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SOLERTIA

'The ability to understand, in perception, the archetypal and intelligible forms that define perception itself'
– Robert Grosseteste

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Foreword

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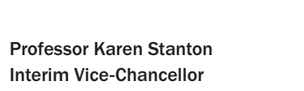
Credits
Particular thanks go to: James Duke and Dr Claire Thomson from the Centre for Enhancement in Learning and Teaching; Head of Research, Dr Andrew Jackson; and Stephen Macdonald from BGU Library Services, for their support in the production of this publication.

Humanity would be so much the poorer if it had not over the generations invested in and developed institutions of Higher Education. Universities have become such an established part of global society that there is a danger we take them for granted and fail to reflect on the many ways they transform lives and the value they add to society.

Students are at the heart of what we do at BGU and Solertia provides them with an opportunity to showcase their work. This publication is an important part of the Universities mission to discover, publish, disseminate and curate new knowledge. When conceptualizing the 'footprint' of BGU it is important not only to perceive the physical campus but also the intellectual capital of the institution.

Solertia is a substantive asset of our University and one I value enormously. For some of the students whose work is found here it will be the first time their work will have been published. Given the quality of the writing and the ideas contained in this issue it will not be their last publication.

To close, may I encourage all those whose submissions grace this Journal to keep writing and to hope that readers find new insights in the content that follows.



Professor Karen Stanton
Interim Vice-Chancellor

December 2023

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Contents

The impact of the COVID-19 Pandemic, E-Learning and Digital Poverty on Academic Progression: University Students' Perspectives

Abstract:

The sudden outbreak of a deadly disease called COVID – 19 caused by a coronavirus and the subsequent evolving technological advancements have led Higher Educational Institutions (HEIs) to immerse their learning methods through digital learning platforms (e-learning). This movement has led to a significant reduction in traditional classroom-based learning within Higher Education (HE). This research explores the impact of moving to e-learning on academic progression as perceived by 40 University students from various HEIs in the United Kingdom (UK). The 40 university students who had experienced e-learning in HE completed an online mixed-methods questionnaire, and three of these students were recruited for semi-structured interviews. Participants from all levels of study recognised that e-learning presented physical benefits. One benefit in particular was session recordings which enabled easier access and subsequently less time commuting, leading to "greater time for studying". However, mature students identified social limitations of e-learning, such as experiencing isolation from peers and having limited communication when contacting their lecturers. In particular, mature students further noted that digital poverty (being without access to core digital items), such as a lack of technology and limited knowledge of online applications, led to significant adverse effects on their academic progression. The findings concluded that most undergraduate students who participated preferred traditional or blended learning methods over e-learning. This differs from the postgraduate students who significantly preferred e-learning over the traditional classroom-based learning method. Thus, HEIs should carefully consider the learning methods implemented at different degree levels to accommodate student preferences.

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Introduction

Since the early twenty-first century, technological advancements have made e-learning a more prominent learning method within HE, with various courses in the UK being entirely delivered online (Nicholson, 2007). The implementation of e-learning into the HE system have raised contrasting views on the potential academic progression that online learning develops. For example, Coman et al. (2020) notes that the HE system has evolved to become more dependent on technology which results in a reduction of traditional learning methods. Valverde–Berrocoso et al. (2020), also further confirmed that online learning practices such as e-learning are crucial to students' academic development and progression in the twenty-first century within HE. According to the Department for Education (DfE) (2020), since 2020, the COVID – 19 pandemic has led to e-learning becoming the primary learning method in HEIs within the UK, as academic sessions were facilitated via online learning platforms such as Blackboard. Due to developing learning methods within HE, the OECD (2020b) argued that HE staff and students should receive adequate e-learning training to maximise their potential to utilise online learning platforms.

This research project explored the impacts of the COVID – 19 pandemic forcing HE to be taught entirely online. The research explored the perspectives of 40 university students from across the UK, both male and female, who self-reported differing experiences of e-learning whilst undertaking their degrees. This project offers a review of pertinent literature, particularly from: Porter and Graham (2015), the DfE (2021a) and the Office for Students (OfS) (2020c). The researcher's tentative conclusions were informed by established literature and gathered data to lead to recommendations for a blended learning style of traditional and e-learning for the academic progression of university students.

Literature Review

This review analysed the relevant literature on implementing online learning within HE during the COVID – 19 national lockdowns in the UK. Specifically, it critically reviewed the literature surrounding the effects of e-learning on university students' academic progression.

Overview of e-learning

There are various definitions of e-learning. Mentis (2008) noted that e-learning represents the integration of technology and pedagogy within a learning context. The prime example of this integration is the equipment and facilities that enable online learning; a global definition supported by Veletsianos (2016). Mentis' definition is further enhanced by Rapanta et al. (2020), who adds that this paradigm of education modifies how students engage with learning materials, resulting in students no longer being limited by the boundaries of the classroom. Removing these classroom boundaries permits the learning process to be fully interactive, where externalisation transfers the core knowledge students require. However, Vanderhouten et al. (2014) has found the rapidness into e-learning within the education system to be problematic; without adequate training, some educators will be ineffectual at using the technology. This issue could lead to educators spending considerable time trying to work the technology instead of teaching their students, thus creating the need for educational institutions to provide e-learning training to maintain the expected teaching standards. Even so, Vanderhouten et al.'s (2014) approach does suffer from severe problems as it makes the assumption that educational institutions will not have adequate training already in place for educators to access, thus adequate support for staff and students may already be in place. Conversely, the OECD (2020a) found that e-learning offers a diverse education process to enhance learning within the education system, further reporting that for educational systems to maintain the teaching standards, e-learning training is crucial providing educators with the necessary skills to utilise the technology available.

Introducing e-learning into HEIs

DfE (2019) noted that the UK's education system has significantly transformed to use digital learning platforms in the last twenty years, especially in HE, where technology is at the forefront of students accessing their learning materials. Ross (2020), further supports this digital development by arguing that traditional classroom-based learning has evolved with technological advancements such as interactive whiteboards. When online learning was first introduced, it referred to the use of computers within the classroom. Now, the development of technology such as mobile devices and tablets has resulted in the development of e-learning (Valverde–Berrocoso et al., 2020). The recent impacts of the COVID – 19 pandemic have led to a swift movement into e-learning, as HEIs could not facilitate students on-campus due to government regulations (DfE, 2021a). According to the OfS (2020c), which builds upon the previous strategies of the Department for Business, Innovation and Skills (DBIS) (2015), HEIs should equip students with resources and arrangements to facilitate their professional capabilities to flourish academically. During the COVID – 19 pandemic, these arrangements could include having access to e-books and e-learning support. Under the Equality Act (2010, section 98), HEIs utilising anticipatory decision-making over the pandemic has allowed for reasonable adjustments to be implemented. These adjustments include enabling resource allocation to develop e-learning strategies to support students' academic progression further.

The literature advocates that e-learning is classified as the most effective method for delivering education, with Andrade (2015) finding HEIs' adoption of e-learning having resulted in striking benefits such as easy access to resources. This supports the findings of Marc (2000), where e-learning is described as a practical approach to providing education because it focuses on students' needs within the process of education as opposed to the needs of HEIs. Wu et al. (2012) and Soliman (2014), found that e-learning is the best approach in HE. However, their research found varying reasons why e-learning is the most effective method. Marc indicated that e-learning supports students' needs, and Wu et al. (2012) believed that this support was exemplified in the independence it provided students. Similarly to Marc and Wu et al., Soliman (2014), highlights that e-learning offers opportunities for introverted students to become more involved by joining online sessions and being given more independence with their workload.

However, published research from the OECD (2020a) and Vanderhouten et al. (2014), highlighted the most significant weakness of e-learning; the need for computer competence to participate in, and access, online sessions and resources. Graham (2015), found that a lack of computer competency led mature students to feel isolated and alone when expected to use online systems. This

Partic-ipants	Age	Degree Level (2020/21)	Group
1	20	Undergraduate	A
2	20	Undergraduate	A
3	21	Undergraduate	A
4	21	Undergraduate	A
5	20	Undergraduate	A
6	27	Undergraduate	B
7	20	Undergraduate	A
8	47	Undergarduate	B
9	25	Postgraduate	C
10	21	Undergraduate	A
11	26	Postgraduate	C
12	27	Undergraduate	B
13	20	Undergraduate	A
14	32	Undergraduate	B
15	24	Undergraduate	B
16	39	Undergraduate	B
17	21	Undergaduate	A
18	21	Undergraduate	A
19	31	Undergraduate	B
20	48	Undergraduate	B
21	20	Undergraduate	A
22	22	Undergraduate	B
23	22	Undergraduate	B
24	24	Postgraduate	C
25	21	Undergraduate	A
26	18	Undergraduate	A
27	22	Undergraduate	B
28	29	Undergraduate	B
29	19	Undergraduate	A
30	23	Undergraduate	B
31	22	Postgraduate	C
32	20	Undergraduate	A
33	54	Undergraduate	B
34	36	Undergraduate	B
35	21	Undergraduate	A
36	22	Undergraduate	B
37	22	Postgraduate	C
38	26	Undergraduate	B
39	20	Undergraduate	A
40	22	Undergraduate	B

Table 1.1: Descriptive characteristics of the questionnaire participants

Group A – Undergraduate students aged 18-21;
Group B – Undergraduate students aged 22+;
Group C – Postgraduate students.

furthers the theory by Rahim et al. (2014) that to succeed in the twenty-first century HE system, students must engage and have the technical skills to utilise e-learning. These findings support Becker et al.'s (2013) argument that to assess students' computer competency, an assessment must happen before e-learning is initiated. Due to the speed of the national lockdowns, the initial assessments were unable to occur before HEIs implemented total e-learning (Carr, 2020). Within HE, it can be challenging to address students' technology skills before their enrolment such as with mature students returning to education (Rahim et al., 2014). In order to combat this weakness, during the pandemic period HEIs opted to introduce "Safety Net" policies during 2020/21 that safeguarded university students' grades to reflect their work accurately, thus ensuring that issues with e-learning could not have affected their overall academic progression (The Quality Assurance Agency for Higher Education, 2021).

Students' Attitudes of Experiencing e-learning

Cole et al. (2019), found that understanding students' perceptions towards e-learning was complicated and this complexity could be one reason for the limited literature surrounding students' attitudes towards e-learning. Coman et al. (2020), found that students reported that they learn less through e-learning and felt more respected in the classroom environment. Preceding this, Dumford and Miller (2018) noted that HE students rate traditional learning methods more favourably than e-learning methods. Coman et al. (2020), and Dumford and Miller's (2018) studies, revealed a negative linear relationship between the students' views of e-learning and their attitudes towards online learning. Loades et al. (2020), indicated it was problematic to reduce in-person interaction, resulting in many HE students experiencing physical and social isolation.

Holley (2002) noted that personal factors shape students' attitudes towards e-learning, for example technological knowledge and past experiences. The review of the data collected through this research seeks to develop conversation surrounding both the benefits and limitations of HEIs employing e-learning, and HEI's implementation of effective utilisation strategies toward it. This research project seeks to follow the theme of students' attitudes to e-learning in their academic progression within HE, in the hope to build upon the limited literature surrounding the effects of e-learning barriers noted by Porter and Graham (2015). Specifically, this research project aims to fill a gap in the current literature on the differing perceptions traditional and mature students have surrounding the effects of e-learning and digital poverty, specifically in relation to academic progress during the COVID – 19 pandemic. The aim of conducting this research project is to allow the student voice to influence the potential future practice within HE.

Methodology

Guided by the research methodology work of Laws et al. (2013) and Burton et al. (2014), the research project's design was driven solely by the nature of the research title. The research used an exploratory retrospective approach that implemented a methodology that focuses on perceptions about particular life experiences that have previously been formed (Cohen, Manion & Morrison, 2013). The data collection implemented triangulation using mixed methods that incorporated qualitative and quantitative elements in the questionnaires and semi-structured interviews such as multiple-choice answers and free text boxes (Guthrie, 2010). DeWalt and DeWalt (2010) argued that implementing triangulation limits any potential disadvantages of each research method used. Following Denscombe (2010), by gathering quantitative and qualitative data, the researcher can obtain a deeper understanding of university students' perspectives on how the COVID-19 pandemic, e-learning and digital poverty have impacted academic progression.

The Research Setting

The JISC application was used in designing the structure of the questionnaire, and the social media platform Facebook was used to recruit participants for the questionnaire and interviews. A private Facebook group specifically for university students wishing to gather data for their dissertations was chosen as the research setting to reach the target sample without physical contact. A link to the questionnaire consent form was posted in the Facebook group for participants to volunteer to participate in the research. The researcher selected the application Zoom video calls for the interview setting to complement and add greater depth to the data gathered via the questionnaires. There was no physical contact with any participants as interviews were conducted online, which followed the strict guidelines in place during the national lockdown enforced due to the COVID – 19 pandemic (Public Health England, 2021).

The Sample

The research used a voluntary response sample of participants (Burton et al., 2014), comprised of university students from across the UK from various HEIs (n = 40). The researcher gathered the limited identifying characteristics of age and degree level of the participants to maintain their anonymity. By using this demographic information, the researcher was able to explore the similarities and differences in their e-learning experiences of mature and 'traditional' students at university. From this data, the researcher separated the 40 participants into three categories, as seen in Table 1.1.

A strength of selecting the voluntary response sample of participants is that it creates the potential for a variety of views and perceptions whilst only collecting limited specific or identifying characteristics, maintaining participants' anonymity (Cohen, Manion & Morrison, 2013). Nevertheless, the researcher acknowledges that small-scale project such as this mean that the findings are tentative and sector-wide generalisations are not possible (Guthrie, 2010).

Questionnaires

Phase two of this research involved gathering data within a limited timeframe from participants through questionnaire distribution. Bell and Waters (2014) state that implementing questionnaires when experiencing a limited timeframe provides a rapid method of obtaining a large amount of data. Young (2015) supports this further by adding that questionnaires are an efficient research method to implement with the available time (p.163-180). Moreover, another benefit is that questionnaires present the data gathered in a way that is measurable and easily analysed (Jones et al., 2013). From this, Frampton (2020) argues that gathering data in its numerical forms allows it to be easily categorised, measured and compared. Therefore, any relationships between the data can be acknowledged promptly. A limitation of implementing questionnaires focused on quantitative data is that it does not contain the depth of meaning like qualitative data, as it does not review descriptive responses (Andrade, 2020). Upon reviewing this, the researcher implemented open and closed questions into the questionnaire to increase the depth of the responses by gathering both quantitative and qualitative data.

Further to this, the researcher had to consider limiting the likelihood of the "Hawthorne effect" affecting the data collection. The Hawthorne effect describes when participants alter their responses to provide answers they believe the research and the researcher are looking to find (Popper, 2004; Salkind, 2010). Kumar (2019), further reinforces Popper's (2004) thesis in that the dependence of the participants' truthfulness in responses put the research's validity into question. To mitigate this limitation, the researcher implemented a pilot study to eliminate or amend leading questions (Malmqvist et al., 2019).

The Pilot Study

Due to the sensitive nature of the research project, it was vital to ensure the questions were fit for purpose whilst minimising potential distress (Cohen, Manion & Morrison, 2013). For this reason, a pilot questionnaire was designed and distributed to five volunteer participants chosen by the researcher due to the status of university students, to provide feedback on how the questions respected the sensitive nature of the research. The outcome from the pilot study revealed several minor issues that required altering, such as removing redundant questions and amending questions so their intention was clear to participants.

Interviews

Phase 3 of this research – semi-structured interviews conducted following the responses from the questionnaire (see Appendix E1) – aimed to further develop a deeper understanding of the participants' perspective of the COVID-19 pandemic and e-learning. The interviews comprised of three university students, both male (n = 1) and female (n = 2) recruited via an advert at the end of the questionnaire (see Appendix D1). The interview participants will be identifiable as the interviewee codes; INTRW D, F and E, as seen in Table 1.2. Due to the nature of the research, non-probability voluntary response sampling was selected as all the participants put themselves forward to volunteer in the interviews (Galloway, 2005). This type of sampling increases the researchers' likelihood of gathering a variety of perspectives (Vehovar et al., 2016). Tyrer and Heyman (2016) suggest that this type of voluntary sample leads to a high risk of sample bias. There was a range of twelve years in age between the youngest and oldest interviewee, which was crucial in analysing the data to identify differing experiences between traditional and mature students.

Ethical Considerations

This research project was conducted under the regulations of the Bishop Grosseteste University Ethical Policy's (2019) ethical guidelines and the British Educational Research Association Ethical Guidelines for Educational Research (2018). Following these guidelines, all participants were required to complete a consent form before partaking in any research involved with this project (see Appendix B2 for consent form). Following the guidance of Bell and Waters (2014), all participants were fully informed on the purpose of this research by the inclusion of an information page within the questionnaire, whereby participants

Sex	Age	Degree Level (2020/21)	Interviewee Code
Female	20	Undergraduate	D
Male	24	Undergraduate	E
Female	32	Undergraduate	F

Table 1.2: Descriptive characteristics of the interview participants

Interviewee Code refers to the participants' identifying code within the data presentation

were made aware that they had the right to withdraw from this study at any time.

