture, parents' attitudes, ancestral belief norms and values. Since the community is deeply entrenched in these value systems, Mahoso (2020) stated that parents are reluctant to engage in sex education with their children despite the increased child abuse in Zimbabwe (University of Edinburgh, 2016). Emanating from the findings and discussions above, the researcher proposed the following recommendations: Zimbabwe needs to, first and foremost, begin with a consultative forum that encourages the participation of teachers, parents, religious leaders and community leaders in developing a framework for the inclusion of CSE into the curriculum to minimise and eradicate child sexual abuse. Robust communication and consultation should be encouraged with different views for and against implementing CSE in schools.

Another recommendation is to organise capacity-building workshops for all relevant stakeholders to allow the teaching of CSE age-appropriate content. These workshops should enlighten participants that CSE is not about sexuality education but about the well-being of young children. The focus should also be on informing parents that CSE is about developing life skills such as decision-making, communication, assertive skills and interpersonal skills. These skills will empower young children to communicate incidents of abuse without fear or intimidation. Through the CSE programme, young children will also become aware of what is abuse and non-abuse.

Finally, it is recommended that both the school and parents should become partners in education, especially regarding CSE. Schools should inform parents that each grade will have its age-appropriate content. As children progress to higher grades, the content will be aligned accordingly to meet their needs. For example, young children will be taught about their bodies in the early grades, while in higher

grades, learners will be taught about the body's biology. The scripted lesson plans on CSE will have continuous sequence and progression.

CONCLUSION

There is ample evidence about child abuse in Zimbabwe that warrants the teaching of CSE to young children. This study found that parents are highly influenced by their religious and cultural values in Zimbabwe. Although there is a high rate of child abuse, parents believe that the teaching of CSE, especially sexuality education, is the responsibility of the religious leader. Several cultural factors have also been found to be prohibitive to the provisioning of CSE to young children. Teaching CSE in Zimbabwe is regarded as taboo. Due to the lack of knowledge and understanding of CSE, initially, participants were reluctant about teaching CSE to young children. However, when they began to understand that CSE focuses on the holistic development of learners, they were more accepting and accommodating of their children being taught CSE age-appropriate content. Parents agreed that their young children will learn appropriate communication skills (they would report incidence of abuse), assertive skills (they will learn to say 'no' when they experience inappropriate behaviours) and decision-making (they have the right to make decisions about how they feel). Parents agreed that they should protect their children and that the skills they would learn through the CSE programme would help protect them (children) from harm. Therefore, this study reflects the need for CSE to be taught to young children in primary schools. However, parents in Zimbabwe are encouraged to cooperate and work collaboratively with teachers to implement CSE to eradicate child abuse. The need for advocacy for providing CSE to young children has been recommended, as well as workshops to educate parents on the significance of teaching CSE to young children. This is expected to help these parents develop a positive attitude toward teaching CSE to young children to reduce child sexual abuse in Zimbabwe.

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