Methods to Analyse the Data

The online application JISC was utilised to record all the participants' responses. The closed question responses were tallied, creating quantitative data, and the open question responses were identified and categorised appropriately, creating qualitative data. Whilst conducting the interviews, Zoom recorded the participants responses visually, so later analysis could take place. Wellington (2000), stated that the research could facilitate meaningful reflection upon review if interviews were recorded. Following this, by recording the responses, the researcher reviewed them as needed, which prevented any respondents from being overlooked. From recording all the participant responses, the researcher was able to identify common themes across all responses by categorising common phrases. The responses were separated into the appropriate categories from this identification to enable a precise filter of the data. This filtering method was the most appropriate means of categorising data because it allowed for related responses to be identified smoothly.

Presentation and Analysis of Findings

The data gathered from both the questionnaire (Q) and semi-structured interviews (INTRW) backed Holley's (2002) theory that external and internal factors shape HE students' attitudes towards e-learning: social interactions and flexibility with time, for example. The gathered data revealed four common themes across the participants' responses: communication, interaction, accessibility and motivation/ engagement. The responses are separated into three categories: Group A (GRP A) – Undergraduate 18-21, Group B (GRP B) – Undergraduate 22+ and Group C (GRP C) – Postgraduate. The interview participants' responses are categorised as D, E and F.

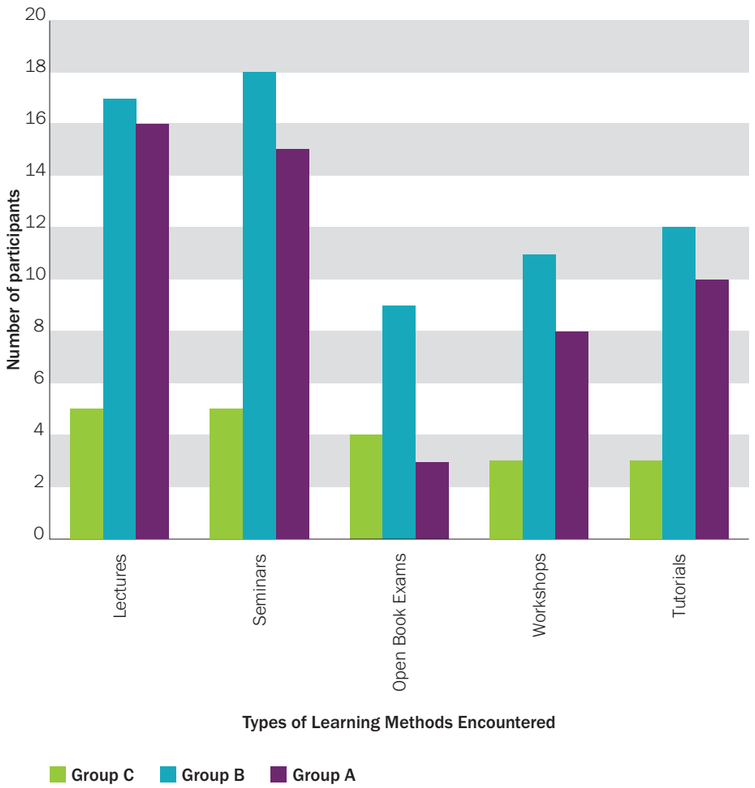

Figure 1: The types of learning methods encountered by the participants through e-learning during the academic year 2020-21 whilst in national lockdown

Theme One: Communication

The participants' perceptions of the different learning methods experienced through e-learning during the COVID-19 lockdown of the academic year 2020/21 revealed the first theme: communication. When asked, "What types of e-learning have you experienced at university during the COVID-19 lockdowns?" the data presented in Figure 1 showed that the overall majority of all groups (98%) experienced the traditional HE learning methods of seminars and lectures. The other 2% experienced learning methods of workshops, tutorials and open book exams.

As seen in Figure 1, the learning methods encountered by all groups during the COVID – 19 lockdown have not changed from previous academic years but have been altered to accommodate online learning. Participants comments have displayed this:

> *"The overall structure of [the academic] sessions are the same, we still have seminars and lectures like last year" (INTRW E).*

> *"The learning methods are the same as before the lockdowns" (Q GRP A = 1, GRP B = 2, GRP C = 1).*

Conversely, when analysing the data, there was a slight majority of 67% of Group B compared with 59% of Group A that have experienced tutorials during the COVID – 19 lockdowns. This analysis highlights similar findings to Hassel and Ridout (2018), in that mature students may require more communication with tutors and academic staff when using e-learning than their peers. Moreover, from the participants' responses, it can be estimated that learning methods have been largely unaffected by the COVID – 19 lockdowns. Thus, the learning methods experienced should not negatively affect academic progression between 2019/20 to 2020/21.

Although Figure 1 shows that learning methods had not changed due to COVID-19, Figure 2 revealed that participants' perceptions of their changing contact hours during the academic year 2020/21 varied. Firstly, the majority of Group C (80%) had experienced

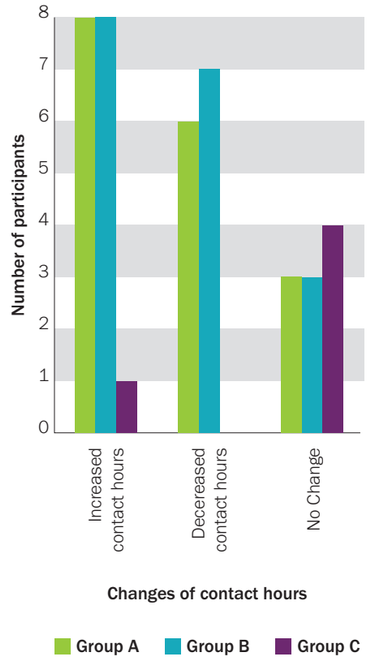

Figure 2: The participants' perceptions of the change in their academic contact hours in academic year 2020-21 whilst in national lockdown

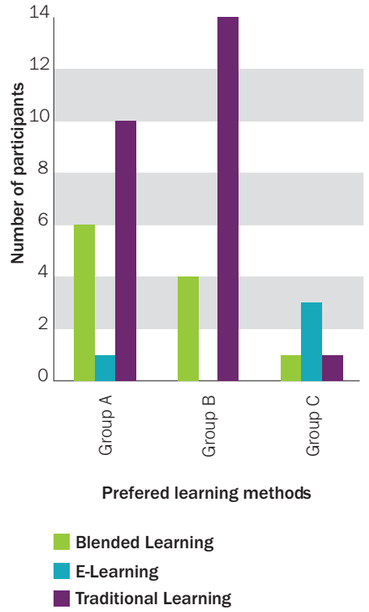

Figure 3: The participants' preferences in academic learning methods whilst studying at university

no changes to their contact hours since the beginning of lockdown, which could be due to postgraduate courses taking place in the evenings with generally fewer sessions than undergraduate courses. There was a similar divide in the increased and decreased contact hours experienced by Group A and B. Importantly, Group A had a slight majority of 47.5%, towards the participants experiencing increased contact hours shared by Group B that had a 44.5% majority. The participants that experienced increased contact hours during lockdown commented the following:

> *"The increased hours have maintained my confidence in the assignments set" (Q GRP A = 1).*

> *"I feel with increasing the hours I'm not being forgotten about" (Q GRP B = 1).*

In contrast, 35.5% of Group A and 39% of Group B experienced decreased contact hours. The overall tone of respondents was opposed to the positive comments of the participants experiencing increased contacted hours. The participants that had experienced decreased contact hours commented the following:

> *"Fewer sessions than before lockdown started has left me lost" (Q GRP B = 1).*

> *"Less sessions have meant a lack of communication between myself and tutors" (Q GRP A = 2).*

Overall, these participant responses revealed that university students felt that increased contact hours during the COVID – 19 lockdowns had maintained strong communication between the students and staff. This finding supports the argument of the OfS (2018) that stable communication and connection between HEIs and students promotes confidence and independence within student groups. Decreasing the contact hours has led to communication issues affecting all students, including mature students and their peers. These communication issues backed the OfS' (2018) theory that HEIs need to maintain adequate arrangements to further their students' professional academic potential, such as maintaining or increasing student contact hours.

Theme Two: Interaction

Interaction emerged as a second theme when participants were asked to select their preferred learning method between traditional learning, blended learning, and E-learning. Results showed Group C had a 60% preference for e-learning which supports the independence that postgraduate courses promote. According to the OfS (2020d), postgraduate students often hold full-time jobs. As such, e-learning can be the most suitable learning method to support their careers and studies. The OfS' (2020d) argument further supports Wu et al.'s (2012) argument that e-learning encourages greater independence.

This preference for e-learning was not represented by the data gathered from the undergraduate participants. Group A had a slight majority of 59% towards traditional learning, whereas only 6% of Group A preferred e-learning after their previous e-learning experience. This trend was also present with Group B, where the preference for traditional learning had a significant majority of 78%. Differently from Group A, there was no Group B participant with a preference for e-learning. Importantly, Figure 3 shows participants from both Group A (35%) and Group B (22%) who preferred blended learning, where students are taught through a mixture of online and traditional learning. All the interviewees demonstrated this preference towards traditional learning during their interviews, where they commented:

> *"My preference is towards the classroom [traditional learning], I like interacting with the others on my course. e-learning is extremely isolating" (INTRW D).*

> *"I am used to traditional learning it's simple, e-learning isn't simple" (INTRW F).*

This data presented in Figure 3 and the responses from the interviewees provide an insight into the mentality of the students experiencing e-learning currently both at undergraduate and postgraduate level. e-learning has positive aspects for a career-driven postgraduate student experience; for undergraduate students, e-learning is

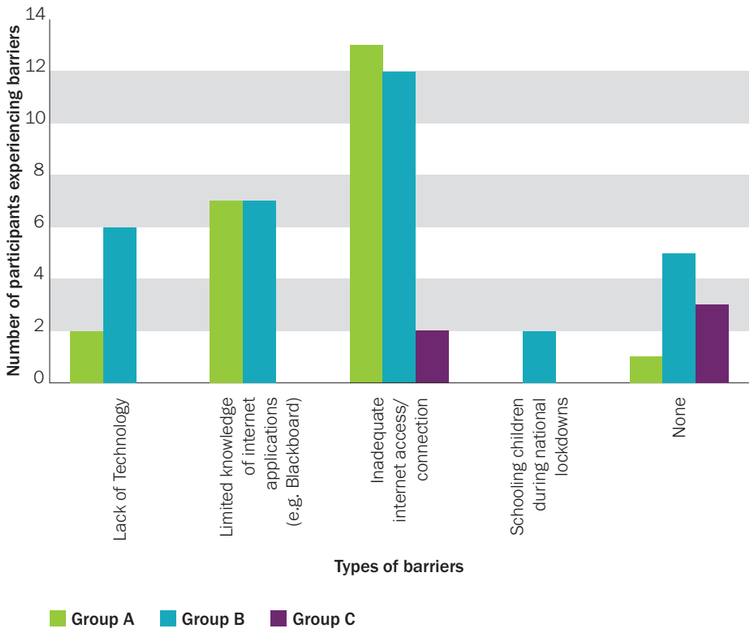

Figure 4: The types of barriers university students encountered whilst undergoing e-learning during national lockdown

problematic, leading to a lack of interaction and the feeling of isolation (Coman et al., 2020; Hasan & Bao, 2020). These problematic aspects of e-learning indicated by Coman et al., (2020) and Hasan & Bao (2020), can be seen as accurate in the participants' responses to their preferred learning method; there was a significant 97% preference towards traditional learning in undergraduate participants.

Overall, the data gathered demonstrates how e-learning interaction is most likely to be subjective to the preference of the individual and their degree level. From the data collected, the majority of Group A and B responses favoured maintaining traditional learning methods; this supports the findings of Dumford and Miller (2018), that undergraduate students prefer the structure and interaction of traditional learning rather than e-learning.

Theme Three: Accessibility

Before partaking in the research due to the COVID – 19 pandemic and the national lockdowns, following government guidelines, all HE students have been completing their studies online (DfE, 2021b). Participants reported:

> *"Lockdowns have meant all my university experiences have been online" (INTRW D).*

> *"Since March [2020], I have experienced seminars, lectures and tutorial online" (GRP A = 3, GRP B = 2).*

Starkey's (2012) findings of a steady reduction in traditional classroom-based learning within HE, coincides with the current strict decrease of classroom learning due to the COVID – 19 pandemic. The most critical theme discovered from the data was the accessibility issues and barriers disclosed from the participants' responses, and this is due to the increased implementation of e-learning in HE.

Figure 4 shows the variety of barriers that groups have experienced. Firstly, Group C had no digital poverty experience with a majority of 60%. Moreover, as seen in Figure 4, it is evident that the majority of Group A and B had encountered one or more barrier(s) that would classify them as experiencing a form of digital poverty such as inadequate internet access (OfS, 2020b). A significant majority of Group A (77%) and Group B (67%) had experienced inadequate internet access while undertaking e-learning.

Notably, Group B experienced significantly more external barriers than the others, such as a lack of technology and home-schooling children. During the COVID – 19 national lockdowns, schools were closed, which meant that parents had to aid their children's education (OfS, 2020a). These external barriers could have lead Group B to experience added pressure and stress when attempting to maintain HE studies. Participants in Group B commented:

> *"Home-schooling my children made it difficult to keep up my [academic] work" (Q GRP B = 1).*

> *"I can't attend the online sessions as my child needs the laptop for their own work" (Q GRP B = 1).*

As seen in Figure 5, Group B have a significantly higher number of participants who find support for e-learning challenging to find and use. This factor coincides with the data in Figure 4 that 72% of Group B had experienced a form of digital poverty. Experiencing a lack of technology, schooling children and having limited knowledge of internet applications such as Blackboard, can all be causes of Group B being unable to locate and use e-learning support provided by HEIs. This supports Williams et al.'s (2015) argument that mature students can struggle to access the relevant support.

As seen in Figure 5, Group B had a significantly higher number of participants who found it challenging to access e-learning support, which coincides with the seven participants from Group B who had limited knowledge of internet applications such as Blackboard. Without having a basic knowledge of online systems such as Blackboard, where e-learning support is available, this leads to the unlikelihood that such individuals like mature students can easily access the support (Staddon, 2020). This concept furthers Rapanta et al.'s (2020) and Spante et al.'s (2018) arguments that mature students find returning to education difficult with evolving technological advances. Therefore, partaking in e-learning can be challenging without the relevant support. This conclusion backs Rahim et al.'s (2014) findings that HE students must have technical skills to be academically successful in the HE educational system. This implies that mature students' e-learning experiences have been negatively affected by the numerous forms of digital poverty noted in Figure 4. This data analysis coincides with Porter and Graham's (2015) theory that e-learning barriers negatively impact students' HE experiences and academic progression.

Theme Four: Motivation and Engagement

The participants' perceptions of e-learning's impact on their academic progression presented the fourth theme, motivation and engagement. When asked, "What aspects of e-learning have been valuable to your academic progression?", the data showed a 60% majority of all participants who found the ability to access recorded sessions to the most valuable aspect of e-learning (see Figure 6). Additionally, participants commented:

> *"The recorded sessions are so useful to revise content" (Q GRP B = 1).*

> *"I like being able to revisit live sessions through the recordings, it motivates me to go back and take time to understand the topics" (INTRW F).*

Group B found the session recordings

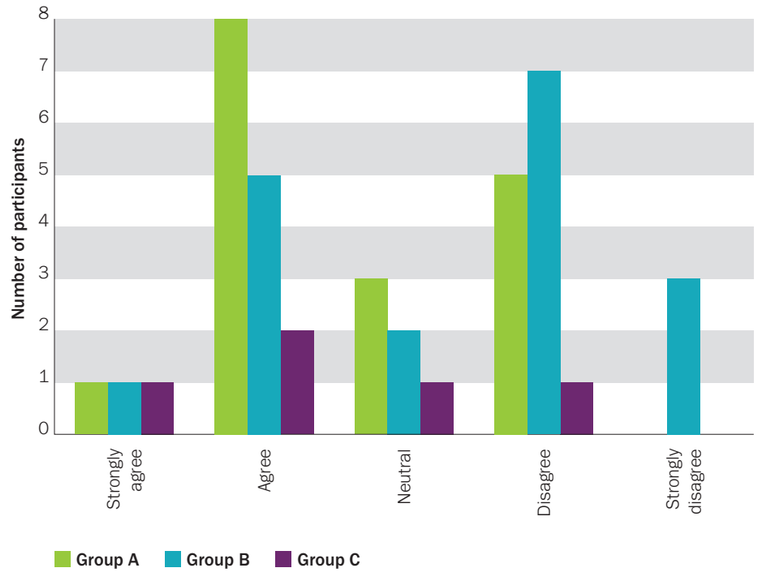

Figure 5: The participants' responses to being asked if during the COVID-19 pandemic has e-learning been simple and useful

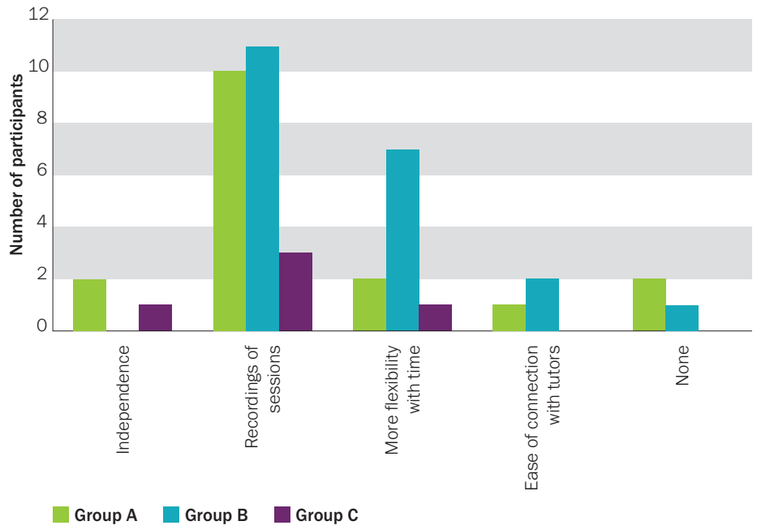

Figure 6: The participants' perception of the valuable aspects of e-learning towards their academic progressionl

valuable and discovered that e-learning enabled more flexibility with time, such as for students with children. According to the DBIS (2014), the combination of session recordings with time flexibility leads to great accessibility can lead to greater engagement levels of mature students. Graham (2015) and Hassel and Ridout (2018), add to the theory of DfBIS (2014) that mature students will experience greater motivation when the resources are easily accessible.

Conversely, when participants were asked, "Are there any aspects of traditional learning that are overlooked through learning online?" 50% of all participants believed that the social interaction of traditional learning was absent when experiencing e-learning (see Figure 7). The lack of social interaction led the participants to experience less motivation and engagement. Their responses included:

> *"The less social interaction has made me feel isolated and alone" (Q GRP A = 1, GRP B = 2).*

> *"I miss being on campus and speaking to others on my course, we used to motivate each other to complete assignments." (INTRW E).*

These responses revealed that some university students felt less engaged with academic work whilst experiencing e-learning which decreased their motivation. The data gathered supports the findings of Bartlett and Burton (2016) that students believe that their lack of motivation negatively affects their academic progression. The overlooked aspects of e-learning noted by the participants can be linked to accessibility issues as discussed,

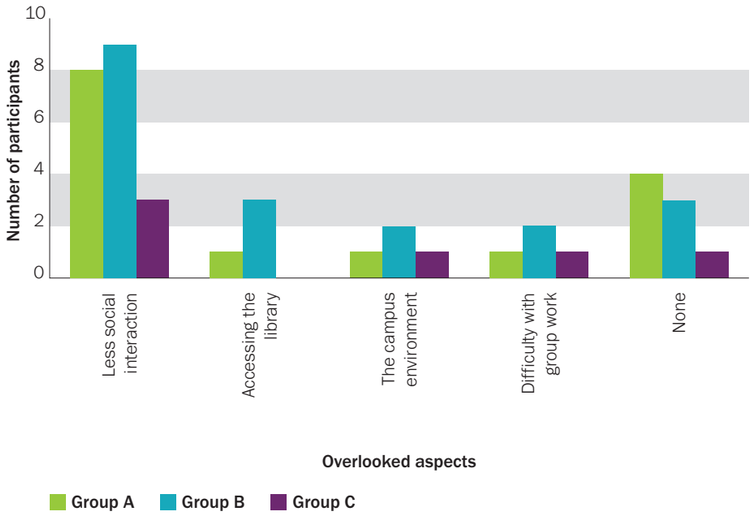

Figure 7: The participants' perceptions of the aspects of traditional learning methods that have been overlooked during the experience of e-learning

as participants can find it challenging to adjust to new learning methods without a traditional classroom setting. Kahu et al. (2013) argued that the lack of traditional learning methods is demotivating to mature students as developing technology does not support relatable learning styles such as classroom-based settings.

Further to this, participants' responses reveal that students who experience accessibility and interactional issues such as digital poverty within e-learning can lead to demotivation when it comes to academic progression. From the data gathered, it is evident that Group B experienced the most significant issues when undertaking e-learning, which would support the theory of Bawa (2016) that e-learning is a complex system which mature students should adapt their learning styles for. From the theory of Bawa, the OfS (2018) noted that HEIs need to provide suitable arrangements for students to progress academically. Providing arrangements for mature students such as e-learning training can increase their motivation towards their academic progress as they can feel supported by HEIs and level with their peers (OECD, 2020b). Unfortunately, due to the COVID -19 lockdown restrictions, face-to-face e-learning training has been delayed because of social distancing (Hasan & Bao, 2020). However, global support services online for e-learning issues have been available to students throughout the COVID-19 pandemic (OECD, 2020a).

Conclusion and Implications

The findings from this small-scale research project offer a tentative insight into university students' perspectives across the UK around how the COVID-19 pandemic, which led to HEIs implementation of e-learning, impacted upon their academic progression. For this reason, the project findings cannot be generalised to all university students. Although the results have limited generalisability to the wider HE sector in the UK, analysing the data from the participants who experienced e-learning within HEIs can inform future developments for e-learning policies and practices in HE whilst being directly influenced by participants' feedback.

The majority of the research discussed in the literature review centred around the implementation of e-learning into HEIs. There was limited literature surrounding university students' perspectives at differing degree levels and this increased the significance of the research, as it provided an insight into the area of e-learning where a gap in the literature was present. The data gathered built upon the work of Porter and Graham (2015) concerning the impact that e-learning barriers have on mature students' academic progression.

Due to the COVID-19 pandemic, the UK's government guidelines of social distancing led to a rapid halt in HEI's use of traditional classroom-based learning methods. The speed of the pandemic resulted in a lack of e-learning training for both students and educators, which increased accessibility barriers. The majority of mature students had experienced one or more forms of digital poverty which, with the influence of social distancing, led to students with children also having to act as educators whilst completing their degrees. Non-traditional students also experienced e-learning issues surrounding communication when undertaking group work. These issues could be due a range of factors: from the volume of people working from home resulting in poor internet connection to a lack of training for students to access the applications needed, supporting Bawa's findings (2016). Additionally, the barriers experienced by 'traditional' and mature students further support the conclusions of the OfS (2020a); that HEIs have the responsibility to provide adequate arrangements for staff and students to use e-learning effectively.

Furthermore, the data gathered in this small study is similar in outcome to that gathered by Dumford and Miller (2018), indicating that undergraduate students have a strong preference towards traditional learning whilst postgraduate students had a significant preference for e-learning. The four categories identified from the data gathered revealed that the participants' issues with e-learning could result from COVID - 19 rapidly changing the familiar learning styles and structure of university sessions. The pandemic would be classed as an extraneous variable that influenced participants' view of e-learning. For example, some mature students' barrier of schooling their own children which often negatively affected their e-learning experiences. The rapid shift into national lockdowns and social distancing meant that HEIs were generally unable to provide adequate training to students about online systems and applications. Overall, the researcher gathered data that supported the OECD's (2020a) theory that, when provided with adequate time and training, 'traditional' and mature students would enable e-learning to become the primary learning method of HE in the twenty-first century, through a blended learning approach of incorporating traditional classroom-based learning and e-learning.

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Increasing Self-Efficacy: Critically Reflecting upon Teaching and Learning via Brookfield and Gibbs

Abstract:

This reflective piece is divided into two sections. The first provides critical reflection from a trainee teacher perspective upon a significant incident (Tripp, 2011) related to behaviour management within a larger than average sized Church of England primary school in a mixed Year 1 and 2 class of 30 children. This reflection is enacted via Brookfield's lenses (2017). The second section presents a critical reflection on the positive impact a teacher can have when a student is struggling with maths in a Year 5 class in a large primary setting for children from British Forces families. This account is provided via Gibbs' Reflective Cycle (1988). It is argued that whilst both reflective frameworks have their limitations, linked to Bandura's (1977) concept of self-efficacy, they help the educator to develop an empathic approach to improving their own professional and personal practices, and those of their stakeholders, including pupils, colleagues and parents.

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Introduction

This piece comprises two essays that explore significant incidents that have shaped my teaching practice. It is first imperative to define the phrase 'significant incident'. According to Joshi (2018), a significant incident is 'something which we interpret as a problem or a challenge in a certain context. It is not a routine occurrence' (p.82). Tripp (2011) elaborates on this by claiming that the way we view events and the meaning we attach to them is what makes experiences significant. As a result, these incidents are unique and personal to each individual teacher (Joshi, 2018). The reflective process also differs between individuals as it is influenced by previous experiences, feelings, personal dispositions, values, beliefs, and assumptions (Bruster & Peterson, 2013; McGregor & Cartwright, 2011; Pollard & Tann, 1997). The purpose of reflection in teaching is to gain better understanding of an experience to inform future practice (Hayes, 2017; Thompson & Spenceley, 2020).

This piece will use two models of reflection to aid this process. The first significant incident will be analysed using Brookfield's lenses (1998; 2017) to develop an empathetic understanding of a situation. As part of this process, various perspectives are examined to reflect upon an incident that will focus on disruptive behaviour and the possible reasons behind this. I will also reflect upon the teacher-pupil relationship and how I could have managed the latter's behaviour differently. The second incident will use Gibbs' Reflective Cycle (1988) to reflect upon events from my personal school experience, which informed my decision to become a teacher and continues to influence my practice. It will focus on how providing additional support to students can better their self-efficacy and level of achievement. The use of Gibbs' Reflective Cycle provides a basic scaffold to reflect on my feelings, thoughts, and actions to shape the teacher I continually become.

Significant incident analysis via Brookfield's lenses: behaviour management

The incident occurred at the beginning of my introductory placement whilst I taught a guided reading lesson. I had to speak with pupil A several times concerning increasingly disruptive behaviour. It started with swinging on a chair and tapping a pencil. I asked the pupil to stop as I was struggling to hear another child who had asked a question. The pupil then started talking to people at their table. This caused more discussion between other pupils to which they responded by shouting at everyone to be quiet. I followed the school's behaviour policy and informed the pupil that if I had to speak to them again, I would be moving their name to the 'grey cloud', which forms part of a visual behaviour management system displayed on the wall for those enacting disruptive behaviours. The pupil continued to talk so I asked them to move their name and referred to the school's values of showing respect and being fair and caring. The pupil's behaviour continued to be disruptive, so I asked them to sit on the carpet. They refused and started shouting. At this juncture I removed their usual end of lesson motivational treat. This affected their behaviour for the rest of the day. In the afternoon, they refused to sit down and complete a task when another teacher asked, despite the lesson being one they typically enjoy.

Autobiographical view

Reflection of the incident can be separated into reflection-in-action during the incident and reflection-on-action, which occurred after the event (Olteanu, 2017; Schön, 1983). My reflection-in-action was influenced by my observations and previous experiences of pupil A's behaviour and the impact this has on both their, and other students', learning. This reflection-in-action encouraged me to attempt to manage pupil A's behaviour as I did not want any disruptive behaviours to escalate, resulting in further disengagement. This understanding of the pupil's behaviour, coupled with the anxiety regarding teaching my first guided reading sequence, hindered my ability to make incisive professional judgments.

After previous incidents, a fellow teacher and I put in place incentives for the end of lessons, such as extra time to read. Reminders of these usually helped to discourage any further off-task behaviour, re-engaging pupil A with their learning, but this was not the case in this lesson. Consequently, my reflection-in-action (Schön, 1983) caused me to react hastily meaning I quickly went through all the levels of the school's behaviour management protocol without reminding them of the next step or giving them enough time to respond. Tripp (2011) stresses that in this instance I needed to decide on a course of action in a situation where I lacked the knowledge to determine the correct strategy, whilst also being conscious of the impact these would have upon pupil A's wellbeing. This meant that my intervention was not positively impacting the situation (Kyriacou, 2009). Instead, it likely contributed to their negative behaviour and despondent mood for the remainder of the day.

My reflection-on-action highlighted how frustrated I had become. James (2016) states that when a problem arises, people tend to make this the centre of attention. This problem-focused approach was the main issue in my management of the situation. I started to view the problem as too challenging, and lost belief in my ability to overcome it. Bandura (1994) argues that people with low perceived self-efficacy exhibit several characteristics. In this case, I was imagining all that could go wrong, rather than concentrating on the process in the present. Since I was selectively paying attention to perceived 'failures', a relatively small incident triggered me to doubt my behaviour management skills. As a result, it is essential that I develop my confidence in addressing behaviour so that effective, attentive, teaching remains the focus (James, 2016). To do so, I must switch my attention from failure towards success, by reminding myself of my strengths and resources to hand, considering positive problem solving based approaches. For this incident, reflecting now I could argue that whilst I did not engage with the pupil in an effective or productive manner, I persisted in trying to address the disruptive behaviours.

Student's view

Brookfield (2017) stresses that by examining pupils' perceptions of our actions, we can gain an understanding of problems and mistakes that we might otherwise miss. This informs us of what is and is not working to encourage more accurately grounded decisions. Viewing the incident through pupil A's eyes suggests that their compliance with my requests may be linked to how fair they perceived these to be (Way, 2011). Way's (2011) research demonstrates that practices that aim to deter misbehaviour are not always successful, as higher perceived strictness may result in increased defiance and further disruptive behaviour. To add to this, by consistently depending upon the extrinsic motivation of rewards, I may have adversely impacted their intrinsic motivation for learning, and so their engagement had become overly reliant upon these rewards (Payne, 2015). Student feedback in Shreeve et al. (2002) demonstrates that I should motivate students and manage behaviour through encouraging interpersonal relationships with pupils, rather than focusing on formal systems of behaviouristic rewards.

These findings are echoed in research and policies which highlight the importance of consistency, fairness, and a positive pupil-teacher relationship (Bennett, 2016; Payne, 2015; Reid et al., 2010). Reflecting on the events through pupil A's eyes emphasises potential issues of power. Pupil A may have felt that I had unfairly imposed the school rules, which may have reinforced a power dynamic that was unhelpful and continued to negatively impact upon their actions. This is important to consider as their mother had previously expressed that she struggled with their behaviour at home and would often 'give up'. As students can bring issues from their wider social systems into class (Muna, 2020;

Parsonson, 2012), it can be argued that my use of reactive behaviour management strategies partially helped in the moment, but ultimately escalated the issue. A more effective approach may have been to use more nurturing, proactive strategies to prevent disruption (Nash et al., 2016). For example, a discussion with pupil A would have highlighted why they were engaging in these behaviours, helping us to explore ways I could better assist them. This may have addressed any affective and cognitive factors that influenced their behaviour through encouraging pupil A to have an active voice in resolving the issue (Ellis & Tod, 2018; Oxley, 2016; Powell & Tod, 2004).

It is also important to acknowledge that 'a classroom is an environment with its own ecology, including teacher, pupils and their interrelationships, the equipment, books and a range of activities which all interact to influence the behaviour of the room's inhabitants' (Parsonson, 2012, p.16). Therefore, a student's disruptive behaviour is dialectically impacted by the audience of their peers, as well as the teacher's behaviours and vice versa (Rogers, 2015). Within the class, there is a variety in attainment levels, personalities and motivations to learn, which must all be catered for (Rogers, 2015). My critical incident required me to balance the needs of pupil A with the rest of the class. The negative impact of a disruptive classmate was highlighted in The Good Childhood Inquiry report (Layard and Dunne, 2009). It indicated that 43% of 11–14-year-olds reported that the noise of other students often made it difficult to concentrate in class. Thus, the disruptive behaviour of pupil A was not just a stressor for me, but also for the other pupils (Muna, 2020). This frustration was evident in that their classmates were asking them to 'stop', arguing that they wanted to learn or that they had a headache. It is, therefore, possible that the other pupils felt neglected as my attention shifted from the academic task to the distractions of pupil A's disruptive behaviours. This interrupted the flow of the lesson and the process of learning (Parsonson, 2012) and potentially compounded class management difficulties by inciting others to join in with disruptive activities.

Colleagues' view

Brookfield (2017) acknowledges that discussing practice with colleagues can offer alternative perspectives on situations. Our colleagues may have experienced similar situations during their career so working together can expose anything overlooked during personal reflection to find the cause of a problem, and a solution (Watkins, 2014). These thoughts are supported by a professional discussion I had with a colleague about the incident. Within this discussion, they revealed that they were facing the same behaviours, but found them difficult to address as they were unsure whether pupil A realised their behaviour was distracting. This is important to consider because pupil A is currently undergoing an ADHD diagnosis, so may not have been able to control their behaviours (NHS, 2018). At the time, I was not completely aware that of this, or that they were also struggling with a recent parental separation. Consequently, it could be argued that, by applying a strict behaviourist approach, I failed to use 'approaches which are appropriate to pupils' needs in order to involve and motivate them' (Department for Education (DfE), 2011, p. 1). According to Rogers (2015), my management was overly vigilant and, therefore, pupil A naturally challenged my instructions. As an alternative, I should have initially avoided referencing the disruption, and instead asked them what was wrong and how I could help. This would have indicated that I was aware of the disruptive behaviour, but that I expected some cooperation to overcome it.

I decided to talk to the school's SENCo to provide another perspective on the incident. This discussion enabled me to better understand how to support pupil A's needs, which prioritised establishing a secure relationship with them (Edwards, 2016). This links to Bennett's (2016) idea of the three Rs of the behaviour curriculum: routines, responses, and relationships. Within the incident, I had become focused on routines and responses, but neglected the relationship element. Blatchford (2017), Glazzard (2016) and Thompson and Spenceley (2020) all acknowledge that if pupils feel secure and have a clear understanding of behavioural expectations, they are more likely to learn well and engage positively. As emphasised by Nye et al. (2016), the SENCo's suggestion that I build a positive relationship with pupil A, combined with the existing rewards based system, rendered sanctioning poor behaviour as a last resort. These thoughts echo Bennett's (2017), who highlights the importance of knowing the school's behaviour policy, having clear expectations, and gaining the respect of pupils. This approach may have helped me to better manage the behaviour in the incident as my reliance upon sanctions for a relatively small distraction likely intensified any problems.

Glock & Kleen (2019) and Glock and Pitten Cate (2021) demonstrate that trainee teachers often feel as though they should appear authoritarian, meaning they are less likely to use mild intervention strategies, such as positive reinforcement, as they doubt their effectiveness. Therefore, this experience and my subsequent feelings of inadequacy are not unique to my incident, with most trainee teachers being concerned about their ability to cope with disruptive behaviour (e.g., Bromfield, 2006; Twiselton & Goepel, 2018). As a result, Bennett (2016) states that new teachers must learn how to manage behaviour practically to allow them to make mistakes, reflect upon these with the help of mentors and then try again. Bennett (2016) also stresses that there is no universally effective behaviour management strategy. Instead trainee teachers must have a toolbox of strategies at their disposal to allow them to select the techniques that are appropriate for each incident. It is evident that behaviour management skills improve with experience, but some class dynamics can produce problems for even the most patient and experienced teachers (Konti, 2011). As a result, I should not become disheartened by any difficulties I experienced at the beginning of the course. Instead, I ought to focus on the positive aspects of my relationship with pupil A to ensure an inclusive environment, which should help to promote healthier classroom behaviours over time (Twiselton & Goepel, 2018).

Theoretical view

Pupils' disruptive behaviour is regularly found to be one of the greatest daily stressors experienced by teachers (Cogswell et al., 2020; Kyriacou, 2009; Nash et al., 2016). To counter this, behaviourism is embedded in school behaviour management systems (Harold & Corcoran, 2013; Hart, 2010). With government policies (DfE, 2014a, 2014b, 2014c) and the English school inspectorate system (Ofsted, 2014) favouring behaviourist principles of positive reinforcement and punishment as motivators for altering behaviour (Nash et al., 2016). This theoretical paradigm traditionally views children's behaviour as manageable through a hierarchical system of clearly defined sanctions and rewards to promote pro-social behaviours and improve classroom performance (Nash et al., 2016; Rogers, 2015). This approach had previously been successful with pupil A. However, in this instance, it did not have the anticipated effect since my efforts to apply operant conditioning through rewards (Skinner, 1948) failed to positively modify their behaviour. Harold & Corcoran (2013) claim that the reductionist nature of the behaviourist paradigm contradicts the complexities of behavioural difficulties. Instead, it relies upon the ideas of passivity, control and obedience (Payne, 2015). While such strategies can be effective for many students and create a classroom in which learning can take place, it is suggested that a child's behaviour is affected by a dynamic interplay between sociocultural, genetic, and contextual factors (Parker et al., 2016), which may explain why a behaviourist approach was ineffective in this incident.

Arguably, the one size fits all perspective of behaviourism does not address the constructivist view of human learning, intrinsic motivation, self-regulation, and the child's voice (Parker et al., 2016). Harold and Corcoran (2013) offer an alternative that rests upon 'relational action', which encourages more inclusive practice. This relates to Shaughnessy's (2012) appeal for an increased focus on humanist perspectives of supporting children's behaviour and well-being by emphasising internal factors, rather than external control. However, Bromfield (2006) identifies that while such a viewpoint may fit with trainee teachers' values and beliefs, they may not be suitable when a trainee is faced with the challenges of a classroom dynamic. Even so, combining this humanist perspective by establishing a good relationship with pupil A based on mutual respect and rapport, alongside the behaviourist school policy, may have been useful in my significant incident. This finds a balance between the need for trainees to 'maintain good relationships with pupils, exercise appropriate authority, and act decisively when necessary' and the ability to 'establish a safe and stimulating environment for pupils, rooted in mutual respect' to meet the Teachers' Standards (DfE, 2011, p.1).

When I attended school, I only recall experiencing behaviour management through a behaviourist approach. As a result, it is understandable that I relied upon these techniques. Brookfield (1998) proposed that individuals tend to rely upon their personal experiences of learning to inform their actions. Therefore, in this incident, I failed to explore other motivators that could potentially have been more effective (Payne, 2015). Reflection based on this has highlighted that I should look at additional strategies for behaviour management as well as the causes of low-level disruptive behaviour. This is important because such disruption affects learning for all within the classroom with up to 30% of teaching time lost (Aubrey & Riley, 2016; James, 2016). According to Ofsted (2014), typical features of low-level disruptive behaviour included children displaying a lack of respect to others, calling out, unnecessary talking, fidgeting and being slow to follow instructions. They suggest that to combat this, teachers should set expectations of behaviour, that children should be aware these expectations, as well as ramifications that follow through potential non-adherence. Consequently, following the school's behaviour policy was a valid starting point in managing the situation, given that it is a set of protocol that is consistently used throughout the school. However, an error I made when applying it was focusing on the negative side of this policy by issuing sanctions, and not reinforcing positive behaviour, such as by praising pupil A's classmates for adhering to the policies. This may have altered pupil A's behaviour and prevented further discussion with other pupils. Even so, Aubrey and Riley (2016) argue that positive reinforcement alone cannot eliminate all negative behaviour. Instead, the appropriate use of sanctions should be used to support these (Glazzard, 2016).

Conclusion

This reflection enabled me to consider other techniques to manage behaviour. By consistently applying sanctions and becoming frustrated, rather than forming relationships built on mutual respect, my management of the situation was ineffective (Glazzard, 2016). Brookfield's four lenses was an invaluable model of reflection to help come to this conclusion. It allowed me to explore the critical incident beyond my own perspective, and to support and challenge my preconceptions and biases (Eaude, 2018). Reflecting through the student's lens, specifically, was helpful as I gained a more empathetic view to better support pupil A's learning in the future (Brookfield, 2017). From this, I was able to identify necessary improvements for my practice, which is acknowledged as a strength of Brookfield's model.

The strengths of Brookfield's lenses approach notwithstanding, Nagel (1986) argues that it is impossible to see from someone else's viewpoint. For example, others' perceptions are personal and varied, so assumptions even when trying to view a situation from a different viewpoint will still inevitably be filtered through one's own values, belief and so on. Another limitation of Brookfield's lenses is that it does not clearly help in the construction of specific responses, which Bruster and Peterson (2013) argue is critical following reflection. Even so, it is evident that engaging with Brookfield's lenses as a critically reflective tool can foster the development of positive relationships with pupils and other educational stakeholders through empathy, to better meet intended teaching and learning outcomes (Rhodes et al., 2019).

Gibbs' Reflective Cycle: enculturing a growth mindset in learning maths

Description

Throughout my primary education, I frequently moved schools as my father was in the Army. Consequently, like many military children (Bradshaw et al., 2010), I had several educational gaps due to repeating certain material. My parents would, therefore, attempt to cover any gaps at home to prevent me from falling significantly behind my peers in terms of academic attainment (Mmari et al., 2010). However, I particularly struggled with maths, which is a concern that parents commonly express due to the differences in scope and sequence within different maths curricula (Ruff & Keim, 2014).

In year 5, my teacher recognised that despite the effort I was putting in, I was still struggling with maths. We were learning about fractions, but as my understanding of the concepts of multiplication and division was weak, I could

not grasp the content. They devised a plan to support me, starting with a 'times tables mountain'. Each week, I would learn a specific set of times tables at home. Then, on Friday, I would complete a short test. The teacher made a mountain out of cardboard. It had a picture of myself, which I would move every time I got all the answers correct within a certain time. My confidence grew rapidly. At the end of the year, the teacher entered me into an international maths challenge, and I received a silver certificate, which I was incredibly proud of. As a result, the teacher has left a lasting impression on me. They played an integral part in both my professional and personal life by believing in me. Their positive attitude, kindness and support is something I aim to ensure I exhibit in my teaching career.

Feelings

Mmari et al. (2010) note that parents of military children frequently express concerns regarding their children's quality of education, which was true of my parents. They would spend a lot of time helping both my sister and I with topics we struggled with, or had not covered, to prevent us from falling behind our peers. I was always aware that maths was not easy for me. Everyone around me appeared to easily learn new content, whereas no matter how hard I tried, I always seemed to struggle. Over time, I became frustrated and started to worry that I was destined to attain poorly in maths.

Even though I felt relieved that someone had noticed the effort I was making, these negative feelings were at first exacerbated by the intervention. I became worried about the mountain based tests, especially when I did badly in the initial assessment. However, the practice built upon my maths fluency and my test scores began to improve. This was a huge confidence boost, which resulted in me looking forward to the tests. This encouraged me to try harder so that I could beat both my previous scores and times. This confidence in myself and my ability to do mental maths has been useful throughout my life. It was vital when completing my GCSE examinations, and also motivated me to take A-Level Biology and become a trainee teacher.

Evaluation

The main issue in the incident was that I lacked self-efficacy, which can be described as an individual's belief that they can complete a task (Bandura, 1977). In maths, this relates to an individual's judgments about their ability to successfully engage in specific tasks (Bonne and Lawes, 2016). Self-efficacy has been shown to positively correlate with achievement as it influences motivation, effort, and persistence when solving problems (e.g., Chiu & Xihua, 2008; Siegel et al., 1985). This is also linked to maths anxiety, which Ashcroft (2002) define as apprehension that interferes with an individual's capacity to manipulate numbers and thus solve mathematical problems in a variety of situations. As a result, rather than asking for help, I spent time worrying about doing things wrong and appearing inadequate in front of the teacher and my peers.

On a positive note, with the help of my parents, I persevered with the subject and learnt concepts outside of school. Koutsoulis and Campbell (2001) argue that this parental support would have had beneficial effects upon my maths achievement. It was this support that encouraged me to accept th teacher's help, despite feeling self-conscious and inadequate. Upon reflection, it was this teacher who made a significant positive contribution to my academic life, which evolved into a wider confidence in everyday situations.

Analysis

Research by Bonne and Lawes' (2016) explains how my maths self-efficacy negatively impacted my achievement and sparked the incident in what had been a hitherto vicious cycle. They claim that students with low levels of self-efficacy are less likely to exert effort to solve a problem than their peers with higher self-efficacy levels. Within their study, they brought a group of 7-year-olds together for maths lessons that focused on strengthening their knowledge of numbers. These pupils had been highlighted by the teacher as individuals struggling in maths. The students appeared to be reluctant to engage with the maths activities, despite the teacher presenting a range of scaffolded activities that could allow all students to be successful. This suggests that some learners go into a lesson expecting to encounter difficulty, or to fail. These negative self-perceptions can be persistent once formed, so it is vital that teachers attend more to the self-concepts of their students (Kaskens et al., 2020). Arguably, my self-belief had been acting as a barrier to learning maths content, slowing my progress. This could have been perennially detrimental had the teacher not been so attentive and invested in my improvement.

Bandura (1986) further describes self-efficacy as 'people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses' (p. 391). This implies that maths self-efficacy is a belief about something more specific than maths in general, but instead it is an individual's ability to solve particular problems. In my incident, I did not have a strong conceptual understanding of multiplication and division. This meant that when covering fractions, I convinced myself I would fail and embarrass myself in front of my peers. These worries made it difficult to engage. Research shows that my feelings may have impacted my mathematical performance by interfering with my working memory (Young et al., 2012), which is essential for successfully solving problems (Marshall et al., 2016). The teacher noticed where the gaps were within my knowledge and how this was starting to hinder progress in other areas of maths.

As part of their role, teachers are required to promote good progress by being 'aware of pupils' capabilities and their prior knowledge, and plan teaching to build on these' and applying appropriate teaching strategies within mathematics (DfE, 2011, p.1). The National Centre for Excellence in the Teaching of Mathematics (2019) recognise that the ability to multiply and divide both the numerator and denominator is vital for identifying equivalents and simplifying fractions. Consequently, the teacher's actions highlighted how it is essential for educators to know the child, their strengths and their learning needs, understand the subject and scaffold the learning practices as appropriate, which my teacher did through the metaphor of an ascent of a mountain. Reflecting on this incident throughout secondary school and into university strengthened my belief that it only takes one teacher to notice a child and their strengths and difficulties. Marshall et al.'s (2016) research suggests that my teacher was the person who noticed these aspects of my learning, invested in me, and transformed negative memories and emotions by continuing to reinforce the idea that I was capable at maths.

Arguably, my initial negative feelings can be understood through social comparison theory, which focuses on the impact of how we perceive the abilities of others on the perception of our own abilities (Festinger, 1954; Gerber, 2020). In the incident, I compared myself to classmates to form an evaluation of my abilities (Buunk & Gibbons, 2007; Kaskens et al., 2020). As I viewed these individuals as performing better than myself, I was engaging in upward social comparison that negatively impacted my self-confidence. Generally, upward comparisons result in lower self-evaluations because we are reminded that we are inferior (Marsh & Parker, 1984; Gerber, 2020). These claims are supported by Wehrens et al. (2010) who found that the more upward or the less downward students compared themselves, the more students' academic performance increased. Moreover, they highlighted that upward social comparisons are particularly motivating for students with higher self-efficacy, who consider this a way of setting realistic and attainable goals. Pulford et al. (2018) highlight that learning is not a solitary process and therefore these comparisons were unavoidable in my critical incident as I was frequently exposed to the progress of my peers through feedback. However, within the intervention, my teacher tailored both the support and praise so that it was unique to me. This meant that rather than comparing my achievements with my peers, I was comparing them to my previous achievements to create a more positive narrative arc. This helped me to continually improve my performance.

Another reason for this improvement could be an increase in my maths self-efficacy. This is because I began to view the process of getting better at maths to be within my control and that I could change the outcome, rather than being destined to fail (Dweck, 2007). With time, I became more intrinsically motivated and less focused on the extrinsic motivator of achieving the same as my classmates. These ideas can be explained by a study by Bonne and Johnson (2016) that suggested several ways to strengthen students' self-efficacy. For example, the teacher explained to me what my learning goals were, what I needed to do to achieve these, gave feedback about my progress, and explained what I needed to do next to meet my goals. This demonstrates the importance of scaffolding as part of an effective teacher's approach.

This view fits with the Teachers' Standards (DfE, 2011), which highlights that teachers should 'encourage pupils to take a responsible and conscientious attitude to their own work and study' (p.1). Wood et al. (1976) identified six key elements of scaffolding: recruitment, reduction in degrees of freedom, direction maintenance, marking critical features, frustration control and demonstration (p.98). As part of this, the teacher focused on increasing my interest in the task by simplifying it to allow for feedback to be used for correction. To keep me on track, they modelled solutions to tasks and responded to my negative emotional states. Arguably, the teacher provided me with the framework of support, but ultimately it was my responsibility to complete the extra work outside of school. To allow for this, they prompted me to reflect on the role of effort within my learning and, when necessary, encouraged me to attribute failure to insufficient effort. This was the case when they noticed I had become frustrated with the seven times tables, as I found them too difficult. They drew attention to the importance of perseverance when learning is challenging, by reminding me of how I had found other problems difficult, but managed to overcome them (Dweck, 2007).

Conclusion

By using Gibbs' cycle, I was able to use the stages to consider the incident in a logical manner. This scaffolding of the exercise was invaluable for me as I was new to formal academic reflection (Forrester, 2020). The model broke down my experience into six manageable components (University of Hull, 2021) that encouraged me to look at the event in an appropriate level of detail and uncover the complexity of the incident (Markkanen et al., 2020; Thompson & Spenceley, 2020). However, Bolton and Delderfield (2018) and Forrester (2020) argue that, contra Brookfield, Gibbs' Cycle is a somewhat superficial form of reflection, as it is limited to one perspective of an incident, leading to a biased account of events. Furthermore, It can be argued that the Cycle does not provide explicit tools to help challenge assumptions that the reflector may hold about the chosen experience. Therefore, it is possible that engaging in this cycle of reflection may not result in any substantive changes to the reflectors assumptions, perspectives, or practices (University of Hull, 2021).

Despite these valid criticisms, my reflection via Gibbs was helpful, and illustrated that a teacher's beliefs about, and actions in collaboration with, their students can have a long lasting impact. For pupils with a fixed mindset, maths is difficult (Dweck, 2007). This hinders their maths potential as they are often afraid to take risks and get answers wrong. However, it is the teacher's responsibility to recognise that a pupil may still excel in math. These pupils require engaged, tailored teaching and high expectations from both their teachers and parents. Boaler (2015) highlights how one educator can change a child's outlook on a subject and their future learning. I am now more conscious of my potential to be that educator for my pupils.

Action plan

Teachers play an integral part in children's learning and their wider professional and personal life. Kaskens et al. (2020) stress that teachers' professional development should concentrate on children's self-concept. To aid this, I will focus on increasing my subject knowledge, building a positive learning environment, forming relationships with pupils, and communicating high but achievable expectations to students through encouraging language (Scherzinger & Wettstein, 2019). It is especially important to communicate these positive beliefs and expectations to students who seem to be unmotivated or struggling. It is, therefore, important to not have any preconceptions about the students and always remain open to help them all achieve their best. Glock and Pit-ten Cate (2021) suggest that this social and emotional competence may also impact my classroom management as I will become aware of the factors contributing to students' behaviour. This could be useful when dealing with incidents of low level diruptive behaviour, as seen in the discussion above. ■

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To What Extent Do Key Stage Two Teachers Think That Mathematics Anxiety is Negatively Impacting Their Students' Attainment in Mathematics?

Abstract:

This article focuses on how Maths Anxiety [MA] negatively impacts attainment in Key Stage Two [KS2] children. This exploration covers a unique are of MA by seeking the persepctives of teachers' working with younger students. The study looks to establish the presence of MA in KS2 classrooms, before analysing the breadth and cause of MA's negative impact on attainment. Together, these factors help to establish the extent to which MA negatively impacts children's attainment in mathematics. The research methods utilised were questionnaires and semi-structured, in person interviews. Findings suggest that whilst MA is not as prevalent in KS2 children as the literature suggests it is later in the educational timeline, where the impact on the attainment of those with MA is severe. This can be attributed to avoidance strategies students with MA display, with findings suggesting this inhibits teachers' formative assessments of their students.

Introduction

Mathematics anxiety [MA] is defined by Bjälkebring (2019) as 'a feeling of tension, worry, and fear in situations involving math-related activities'. Whilst this definition is not exclusive to mathematics lessons, they are the most common environment for 'numbers, maths and mathematical calculations.' Mathematics is becoming an increasingly important part of people's lives, with the Government recently introducing a new proposal to teach mathematics in some form to everyone until the age of eighteen (Sunak, 2023). Therefore, those suffering with MA are going to be exposed to even more troubling experiences in the future. This makes MA an important area to conduct further research. To deal with a problem such as MA, it seems important to look at how it impacts younger children, so strategies can be implemented to help support children at an earlier age who may be struggling with these experiences. There is a breadth of research relating to how MA impacts older students with a lack of research relating to MA in younger children (Dowker et al., 2012; Hill et al., 2016). This incidental finding was one which suggested a need for further research which prompted this project. Therefore, this article has explored teacher perspectives regarding MA and how this can negatively impact attainment.

The purpose of this study is to explore whether teachers in Key Stage Two [KS2] believe that their students are affected by MA, and in what ways they are impacted. The majority of current literature focuses on the impact MA has on people in their later years of education and life itself (Lee & Johnston-Wilder, 2010; Marshall et al, 2017). When MA is explored in younger children, it is often assessed through tests and surveys with children themselves (Krinzinger et al., 2009; Thomas & Dowker, 2000). However, the Teachers' Standards (2011) requires teachers to 'be accountable for pupils' attainment, progress, and outcomes' (p.10). Hence, it

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is important to explore primary teachers' perspectives on the extent of the impact of an issue that the literature suggests has a negative impact on students' attainment (Lee & Johnston-Wilder; Punaro & Reeve, 2012). Using online questionnaires and semi-structured interviews, this research takes the form of a mixed methods case study to gain a deeper insight into MA from teachers within one specific setting. The study originated from a ten-day volunteering experience in a mainstream primary school in KS2 classrooms. This research is small-scale and whilst this means that it cannot claim to contain proof of the impact of MA on KS2 children, it can be used to identify possible areas for further research by comparing it to the current literature.

Literature Review

The detrimental impact of MA is consistently seen throughout the available literature (Ashcraft, 2002; Devine et al., 2012; Hembree, 1990). However, there is a distinct discourse over the breadth of impact MA has on the population. Lee and Johnston-Wilder (2010) developed a construct of mathematical resilience to combat the wide-ranging impact that they believe MA has on schools. Their work demonstrates the view that MA has a wide-reaching impact on large amounts of students. This is supported by Ashcraft and Moore (2009) whose research in the US found that MA impacts 'a considerable proportion of the population.' Several pieces of research quote the figure that 17% of the US population have high MA (Luttenberger et al., 2018; Paechter et al., 2017). Ashcraft and Moore (2009) developed this figure using a statistical definition based on standard deviation from the normal curve. However, they were clear that this figure was only useful for forming research groups and that it would be a mistake to draw the conclusion that 17% of the population suffered from MA (Ashcraft & Moore, 2009). Research by the Organisation for Economic Cooperation and Development [OECD] (2012), published in a Programme for International Student Assessment [PISA] report, found that in a study 31% of 15-year-olds stated that they get very nervous completing mathematics problems. The difference between this figure and Ashcraft and Moore's (2009) 17% may be down to the age range of the study. Whilst Ashcraft and Moore (2009) were developing a figure for the entire population, PISA's study focussed on 15-year-olds, meaning all participants would most likely be taking mathematics exams within the next two years. This gives them greater cause to be anxious about mathematics, as opposed to members of the US population who will likely have very few encounters with mathematics. This may explain the difference in figures between the two studies. The lack of clarity around figures readily quoted serves to highlight the uncertainty that is still present in research about the prevalence of MA, and this makes it even harder to establish its impact on attainment.

The literature suggests that MA's impact on attainment is more severe than other subject-specific anxieties (Dowker et al., 2016; Punaro & Reeve, 2012). What is unclear however, is which students are impacted most by MA. Research highlights the negative correlation between MA and performance in mathematical tasks (Ashcraft & Moore, 2009; Devine et al., 2012), although Dowker et al. (2016) are unsure whether poor mathematical ability leads to MA, or if MA leads to poor mathematical ability. It is believed to be something of a vicious cycle, where poor performance increases anxiety which has a detrimental impact on further performances (Carey et al., 2016; Dowker et al., 2016). Research by Hembree (1990) found that people with high MA who had undergone Cognitive Behavioural Therapy [CBT] subsequently reported mathematical scores within the normal range. Assuming the CBT did not contain any mathematical teaching, it follows that anxiety was a factor in the lower attainment scores in mathematics (Ashcraft & Moore, 2009). This suggests that if MA can be lowered then there will be a lesser impact on attainment in mathematics.

As well as ascertaining the demographic that MA impacts, it is important to consider the ways in which MA manifests itself and the impact this has on attainment. Ashcraft (2002) theorised that MA has a negative correlation with mathematical attainment due to avoidance strategies employed by those high in MA. This was believed to lead to a lack of practice for students high in MA compared to other, less mathematics anxious students (Ashcraft, 2002). This view is supported by Lyons and Beilock (2011), who believed that those negatively impacted by MA were highly avoidant of mathematics-related tasks. Furthermore, research has found that alongside the avoidance strategies that students with MA implement, MA also compromises the function of working memory (Cassady & Johnson, 2002; Eysenck et al., 2007; Macher et al., 2012). This suggests that it is not only a lack of practice that impacts the attainment of students with MA, but that high maths-anxious individuals are already using some of their limited working memory resources worrying about their anxiety whenever they perform a maths task (Ashcraft & Moore, 2009). The Teachers' Standards (2011) states that it is a teacher's responsibility to 'have a secure understanding of how a range of factors can inhibit pupils' ability to learn, and how best to overcome these' (p.11). As MA is believed to inhibit attainment, teachers should have a good knowledge on how it impacts students, making the piece suitable for identifying the ways MA manifests itself and impacts attainment.

Certain literature, however, highlights a different response that MA can invoke in students. A study by Paechter et al. (2017) showed a positive relationship between MA and performance in psychology undergraduates during a statistics examination. Paechter et al. (2017) described this as a surprise result, and theorised that it was possible that MA had led to an increased motivation to avoid failure and hence resulted in greater preparation. This idea can also be seen through the research of Lyons and Beilock (2011) and Wigfield and Meece (1988), who believe that some highly mathematics-anxious individuals invest more effort and recruit more cognitive resources in mathematical problem solving. The context of this however was in trying to explore why not all students high in MA perform poorly, and there was an acknowledgement of the generally negative impact of MA on attainment (Lyons & Beilock, 2011; Wigfield & Meece, 1988). A study by Wang et al. (2015) exploring the relationship between MA, maths motivation and maths cognition suggested that higher mathematics motivation in students with moderate MA can lead to higher attainment in mathematics, however the general impact of MA on attainment is generally debilitative.

Most research on MA is focussed on secondary age children or undergraduate students, with relatively little research focussing on primary age children (Dowker et al., 2012; Hill et al., 2016). Research that does focus on MA in primary school children shows interesting results. Hill et al. (2016) found that whilst there was a reliable negative correlation between MA and secondary students' arithmetic performance, there was no such relationship in primary students. This led to the conclusion that MA's negative impact on attainment was developed later in the educational timeline (Hill et al., 2016). Thomas and Dowker (2000) and Krinzinger et al. (2009) also found that the mathematical performance of children between six and eight years old was related to liking mathematics but not to anxiety. This suggests that MA is not an issue that affects the attainment of KS2 children, despite most literature suggesting that MA was present in children of this age (Gierl & Bisanz, 1995; Hill et al. 2016). There is some literature, however, that suggests that MA does not emerge until preadolescence, which is commonly defined as 9-12 years old (Punaro & Reeve, 2012). This would suggest that MA would only be seen during the later stages of KS2. A similar idea to this is promoted by Devine et al. (2012), whose research suggested that mathematics anxiety develops in children at some point during primary school age.

It is important to note that most of the research available on MA in primary schools was conducted by the comparison of the results of a MA questionnaire and the results of mathematical tests (Hill et al. 2016; Krinzinger et al., 2009; Thomas & Dowker, 2000). This may not be the most effective method of ascertaining the impact of MA in primary school children, as Punaro and Reeve (2012) state that 'even though academic anxieties may exist in preadolescent children, it is unclear whether children would be able to accurately describe these experiences because of immature metacognitive abilities' (p.1). However, this research seeks to focus on the perspective of teachers on the effect MA has on their students' attainment, an area which is not covered in the current literature. By combining this factor with the relatively little focus on primary school children, this research covers a unique aspect of the impact of MA. Therefore, based on the research findings discussed it can be seen that there is a need to explore teachers' perspectives on the impact of MA on their student's attainment in mathematics.

Methodology

A mixed methods case study was implemented to answer the research question. This featured a Jisc online questionnaire, followed by in person interviews. Using two methodological approaches ensured that the research was approached from different angles and hence could be triangulated to increase reliability and validity (Brett-Davies, 2007). The study was conducted under an interpretivist research paradigm, focussing on qualitative data in both the interviews and questionnaire, supplemented by a smaller number of quantitative questions on the questionnaire (Denscombe, 2021). By using a mixed method approach, a more comprehensive understanding of the teachers' perspectives was achieved, whilst minimising the weaknesses of both qualitative and quantitative data at the same time (Bell & Waters, 2018; Cohen et al., 2018). Furthermore, most of the research available in the literature review was conducted using quantitative data, meaning a mixed methods approach provides this research with a unique insight into MA. All interviews and questionnaires took place with KS2 teachers from an urban primary school in the Lincolnshire area. As the research required the perspectives of KS2 teachers, a purposive sample ensured that the sample met the needs of the research question (Cohen et al., 2018; Nutbrown & Clough, 2012). The sample also showed elements of convenience sampling, with participants all coming from one school (Cohen et al., 2018). This meant that the research was conducted in the form of a case study. Implementing a case study approach allowed the research to be done in depth (Denscombe, 2021), enabling a more holistic view of the impact of MA on attainment. A case study does limit the generalisability of the findings (Ashley 2012; Elliott & Lukes, 2008), as generalisability would require a much larger research breadth and focus (Nutbrown & Clough, 2012). As this is not possible in a study of this size, a case study is a suitable type of research design.

A Jisc online questionnaire was conducted first, which allowed basic information, such as whether teachers had heard of the term MA, to be established. Establishing basic information in a quick and easy way is an advantage of using questionnaires (Bell & Waters, 2018; Cohen et al., 2018). The questionnaires were produced and distributed digitally, meaning that Jisc collects and stores all the data. This prevents any sensitive material being handled and transported by the researcher. The questionnaire involved both closed and open-ended questions, offering a sensible middle ground for the piece (Sharp, 2012). The six closed questions resulted in quantitative data, which was highly standardisable and could be analysed using descriptive statistics, a method that is less vulnerable to bias (Neale, 2009). Four open-ended questions were included to help further understand the responses by allowing elaboration by participants where quantitative questions were insufficient to gain the required understanding (Sharp, 2012). These could then be analysed using thematic analysis.

Responses given to questionnaires can sometimes lack depth and detail, as well as having relatively low response rates (Denscombe, 2021). The questionnaire was sent out to twelve different teachers and was completed by four, giving a response rate of just over 33%. This is a reasonable response rate for a questionnaire (Cohen et al., 2018). All questionnaires that were submitted however were fully completed, meaning that none had to be removed. After the questionnaires were collected, semi-structured in-person interviews were conducted with three participants who had stated on their questionnaire that they would be willing to complete an interview on the topic. This means that 75% of those that completed questionnaires were willing to do an interview. Interviews were completed one-to-one, to ensure that participants' perspectives were not influenced by other participant's responses (Denscombe, 2021). Participants were offered the choice of time and date to complete the interview for their convenience, to ensure

their participation (Cohen et al. 2018). The interviews were conducted with five initial questions, all of which were open questions. Using open questions allowed the participants to express their perspectives and lead the conversation (Bell & Waters, 2018). This highlights the mainly interpretivist nature of the research, using interviews to interpret teachers' perspectives (Denscombe, 2021). Developing lines of enquiry were also explored in the interviews through unique follow up questions to ensure that all points that participants made were detailed and explained, which is an advantage of using semi-structured interviews (Denscombe, 2021). Despite being in person, meetings were recorded on Microsoft Teams, allowing for usage of Microsoft Teams' transcription software. Transcriptions were then transferred to an encrypted hard drive and the recordings deleted to protect the data of participants. Any minor errors in the Teams transcription were identified and altered by the researcher. Once all the data were collected, thematic analysis on the information collected took place. The transcripts were reviewed to find common perspectives and themes, using inductive coding to find relevant data in relation to the question. Using inductive coding allowed the research to be led by the data, as opposed to having preconceptions of what the themes should be and hence trying to fit them into the data (Cohen et al., 2018).

Consent for the interviews was gained though the participant consent forms drawn from the Bishop Grosseteste [BGU] Ethics Policy (2019) and aligning with BERA (2018) Ethical Guidelines for educational research. The participant information sheets were placed at the beginning of the Jisc online questionnaire, so that participants understood what they were taking part in. This was followed by a consent form, ensuring all participants consented to the collection and analysis of their data as part of the academic research, before they started the questionnaire. When conducting the in-person interviews, a copy of the participant information sheet was given to the teachers and a consent form that had to be completed and returned before the interview to confirm that consent has been given. Each participant was made aware of their right to withdraw throughout the process and given the information of how to do so. Participants were also provided with details of who to contact if they had any questions.

Teacher	What they understand by the term maths anxiety.
Teacher A	Children getting overwhelmed with the subject and their fear of getting things wrong has an effect on their progress.
Teacher B	Children that struggle with maths because of conception that they can't keep up with the learning and content.
Teacher C	Worry about maths work linked to generational issues.
Teacher D	Escalated emotional state when participating in Maths activity due to the perceived expectations versus capabilities not aligning.

Table 1 : Quotes from participants describing what they understand by the term MA.

Presentation and analysis of findings

This section will present the findings of the four completed questionnaires and three semi-structured interviews, using the data that has been inductively coded to analyse what the findings show and how they compare to the previous research found in the literature review. Participants will be referred to as Teacher A, Teacher B, Teacher C and Teacher D to maintain anonymity, with Teachers A, B and C being the three teachers who completed interviews. The findings were split into analysing what the participants understood by the term MA, establishing the presence of MA in classrooms, analysing how it negatively impacts attainment, and finally the breadth of impact of MA on attainment in classes.

Teachers' understanding of MA.

Prior to discussing the impact that teachers feel MA has on their students, it is important to note what teachers understand by the term MA. This is because if a participant has a different understanding of MA to the literature, then their perspective on how it negatively impacts attainment in maths may be different. All four participants in the questionnaire responded yes to the question 'Have you heard of the term maths anxiety?'. This may indicate that the participants have to deal with MA in their classrooms, however the question's primary purpose was to help establish if the participants had an understanding and awareness of MA in education.

Building on this, the questionnaire asked participants what they understood by the term MA, with the responses presented in Table One. MA is described by Bjälkebring (2019) as 'a feeling of tension, worry, and fear in situations involving math-related activities' (p.1). The responses of Teachers A and C are both very similar to this, using the respective key terms of fear and worry. Teacher D's response mentions an '*escalated emotional state*' which eludes to Bjälkebring's (2019, p.1) definition. This suggests that these teachers' understanding of MA is in line with the available literature's definition. However, the response of Teacher B differed slightly, as they believe that MA is when children struggle with maths because they do not believe they can do it. This does not match the definition of MA, instead demonstrating a possible effect of MA, rather than its cause. This should not cause a major issue however, as the response still demonstrates sufficient understanding of how MA affects children to ensure their data are useful.

The presence of MA in primary schools.

All the teachers' surveys saw examples of MA within their mathematics classes. This can be seen in Table Two, which shows the responses to the question 'What examples of MA do you see during your mathematics classes?' The response of Teacher 3 best highlights an example of MA, with their response stating that children were '*worrying that the work is too tricky*' correlating with the idea of MA as described by Bjälkebring (2019, p.1). Furthermore, half of the respondents were able to identify multiple examples of how MA is present during their classes. This suggests that MA may not be a rare occurrence within their classrooms. The ability of the participants to come up with examples of MA in their classes supports the views of Hill et al. (2016) and Gierl and Bisanz (1995) that MA is present in primary school age children. However, the demographic of the participants does contradict the findings of certain literature. Punaro and Reeve's (2012) findings that MA emerges during preadolescence (between 9-12 years), are contradicted by the experiences of the participants, 50% of whom teach in Year 3, an age at which Punaro and Reeve (2012) believe teachers should not see examples of MA in their classes.

Teacher	Examples of MA seen during mathematics classes
Teacher A	Children not interacting and wanting to participate Answering questions quietly Copying and covering up answers.
Teacher B	Children are slow to start and use avoidance strategies Reluctant to engage in lessons. Reluctant to answer questions
Teacher C	Concern for getting things wrong, worry that work is too tricky
Teacher D	Reluctant to have a go/make mistakes

Table 2 : Quotes from participants of examples of MA seen by participants during mathematics classes.

One surprising result from the questionnaire was that there was a split between teachers' perspective on the severity of MA compared to anxiety seen in other subjects. Question eight 'Have you noticed more anxiety from your children during their mathematics lessons than in other subjects?' received a response of yes from 50% of participants and no from the other 50%. This compares interestingly with the participants' response when asked to give examples of MA they see in their classes. Even though all four participants could give examples of MA, and all three interviews revealed several examples of MA in students, 50% of those surveyed do not feel like they notice more anxiety in mathematics classes than in other subjects.

These findings suggest that teachers are also seeing comparable levels of anxiety in other subjects. This contradicts the literature which found that MA had a more severe impact on attainment than other subject-specific anxieties (Dowker et al., 2016; Punaro & Reeve, 2012). For MA to have a greater impact on attainment than other subject-specific anxieties, it is reasonable to expect that more anxiety would be seen during mathematics lessons than other subjects. As this was not the case for 50% of participants, it follows that these teachers also see high levels of anxiety from their students in other subjects. Further research shows that there are other subject-specific anxieties, such as literacy anxiety, although research into these is relatively sparse (Hill et al., 2016; Punaro & Reeve, 2012). Research by Di Lonardo Burr and LeFevre (2021) found that literacy anxiety was present in undergraduates, albeit at a lower rate than MA. However, there is a lack of research into the impact of other subject-specific anxieties in a primary setting, an area which given these findings could be extremely important in preventing anxieties such as literacy anxiety becoming just as prominent as MA.

How MA negatively impacts attainment.

This research study found that MA's negative impact on attainment may be caused by the avoidance strategies that students with high MA exhibit, due to how this inhibits teachers' ability to check their understanding. All three interviewees mentioned that children's MA manifested itself through avoidance strategies, with Teacher B and Teacher C describing children with MA as being deliberately slow to start their work. Teacher A gave an example of children deliberately covering up their work so that the teacher could not check if they had answered correctly whilst walking around the class. This suggests that avoidance strategies are negatively impacting on attainment due to the difficulty it causes for teachers when they are trying to formatively assess understanding of their students.

This provides a different view to Ashcraft's (2002) perspective that students who often display avoidance strategies and also present as having high MA may demonstrate negative attainment in Maths due to the lack of practice these students are getting compared to others. The results of the interviews did however, support Lyons and Beilock's (2011) view that those high in MA were highly avoidant of maths. One teacher stated that '*children with MA do almost anything they can to not engage with mathematics*', an almost identical viewpoint to Lyons and Beilock's. This lack of engagement in mathematics may then lead to poor performance in the subject, causing an increase in MA which leads to more avoidance, and the start of a detrimental cycle, as stated in the literature review (Carey et al., 2016; Dowker et al, 2016). It is possible that both of these factors, the lack of practice avoidance strategies lead to, and the difficulty for the teacher to formatively assess a child's understanding of the topic, cause the negative correlation seen in the literature between MA and mathematical attainment (Ashcraft & Moore, 2009; Devine et al., 2012).

At this point it is important to note that this research is being conducted three years after the outbreak of the Covid-19 pandemic, whereas all previous research cited in the article was conducted prior to this event. This may impact the findings as Covid-19 caused significant gaps in primary school children's foundational maths knowledge, due to a lack of consistency in their early education. This is highlighted in a report by the Royal Society (2022) which found that teachers believed that over 50% of their students between three and nineteen-years-old were more than three months behind in mathematics because of Covid-19. It is possible then that some of the MA that participants discussed was influenced by their children falling behind because of the pandemic, supporting the idea that it is poor mathematical performance that leads to MA and not vice versa. However, it is possible that the vast increase in those falling behind in mathematics caused an increase in MA,

beginning the downward spiral described by Carey et al. (2016) and Dowker et al. (2016). Future comparative studies on MA and mathematical attainment pre-Covid and post-Covid may be useful in helping to establish the relationship between the two factors, which could eventually aid the decrease in MA in children.

This research study failed to identify any perceptions of positive impact of MA on KS2 children's attainment. The questionnaire established that 75% (n=4) of participants believed that MA negatively impacted the attainment of children in their class in mathematics. The one participant who responded no to this question later disclosed that they answered this on the belief that MA had no negative impact on the class as a whole, meaning that 100% of participants believed those with MA were negatively impacted. This misconception regarding a question on the questionnaire is a slight weakness of the study, however the fact 75% of those surveyed were then interviewed allowed any misconceptions to be caught and rectified. All three interviews also failed to result in any mention of a positive impact of MA on students.

This contrasts strongly with some of the literature, such as Paechter et al.'s (2017) surprise finding of a positive correlation between MA and results on a statistics test. The results of this research serve to further highlight the unusual nature of the result found by Paechter et al. (2017). The results of this research study also contradict the perspective put forward in the literature review was that some high MA students increased their effort in maths and hence their attainment was not negatively impacted by MA (Lyons & Beilock, 2011; Wigfield & Meece, 1988). No examples of this were found through interviews, with all participants repeatedly pointing out the negative impact that MA has on their students' attainment. However, this idea was formed to explain why a small percentage of students with MA saw a positive impact on their attainment. Therefore, it is possible that this is an impact of MA that is sometimes seen, but that there were no children within the participants' classes that demonstrated this response to MA. Further research with a larger range of schools and ages would help to gain an improved perspective on this idea. There was also no evidence in the interviews of higher mathematical motivation in any students with moderate MA, contrasting some of the ideas of Wang et al. (2015). However, Wang et al. (2015) acknowledged the generally debilitative impact that MA has, whilst also expressing the belief that it is only those with moderate MA who can use greater motivation to achieve higher attainment. This means that the results of this research cannot disprove the findings of Wang et al. (2015).

Teacher	Year group taught	Roughly how many children in your class do you believe have MA	Percentage of children in the class that participants believe have MA (calculated to the nearest %)
Teacher A	3	4	19%
Teacher B	5	2 to 3	9% to 14%
Teacher C	3	2	10%
Teacher D	4	2	10%

Table 2 : Number and percentage of students that participants believed have MA.

Breadth of impact of MA on attainment

Participants believed that MA affected between two and four of their students, with percentages ranging between 9-19% of classes, as shown in Table Three. Whilst teachers are not medical or psychological professionals and therefore do not have the expertise to officially diagnose MA in children, the Teachers' Standards (2011) requires that teachers 'have a secure understanding of how a range of factors can inhibit pupils' ability to learn, and how to overcome these' (p.11). MA clearly inhibits pupils' ability to learn (Ashcraft, 2002; Devine et al., 2012; Hembree, 1990), meaning that it is required that teachers are aware of who in their classes may be inhibited by MA. This means that participants should be able to give a relatively accurate idea of how many of their students have MA. Percentages found in Table Three were calculated by dividing the number of students teachers believed had MA by the total numbers of pupils in their class, before multiplying by 100 to give a percentage. One teacher could not be sure and hence gave a range of 2-3, which was carried through to give two percentages.

Even the highest percentage found through the questionnaire (19%) is significantly lower than the OECD (2012) study that found 31% of 15-year-olds were very nervous whilst completing mathematics problems. The results are much closer in value to the statistical figure based off the normal curve that Ashcraft and Moore (2009) placed at 17%. This may suggest that the reason for the higher figure found in the OECD study was in fact down to stress caused by upcoming exams, as hypothesised in the literature review. Further research suggested that test anxiety was closely related to the MA of students, and that reducing test anxiety could help to alleviate MA (Hembree 1990; Xie et al., 2018). To explore this result further, methods shown to be successful in studies to reduce test anxiety could be trialled to test their impact on MA. One example of this could be Erbe's (2007) introduction of a cheat sheet prepared by students, which was found to reduce test anxiety. If these methods are successful then this could lead to a drastic reduction in the negative impact MA has on attainment across all ages, including KS2.

Conclusion and Implications

This study's findings suggest that MA is present in primary schools, supporting most literature on the topic (Gierl & Bisanz, 1995; Hill et al., 2016). However, the findings also suggest that other subject specific anxieties were more prevalent than the current literature believed to be the case (Dowker et al., 2016; Punaro & Reeve, 2012). Further research into other subject specific anxieties, such as literacy anxiety, could be highly valuable in developing an understanding of, and limiting, their presence in children. There were no positive aspects of MA identified by the study, which contradicts but does not disprove the findings of Lyons and Beilock (2011), Wigfield and Meece (1988) and Wang et al. (2015) that show some increased motivation for a small number of students with high MA. Instead, participants believed that the impact of MA on attainment was extremely negative. This was because of the detrimental impact of the avoidance strategies employed by children with MA. Whilst the literature felt that it was the lack of practice children with MA were getting due to these avoidance strategies that was the problem, the teachers believed that it was instead down to the difficulties when formatively assessing the understanding of children with MA due to their avoidance of the work. The impact of the Covid-19 pandemic provides a unique opportunity for further research to analyse the impact that a large number of children falling behind in their work had on MA.

Whilst the small-scale nature of this piece must be noted, involving only four participants, the choice of teachers as the participants made it valuable. Teachers are required to understand how factors such as MA affect attainment (Department for Education, 2011). This means that they should show secure knowledge on the issue of MA and how it impacts their students' attainment. However, any further research into teachers' perspectives on MA should seek to use a greater number of participants from different settings, to help improve the generalisability of the findings (Cohen et al., 2018). The research report also found that participants did not feel that MA was affecting as many of their students as the literature suggested it should. This may have been down to the sample of children, with other studies such as the OECD's (2012) study looking at 15-year-olds. Due to the disparity in the findings compared to the OECD (2012) study, further research into the impact that test anxiety in 15-year-olds may have on MA could help establish whether test anxiety is causing more children to have MA. The results of this further research could help to direct the efforts to reduce MA in children at all ages. ■

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The cyclic connection between physical and mental health: from local case study to the globe

Abstract:

Higher Education (HE) students in England are more likely than other demographic to experience poor mental health. Through a case study approach focusing upon Nat, a 20-year-old HE student based in Cambridge, it will be argued that there is a clear cyclic relationship between physical and mental health. This relationship will be explored via environmental and social factors, and the ways in which outcomes are tested via physical, psychological and general procedures are critically evaluated. The need for a positive mindset, as well as testing health in a holistic manner, including evaluating happiness, rather than disorders, will be argued through the case of Nat. Following the case study, there is discussion of global trends, situating Nat within a wider context. In conclusion, is it argued that physical exercise impacts upon mental health, and that by considering wider factors that affect the undertaking of exercise, mental health crises may be better alleviated.

Introduction

This article will argue there is a cyclic connection between physical and mental health. The original contribution of this piece is to explore this connection in the contemporary socioeconomic climate in England via a case study approach, focusing on a full-time student, Nat, who also works part time. This is because England based HE students are one of the demographics most likely to face mental health illnesses when compared to others (Neves and Hillman, 2016). Based in Cambridge, the case study will explore the affects that the wider built environment (Baker et al., 2016; Thomson et al., 2001), and familial and social relationships (Bandura and Walters, 1977) have upon health outcomes in England. Ways of testing health will also be critically explored, looking at physical (Army, 2022; Brzycki, 1993; Royal Air Force, 2017; Royal Navy, 2022), psychological (Beck, 1961; Shrout et al., 2018,) and general health tests (Dalgleish et al., 2001; Heyward, 2010; NHS, 2019). It is argued that holistic health (Bouchard et al., 2012) and happiness (Argyle et al., 2014) testing is preferable to that which focuses primarily on deficits or disorders. Exploring the 'invisible benefits' of exercise (Ruby et al., 2011), the importance of a positive mindset and cyclic correlation of physical and mental health are outlined. The final part of the piece extrapolates from the study of Nat, and situates him within wider global trends (WHO, 2020). The piece concludes with some recommendations; namely, the importance of physical activity upon mental health to foster an ongoing virtuous cycle.

Demographic overview

Nat is a 20-year-old university student studying Criminology and Policing in Cambridge. He used to live with his mum, dad, and younger sister in a small village in Fenland, Cambridgeshire, but moved to student accommodation in Cambridge at 18 for university. Nat's dad and sister are swimming coaches and the whole family is regularly physically active. His BMI is 26.2kg/m2 and his body type would be considered muscular. He grew up involved

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in swimming and football as well as taking part in school sports and activities such as cricket, rugby and athletics. He now only plays football once a week socially with friends. Nat attended a state school and came from a working-class family. He currently works a part-time job alongside his studies as a waiter at a local restaurant.

Psychological Factors Affecting Health, Fitness and Wellbeing

Depression and Anxiety

There are many psychological factors which can affect health, fitness and wellbeing, especially among university students. Psychological concerns can include stress, anxiety, depression and loneliness. Depression and anxiety are common among students which often leads to motivation, concentration and mood being negatively influenced (Andrews and Wilding, 2004). It is considered that most psychological disorders will start at university age, with depression being the first, later leading to the development of associated conditions such as anxiety (Ibrahim et al., 2013; Said et al., 2013).

Research conducted by Goodwin (2003) using 5877 adults aged 15 to 54 found an exposure-response relationship between regular levels of physical activity and mental disorders such as depression and anxiety. Ten Have et al. (2011) conducted research specifically into anxiety using 7076 adults aged 18 to 64 and found that those who were participating in physical activity for between one to three hours per week were 50% less likely to have an anxiety disorder compared to those who were deemed inactive. These research studies suggest that those who have psychological disorders are less likely to be active, which has been shown to lead to an increased risk of obesity, thus meaning a higher risk of developing cardiovascular diseases, musculoskeletal diseases, cancer, diabetes and many other health concerns (WHO, 2021). In a vicious circle, Dixon (2010) argues that those who have these health issues are more likely to be obese or develop obesity, meaning that their physical activity levels will have decreased. This in turn will cause major impacts upon mental health, and also physical health and quality of life. Considering all of the research presented, an assumption can be made that university students such as Nat will be likely to develop mental health issues, such as depression. This could cause a decrease or lack of participation in physical activity which is likely to lead to health concerns such as obesity, meaning that their health, fitness and wellbeing are all negatively affected.

Motivation

An individual's psychological attitude, specifically motivation or a lack of motivation, has a statistically significant effect on their physical fitness and mental health. A lack of motivation can come from mental health issues such as depression, where side effects include factors such as a lack of motivation (Smith, 2013; Scarapicchia et al., 2014). This would suggest that university students who have been found to be more susceptible to developing mental health issues are likely to have a low level of motivation for taking part in physical activity. This, again, vicious circle, suggests that their fitness levels are likely to be low, leading to a higher risk of health concerns. Despite this, Brunet and Sabiston (2011) found that young adults (19-24 years old) have a higher level of intrinsic motivation for taking part in physical activity than older adults (25-65 years old) indicating that they have the potential for a healthy level of fitness and physical health. It is also important to consider how motivation and wellbeing are linked. Maslow's hierarchy of needs is a theory of human motivation which suggests that basic needs such as food and safety needs must be met before psychological needs can be addressed or self-fulfillment realised (Maslow and Lewis, 1987). As Nat has a part-time job, it could suggest that he is financially stable, while he also has a healthy relationship with his family and friends, meaning that via Maslow's hierarchy of needs, he has all his basic needs met, and one could assume that he has met some of his psychological needs. Using this data may imply that Nat's motivation levels are potentially high enough to ensure his wellbeing is addressed.

Environmental Factors Affecting Health, Fitness and Wellbeing

Housing

Considering the lived environment, housing can be a challenging issue for university students. Linked to this, universities strongly suggest to students to not have part time jobs as university is a full-time commitment. However, due to a lack of income from employment, students often encounter financial difficulties. Some individuals, such as Nat, cannot afford to not have part-time jobs alongside their studies. As a result, they often run into additional pressure at university as they do not have as much time for their studies as those without a job. Individuals with less money, regardless of if they are a student or not, normally live in lower quality or overcrowded accommodation. These housing issues can often lead to negative thoughts regarding life in general, as well as future prospects. These issues may also exacerbate the possible development of existing mental health issues such as depression, anxiety and stress. Public Health England (2019) found that 19% of adults who live in poor housing conditions experience jeopardised mental health. Baker et al. (2016) also found that housing can cause health issues as those living in poor quality housing experience social disadvantage. Thomson et al. (2001) argues along similar lines, in that those who live in poor quality conditions are more likely to develop health concerns. Thomson et al. (2001) also found that by moving these individuals into accommodation with improved conditions, their overall health began to improve. This may suggest that for Nat, his health, fitness and wellbeing are being put at risk by his living situation.

Living Area

Taking into consideration the financial issues that university students often face, this may cause difficulties when accessing sports and fitness facilities such as gyms and sports clubs, as these are usually relatively expensive. Due to this, it is important to consider the area that an individual lives in and what it provides as an alternative to costly facilities, including nature and open spaces for exercise. Hunter et al. (2019) found that green spaces benefit individuals' health and fitness and fosters socialization.

Living in an area that has a large amount of open green space promotes physical activity, especially for those who cannot afford the gym or sports clubs or lack a larger outdoor space at home. This is applicable to university students, such as Nat, as they often live in apartments that are small and do not allow for physical activity. Nat has no access to easy access to green space at his accommodation. However, Cambridge as a city has lots of green space, meaning that with spare time, and his commutes, he may be able to utilise the environment in an advantageous manner for his overall health.

Social Factors Affecting Health, Fitness and Wellbeing

Family and Friends

An individual's family and friends can have a significant impact on their outlook and motivation towards being healthy, involved in physical activity and taking care of their wellbeing. Bandura's social learning theory suggests that we learn through those who are deemed significant role models, which at a young age is often parents or siblings (Bandura and Walters, 1977). Considering this, if an individual's family is dedicated to being healthy and both physically and mentally fit, then they are more likely to commit to ensure the same occurs for themselves. Bandura's (1977) social learning theory may then explain why Nat was more involved in sport and physical activity when he was younger, as he observed his family being so. However, this may have changed as he has entered adulthood, as his family would have less of an effect upon his behaviour compared to before. Through one's wider friendship network, those with more social connections are more likely to be involved in group physical activities or use physical activity as a way of socialising (Graham, 2013).

Time

In relation to time, we should consider an individual's education and employment. Those who are full-time students with part-time jobs, such as Nat, will have little to no free time. They may decide to use this free time for other things such as visiting family or socialising with friends rather than taking part in physical activity or exercise. This could be because the individual feels as though that is more important for their personal wellbeing. Nat only takes part in planned exercise for an hour a week, which may be due to his busy schedule of university and work. Due to this lack of time, Nat is more likely to have a lower level of fitness han he could have otherwise, meaning that he is more at risk of physical and mental health concerns. However, the football that Nat takes part in is with friends, so he can use this time for socialising as well as exercising meaning that he may actually be able to gain some psychological benefits from this time (Graham, 2013).

Physical Fitness Testing

One way to measure an individual's fitness levels is by evaluating their strength with the most common way of doing this being the use of the one rep max test. This is where the individual's dynamic strength is tested by assessing the maximum load that they are able to lift for a single repetition of the major muscle groups (Brzycki, 1993). These exercises may include a bench press to test the strength of the individual's chest and shoulder muscles while a squat or leg press may be used to test their leg and gluteal muscles strength. The one rep max test would be considered relevant to Nat as there are many research studies which report its reliability in adults over 18 years old (Seo et al., 2012; Ribeiro et al., 2014). As in the demographic overview it is suggested that Nat has a muscular body type, it may indicate that this test would be relevant in order to test the strength that the muscles can produce.

The one rep max test has major safety concerns as it requires the individual to lift heavy weights meaning a large amount of pressure on their muscles and bones which may lead to possible injury (Brzycki, 1993). This means that it is important to have an experienced coach involved when employing the test. Research conducted by Brookes and Craven (2011) found that while performing a one rep max test there was no significant relationship found between the weight being lifted and the individual's heart rate which indicates their cardiovascular endurance fitness levels. Despite the test being relevant to the demographic, due to these factors, it is important to consider alternatives that can be used to assess individual's physical fitness levels.

Another commonly used method of testing an individual's fitness is the multistage fitness test which is used to give an indication of cardiovascular endurance and can be used to assess V02. This would be beneficial for Nat as he has been described as muscular, meaning that we could assume his strength is at a relatively good level thus indicating the importance of assessing other aspects of his fitness. The multistage fitness test is used, among others, in the British Military, suggesting that it is a clear indicator of an individual's endurance due to the importance that the military holds on their employees fitness levels being beyond average (Royal Air Force, 2017; Army, 2022; Royal Navy, 2022).

Psychological Wellbeing Testing

The most common method used to test psychological wellbeing is through multiple-choice questionnaires, or with scaled answers alongside checklists (Eabon and Abrahamson, 2013). A questionnaire into mental health such as depression and anxiety may be the best choice for testing Nat's psychological wellbeing, as per the observation above that students are one of the most common demographics to be affected by poor mental health.

A specific test is Beck's depression inventory (1961) which uses four statements per question, and gives a score at the end to suggest the level of depression, if any, that the individual is experiencing. Although this test gives an idea of mental health, giving an indication of their wellbeing, being exposed to words with negative connotations shortly before the test has been shown to negatively impact the results (Shrout et al. 2018). This may give an inaccurate score on the tests and could lead to a possible incorrect diagnosis and treatment plans for the individual.

It would be useful to use other tests or methods of testing alongside this one when investigating mental wellbeing to give a clearer diagnosis (Lincoln et al., 2003). To mitigate against the limitations of the depression test previously discussed, an alternative way of measuring wellbeing could be through a happiness test. Michael Argyle and Peter Hills from Oxford Brookes University were able to form a happiness test which is now known as the Oxford Happiness Test (Argyle et al., 2014). The test is not as commonly used as Beck, as individuals cannot be 'diagnosed' with happiness owing to it not being a mental health concern

General Health Testing

One method commonly used for health check-ups is the testing of blood pressure. Blood pressure can be taken in two ways;

1. Directly, which is invasive as it involves catheterization

2. Indirectly, which uses auscultation or oscillometry (Heyward, 2010).

Taking an individual's blood pressure can give clear results linked to hypertension and hypotension (Tsumura et al., 2002; Dalgleish et al., 2001). Hypotension is when an individual has low blood pressure, which can often lead to feelings of faintness. However, it is not often treated as the effects are not detrimental (Dalgleish et al., 2001). On the other hand, hypertension is marked by an elevated blood pressure, which can cause an increased risk of serious health concerns such as heart attacks and strokes. However, it often involves no symptoms (asymptomatic), meaning that it is difficult to spot (NHS, 2019; Dalgleish et al., 2001). Roughly one third of adults in the UK have high blood pressure, and with it being difficult to diagnose without testing, can be life threatening (NHS, 2019). For this reason, it would be a relevant test for Nat as it could identify a possible risk to health issues.

Despite giving an indication of their health status, it is difficult to test an individual's health with just one test or examination. Bouchard et al. (2012) suggests that statistics do not allow for a full overview of an individual's health as it is a complex and multifunctional structure. Therefore, an alternative to this is the health assessment questionnaire which assesses five different aspects of health (Green et al., 2019). Sometimes known as the health status questionnaire, it explores existing medical conditions, characteristics that may cause an increased risk to health, occurring signs of health concerns, lifestyle behaviours that may indicate a positive or negative health and the results from a fitness test (Howley and Franks, 1997). This would be a holistic way of testing Nat's general health as it explores many aspects, meaning that any health concerns would be identified while he is still young so that diagnosis and treatment could be provided at the stage of prevention, rather than cure.

The remainder of the piece will broaden in scope, extrapolating from the case study of Nat, to place him in a contemporary global context in relation to physical and mental health. This will be done by exploring research data from organisations such as the World Health Organisation (WHO).

The Benefits of Exercise on Public Health Improvement and Wellbeing

Walking is a simple yet highly effective form of exercise that is commonly overlooked. If promoted further, it could help the public to better meet recommended daily physical activity levels. The WHO recommends for adults to participate in around 150-300 minutes of moderately intense physical activity per week, or less if the physical activity is considered to be vigorous. However, at least 25% of the global population do not meet this recommendation (WHO, 2020).

The risk of cardiovascular disease is reduced by up to 30% for those who walk for at least 30 minutes a day when compared to those who are inactive (Stensel et al., 2022; Zheng et al. 2009). A meta-analysis of eight studies researching the same topic area conducted by Hamer and Chida (2008) found that walking as a form of commuting instead of driving or getting public transport results in an 11% reduction in cardiovascular disease risk. Further supporting evidence of this comes from research conducted by Gordon-Larsen et al. (2009) which suggested that men specifically were less likely to be at risk of cardiovascular disease if they used walking as a method of transport. If walking alone can make such a significant difference to the risk of health concerns such as cardiovascular disease, it suggests the majority of the population are able to make a small change which will allow for many life-changing health benefits.

Considering cardiovascular disease as a health concern alongside many others, the risk of health issues is intensified and often the result of being overweight or obese which stems from inactivity. The World Health Organisation states that the risk of death increases by up to 30% for those who are physically inactive (WHO, 2021) while 39% of adults worldwide are considered to be overweight (WHO, 2020). The Global BMI Mortality Collaboration supports this through their meta-analysis, which included 189 studies, to present the idea that there is a heightened risk of early death from being overweight (Angelantonio et al., 2016). Through exercise and eating healthily, creating a calorie deficit, weight loss will occur and therefore reduce the risk of health concerns that have been previously mentioned.

Linked to this, improvements to mental wellbeing and prevention of mental health concerns often come from physical activity and exercise as they provide benefits, which include the development of cognitive ability and the enhancement of mood (Mandolesi et al., 2018). Research conducted by Ruby et al. (2011) on the 'invisible benefits of exercise' found that people usually underestimate how much they enjoy exercise as they tend to focus on the tougher components of it rather than the enjoyable aspects. This may suggest that when the mindset is positive, exercise becomes more enjoyable, which is likely to induce positive thoughts, reducing the chances of negative mental health.

Research suggests that endurance is the best form of exercise for a positive mental health (Ruegsegger and Booth, 2018). In addition to this, Plante et al. (2006) found through their research study that exercise which is done outside provides more energising feelings, while exercising indoors is more relaxing. It is suggested that by making social and environmental changes when exercising, there will be more comfort and enjoyment which is likely to lead to increased mental health benefits (Plante at al., 2006). These factors all indicate that exercise results in an improvement in mental wellbeing.

Martinsen (1990) suggests that individuals who are diagnosed with a form of depression are often physically sedentary which leads to a lower level of fitness. Those with existing mental health are often advised to take part in some form of exercise in order to help them manage their mental health alongside cognitive-behavioural therapies, thereby reiterating a cyclic relationship. De Moor et al. (2006) found that regular exercise resulted in decreased symptoms relating to depression and anxiety as well as seeing higher levels of extroversion being portrayed. Craft and Perna (2004) note that exercise as a behavioural intervention is notably effective in alleviating symptoms of depression. Martinsen (1990) supports this as their research found that exercise has an anti-depressive effect on those involved. When exercise was used as a treatment for depressed patients, more than 50% continued with regular exercise after the programme had finished as they gained mental health benefits from it. This indicates that exercise can be used as a way of restoring and maintaining positive mental health.

Conclusion

To summarise, physical activity has been proven through numerous studies to have a largely positive effect on improving an individual's overall health, multiple aspects of fitness and induce better psychological feelings. Health benefits include reducing the risk of cardiovascular disease, stroke, diabetes and cancer among many other health concerns. Regular physical activity can lead to improvements of muscular strength, muscular endurance, cardiovascular endurance and flexibility. In addition to these benefits, physical activity has been shown to have positive effects on individual psychological wellbeing and is it often used as a method of prevention or treatment for mental health concerns. ■

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Teaching Assistants' perceptions on their role in supporting children's learning in one primary school

Abstract:

The significant increase in the number of Teaching Assistants (TAs) throughout England has influenced the changes to their roles and responsibilities. Due to the rising extent of pupil needs and the considerable lack of available funding, more demands are being placed on TAs. Despite the need for TAs across the country, the focus on developing this workforce remains poor with insufficient training opportunities, poor access to planning, limited career progression and restricted time to communicate with their class teacher. This small-scale study provides an insight into a small sample of Teaching Assistants' perceptions regarding these issues. Eight practitioners responded to an online questionnaire in order to explore the varying views relating to these issues. The findings suggested that the practitioners are often used as a teaching resource for lower ability pupils, frequently fee unprepared within their role and regularly have to conduct their own research due to limited opportunities for subject specific training. It is recommended that teachers share the responsibility of teaching lower ability pupils, dedicated planning and discussion time is set aside for teachers and TAs, and lastly that more subject specific training opportunities are provided for TAs.

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Introduction

Evidence from November 2020 suggests that 271,370 staff members of state-funded schools in England are full time equivalent Teaching Assistants (United Kingdom Statistics Authority, 2021). Sharples et al., (2021) suggest that this number has more than trebled since 2000 when there were only 79,000 full time equivalent Teaching Assistants (TAs) in England. In addition to this, the Department for Education (2019) identify that the increase in numbers of TAs is often related to the significant increase of pupils in schools. The main factors affecting TA numbers in schools is dependent on the extent of pupil needs and the amount of available funding (Department for Education, 2019). In addition to this, Sharples et al., (2021) identify that TAs were also implemented to counteract teacher workload, resulting in the wide range of supporting roles and responsibilities which TAs now hold.

Experience working as a TA for the past six years found that most classes have one TA to support the whole-class. However, it became evident that the TAs who were employed as a whole-class resource are most often being used to informally teach lower ability children (Sharples et al., 2021). Additionally, it was found that TAs were going into lessons without knowing the expectations, lesson plans or having had prepared resources due to the insufficient amount of dedicated time for TAs to meet with their class teacher. Furthermore, the lack of discussion time with teachers, difficulties with accessing lesson plans and negligence of TAs being offered subject specific training resulted in TAs having to conduct their own research to progress their professional development in order for them to support the pupils effectively. To further develop understanding on this topic, a literature review was undertaken to explore the roles of TAs within the classroom, how TAs support learners in their class and the ways they can develop professionally. To investigate this further, the focused research question is: what are teaching assistants' perceptions on their role in supporting children's learning in one primary school?

Literature Review

Due to the large number of TAs in England and the high demands of this job role, this literature review will explore the role of classroom TAs, how TAs support learners within the classroom and how they support learning through professional development.

Role within the Classroom

The roles of TAs are constantly changing to meet the needs of the pupils who they work with and the settings they work in (Bentham et al., 2019). Due to the differing roles, there are multiple names for TAs including: Learning Support Assistants, Special Educational Needs Assistants and Classroom Assistants (Hryniewicz, 2013). For the purpose of this study, the term TA will be used to refer to classroom-based support staff. Furthermore, Bentham et al., (2019) state that one of the key roles for these differing job titles is 'to enable pupils to access learning by supervising and assisting pupils across a wide range of activities and supported learning activities' (p.18). Therefore, it may be seen how although the roles adapt depending on the needs of the pupils and the school, the main role for TAs is still focused on providing pupils with support to access the curriculum. According to Bentham et al., (2019) TAs have the main role of supporting the class teacher and pupil's learning through preparing classroom resources, supporting pupils with their learning and providing interventions to further support with learning. In addition to this, NAHT et al., (2016) identify 'the primary role of the teaching assistant should be to work with teachers to raise the learning and attainment of pupils' (p. 4).

However, Webster et al., (2016) portray findings on deployment of TAs which highlight the inefficient role that TAs may hold within the classroom. It is further recognised by Blatchford et al., (2012) that the more attention pupils received from the TA, the less progress they made. Supporting this, Sharples et al., (2021) argue that the use of TAs is having a negative impact on pupil attainment. According to Webster (2021) TAs often provided too much support to pupils with regards to spoon-feeding information and sometimes writing down answers for pupils which may result in pupils not actually learning anything from this support and becoming too dependent on their TA. In contrast to this, it may be the lack of training or support within setting which may be leading to these undesirable outcomes. This is further supported by Webster et al., (2016) who stress the need for TAs to be given clear guidance on their expectations to ensure they are having a positive impact on the pupils they are supporting.

There are differing roles for how TAs are deployed in terms of whole-class TA, one-to-one TAs and intervention-based TAs (Bentham et al., 2019; Department for Education, 2019; Hryniewicz, 2013; Webster et al., 2016). Due to the TAs in practice being employed as whole-class TAs, this role will be explored more. Webster et al., (2016) recognise the advantages of having whole-class TAs as they have the opportunity to build relationships with the teacher and the pupils. In addition to this, Sharples et al., (2021) recognise the positive teacher perceptions of whole-class TAs as providing more attention and support to pupils who are not able to access the curriculum independently. Furthermore, whole-class TAs have been recognised as contributing to classroom management through reducing class disruption which in turn offers more input time for the teacher (Sharples et al., 2021). However, Webster et al., (2016) highlight a disadvantage of whole-class TAs, stating that teachers may start becoming dependent on their class TA, leaving them to teach lessons and prepare resources which may in turn take away from the time which TAs could be spending supporting the pupils and their learning.

Leading on from this, Webster et al., (2016) raise the concern that TAs will not offer effective support in comparison to teachers due to them not receiving the same level of training. From this, it may be suggesting that teachers must go through training and placements to achieve their role whereas some TAs are volunteers who are learning on the job. Therefore, this may suggest that too much is expected of TAs in terms of the academic support that they provide to the pupils. According to Blatchford et al., (2012), the key difference between teachers and TAs is that teachers provide direct teaching input whereas TAs assist pupils with their learning. In addition to this, Blatchford et al., (2012) argue 'TAs do not so much provide additional support, as alternative support' (p. 91). From this it may be gathered that a whole-class TA can provide alternate support based on their own knowledge of pupils to allow them to access the curriculum through offering different explanations and more simple questions catered to the pupil's needs. In relation to this, Sharples et al., (2021) argue that the role of the TA is to compliment and assist the teacher, not to replace them. Further suggesting that school leaders should be responsible for developing the effective role of TAs (Sharples et al., 2021). Concerning this, Webster (2021) recognises that the lack of clarity within TAs roles and responsibilities means that school leaders are undervaluing TAs' contributions, and consequently not utilising them as effective resources to the school. Therefore, it may be suggested that if school leaders provided more clarity around the role of the TA and provided additional training then TAs could have the opportunity to have more of a positive impact on pupils' learning.

Supporting Learners

Exploring the ways in which TAs support pupils

with their learning may give an insight into how this role can be effective. A key finding from the Deployment and Impact of Support Staff in Schools (DISS) Project, suggests that TAs spent most of their time directly supporting pupils in groups (Blatchford et al., 2009). Webster et al., (2016) recognise that the group support offered may be through specific interventions or within the classroom. In terms of TAs delivering interventions, the Department for Education (2019) highlight that these sessions may take place in addition to lessons, or instead of lessons and are often delivered to pupils with identified needs. Webster et al., (2016) suggest that a disadvantage of pupils being withdrawn from lessons for intervention time as being time taken away from the teacher. Further stating 'interventions are not a substitute for consistently good teaching' (Webster et al., 2016, p. 78). In addition to this, Sharples et al., (2021) recognise the difference between TAs delivering high-quality structured interventions having a positive impact on pupils' learning, in comparison to informal, unstructured interventions which can impact negatively on pupils' learning. Therefore, this may suggest that although the interventions do not substitute teaching, they can be useful towards pupils' learning if the interventions are high-quality.

In terms of whole-class TAs supporting small groups or specific children within the classroom, evidence suggests that TAs are often deployed to support the pupils in most need (Sharples et al., 2021). The Department for Education (2019) further support this by highlighting that in-class TAs usually support pupils with Special Educational Needs (SEN), pupils with additional needs and lower attaining pupils. In relation to this, Webster et al., (2016) recognise that TAs are often primary educators for pupils with SEN or lower attaining pupils. Sharples et al., (2021) suggest 'TAs should not be used as an informal teaching resource for low attaining pupils' (p. 13). This may be suggesting that lower attaining pupils require high-quality, structured work which is catered to their needs rather than receiving informal and unstructured teaching. In addition to this, Webster et al., (2016) identify the need for teachers to take responsibility for the progress and development of pupils with SEN. Therefore, whole-class TAs may be seen to be providing more support to SEN pupils when in fact, these pupils may require more teacher support due to their level of training. To counteract this from occurring, Webster et al., (2016) suggest the teacher and TA altering their roles in the sense of the teacher working with a group and the TA moving around the classroom ensuring all pupils are on task.

The level of interactions between TAs and pupils has been recognised as a method of supporting pupils' learning (Bentham, 2011; Blatchford et al., 2012; Webster et al., 2016). According to Bentham et al., (2019) 'a key recommendation for schools wishing to maximise the impact of teaching assistants is to train TAs in the ability to effectively utilise talk and questions' (p. 145). In addition to this, Webster et al., (2013) suggest that 'TAs tend to close down the talk to pupils rather than open it up' (p. 91). It is further recognised that TAs more commonly ask pupils more closed-questions as opposed to open-questions (Blatchford et al., 2009; Blatchford et al., 2012; Webster et al., 2013). Research also suggests that TAs have the tendency to focus on task completion as opposed to aiding pupils with their understanding (Blatchford et al., 2009; Blatchford et al., 2012; Webster et al., 2013). Therefore, TAs may be trying to lead pupils to correct answers through closed questions in order for them to complete the task quickly. Concerning this, Sharples et al., (2021) promote teaching strategies for TAs to enable pupils to become more independent learners through offering them support when it is needed and using open-ended questions to encourage pupils' thinking skills (p. 15). Furthermore, it is highlighted that pupils gain more individual attention and differentiation from their whole-class TA which can encourage pupil engagement (Blatchford et al., 2012, p. 115).

Supporting Learning

TAs' level of preparedness in terms of how they support pupils learning will be explored. Research suggests that TA preparedness has been identified in terms of day-to-day preparedness, access to planning and feedback, and the subject-knowledge which they hold (Blatchford et al., 2009, Blatchford et al., 2012, Webster et al., 2016). Regarding TA preparedness, Webster et al., (2016) highlight the difficulty of TAs going into lessons unprepared, not knowing the expectations and therefore not being able to provide appropriate support to the pupils. According to Bentham et al., (2019) school leaders are responsible for ensuring teachers and TAs have dedicated time to discuss plans and feedback, offering TAs opportunities to develop their subject knowledge and providing TAs with training opportunities.

Regarding day-to-day preparedness, Webster et al., (2016) suggest that many TAs are under-prepared for daily tasks due to the lack of allocated time for teachers to meet with their TA. According to Webster et al., (2013) it is concerning how little time there is for TAs to receive pre-lesson planning and post-lesson feedback. This is further supported by the Department for Education (2019) who suggest that the inefficient time for TAs to prepare for lessons acts as a barrier to them being effective support to pupils' learning. Concerning this, Sharples et al., (2021, p. 16) suggest methods to ensure for dedicated liaison time between the teacher and TA: adjust the working hours of TAs to enable them to start early, use of assembly time and for TAs to join teachers during their Planning, Preparation and Assessment (PPA) time. However, Webster et al., (2016) argue the financial complications of employing TAs for extra time to counteract this issue, further recognising that TAs will be using their own unpaid time to allow for this liaison time to occur. Although, the implications of TAs not receiving this liaison time may lead to inefficient and undervalued TAs (Blatchford et al., 2012; Webster et al., 2016)

In terms of TAs supporting pupils' learning, the level of subject-knowledge which they hold can be beneficial to the level of support they can provide. According to Bentham et al., (2019) 'As a TA, supporting pupils' learning, having an understanding of relevant curriculum areas is crucial' (p. 142). This is supported by Ofsted (2021) who argue that TAs need good subject knowledge in order to support pupils effectively. Webster et al., (2016) highlight how training for TAs to develop their subject knowledge has been neglected. The Department for Education (2019) stress the negligence of training opportunities for TAs. The lack of TA subject specific training has been recognised with Blatchford et al., (2012) further stating that TAs may have to depend on listening to the teacher's lesson input in order for them to gain the appropriate subject knowledge for supporting the pupils' learning. This is further supported by Webster et al., (2013) who argue that TAs tend to develop their subject knowledge through tuning in to the teacher's lesson input, reading through the lesson plans, informal and formal training. However, Webster et al., (2013) identify that tuning in to the teacher's input is the least effective way of developing subject knowledge and that the lesson plans are not always provided to TAs meaning that some of them are supporting pupils' learning with no prior subject knowledge. This may suggest that TAs are not receiving the formal training required to develop their subject knowledge in order to support pupils effectively.

To investigate these findings further, participants will be asked the focused research question of: what are teaching assistants' perceptions on their role in supporting children's learning in one primary school?

Research Method

As a Teaching Assistant working in a large primary school, the research was conducted in the setting where I am based (Setting A). Due to the research question being aimed at Teaching Assistants' perspectives, eleven TAs from Setting A were sent a qualitative questionnaire online consisting of seven open-ended questions. The online questionnaire was sent out to all participants with a ten-day window to allow them sufficient time to complete the questionnaire. Out of the eleven TAs, eight questionnaires were completed.

Study Design

With the research being focused on Teaching Assistants' perspective, the choice to use a qualitative paradigm was made. A qualitative paradigm portrays the participants' assumptions, personal values and beliefs through the data gathered being in written language (Braun & Clarke, 2013; Creswell and Poth, 2018). The research method chosen was an online questionnaire. Bell and Waters (2018) recognise that questionnaires are often used with a quantitative paradigm. Braun and Clarke (2013) suggest how questionnaires can be used in a qualitative way through the use of open-ended questions. Therefore, the online questionnaire used for this research project consisted of seven open-ended questions to ensure that it was used in a qualitative way gathering participants thoughts and beliefs.

According to Thomas (2017) the term 'reliability' refers to the research producing 'the same result on different occasions' (p. 144). Bell and Waters (2018) highlight how participants' experiences can alter their opinions and beliefs meaning that their responses may be affected due to differing circumstances, leading to the research method not being reliable. This is supported by Bryman et al., (2021) who suggest this research method may be deemed as unreliable due to the study not being able to be replicated due to the changing social circumstances and experiences of the participants. However, it is further highlighted that qualitative studies are reliable in the sense of the trustworthiness of the responses due to the open-ended questions which are asked (Braun and Clarke, 2013).

With regards to the validity of this research method, Braun and Clarke (2013) define validity as 'whether the research actually shows what it claims to show' (p. 338). According to Thomas (2017) qualitative data is questionable in terms of its validity due to the research being based on the participants' assumptions and how this data is interpreted. However, as the research was aimed at gathering perceptions, the use of open-ended questions in an online questionnaire allowed the participants to share their honest thoughts and feelings on this topic. In contrast to this, Bryman et al., (2021) states 'external validity is concerned with whether specific findings can be generalised across different social settings' (p. 363). Further arguing that the use of a small sample size within a certain setting may create the issue that the findings cannot be generalised towards other settings (Bryman et al., 2021).

The decision to choose an online questionnaire for the study design was made due to this being an efficient method of data collection within the setting (Braun & Clarke, 2013). However, the use of structured interviews was also considered as a research method for this project. Although, Braun and Clarke (2013) recognise a limitation to structured interviews as them being time consuming with regards to the researcher conducting and transcribing the interview, together with the impact on participants due to the lengthy interview process. This may have caused an issue due to there being a short time frame for data collection. Whereas the use of an online questionnaire allowed participants to respond at a time which was convenient to themselves (Bryman et al., 2021).

Participant Sample

A purposive convenience sample was chosen for this study as TAs within Setting A were accessible to the researcher, together with them having an insight and understanding on the focus of this study (Braun & Clarke, 2013; Bryman et al., 2021). All TAs from Setting A were emailed asking for volunteers to answer the online questionnaire. Eleven TAs were chosen on a first come first serve basis. Bryman et al., (2021) stress the importance of using a sample size based on the nature of the research. Therefore, the sample size of eleven was chosen due to this being a qualitative small-scale research project to allow for a deep analysis of the responses. All participants were female; however, this is due to all TAs within Setting A being female.

Ethical Considerations

Before conducting the research project, a research proposal needed to be completed and approved by an ethics panel at Bishop Grosseteste University (BGU). Ethical frameworks were adhered to throughout the research process (BERA, 2018; BGU, 2019). All participants were administered an information letter which addressed the focus of the project, what the process would entail and their right to withdraw. Consent was gained from BGU and from Setting A through the signed ethics form. Consent was also gained from participants through a signed consent form. A copy of the questionnaire was also approved to ensure that the questions were ethical prior to

sending them out to participants.

To ensure confidentiality, all participants were kept anonymous through the accessing the online questionnaire through a shared link, meaning that the researcher was not aware of who had submitted which response. A recognised strength of using an online questionnaire has been identified as having a high level of anonymity (Braun & Clarke, 2013; Burton et al., 2014). Thomas (2017) emphasises the importance of changing the names of participants and settings to ensure anonymity. Therefore, for the ethical consideration of the research project, all participants were kept anonymous and will be referred to as Participant A, B, C etc, together with the setting being referred to as Setting A. With further regards to confidentiality, all participants were made aware of who would have access to the results within the information letter, in addition to them being informed of their anonymity when taking part in the research and the inability to administer their right to withdraw.

Ethical considerations were taken regarding data protection. The need for data to be kept anonymous and stored in a secure place was followed (BERA, 2018; Thomas, 2017). Therefore, the data was stored on the researcher's BGU OneDrive and not on any personal devices (BGU, 2019). In addition to this, the Data Protection Act (2018) stresses the importance of General Data Protection Regulation (GDPR) and further states that data should be 'kept for no longer than in necessary'. Due to this, all data collected will be destroyed once the final mark has been received.

Research Outcomes, Discussion and Analysis

To analyse the data received from the questionnaire, the data responses were converted into a spreadsheet. Braun and Clarke (2013) recognise the importance of preparing data to be analysed. Following this, thematic analysis was used to group key findings together. Braun and Clarke (2013) state that thematic analysis is often used to analyse qualitative data, further recognising that it is 'a method for identifying themes and patterns of meaning across a dataset in relation to a research question' (p. 175). From this, three main themes were identified: Lower Ability Support, Day to Day Preparedness and Subject Knowledge.

Lower Ability Support

One of the key findings from this research project portrayed that TAs are more commonly used as support for lower ability pupils to enable them to access the curriculum. According to Participant A

> 'I largely spend my time supporting lower attaining children within the class'.

In addition to this, Participant B stated that one of their main roles was

> 'Working with children through the lesson to give extra support if I can see they are struggling with something'.

Participant E further stated that a key role of their job is

> 'Helping when children are struggling during lessons'.

Therefore, these findings may suggest that one of the key roles of TAs is to provide support to the lower ability pupils, or to pupils who require additional support for them to access the learning materials. This is supported by Bentham et al., (2019) who states a key role of TAs is 'to enable pupils to access learning by supervising and assisting pupils across a wide range of activities and supported learning activities' (p. 18). Sharples et al., (2021) also recognised that TAs provide more attention and support to pupils who are not able to access the curriculum independently.

Another key finding from this research suggested that a key responsibility of TAs is to provide additional support to pupils. Blatchford et al., (2012) recognised that pupils tend to gain more individual support and differentiation from their whole-class TA. In relation to this, Participant F stated their responsibilities as including

> 'Creating and differentiating resources to ensure children can access learning'.

Participant F further identified part of their role as

> 'Contributing to planning/differentiation of lessons for SEN children'.

Regarding this, Participant A stated,

> 'If the children are struggling to grasp something, I try and explain in a different way or make a practical, visual activity. I make learning visual or tailor it to their individual needs.'

These finding appears to suggest that the class TA holds the responsibility of providing learning resources and delivering differentiated lessons to SEN pupils. This contradicts Webster et al., (2016) who acknowledge the requirement for teachers to take ownership of the development, differentiation and progression of SEN pupils. However, Sharples et al., (2021) identify that TAs tend to have a negative impact on pupil attainment. From these findings, it may indicate that TAs predominantly support lower attaining pupils through having to differentiate and alter the work to allow the pupils to access it. Therefore, it may be suggested that the negative impact on pupil attainment may be due to the lack of guidance from the teacher in supporting these lower ability or SEN pupils as opposed to the accountability being placed on the TA.

TAs working with lower ability pupils in small groups was another key finding from this research. According to Participant C as part of their role they

> 'Sometimes take a group to work with at a slower pace to help with understanding or any misconceptions they may have'.

Participant G stated that they

> 'Support children in smaller groups when completing activities – explain tasks, support with answers.'

These findings may suggest that TAs take pupils out in groups to provide them with alternate support from the rest of the class to aid them with their work. In relation to this, Bentham et al., (2019) recognised one of the TAs roles is to provide interventions to pupils to further support their learning. Blatchford et al., (2009) further identified that TAs spend the majority of their time supporting pupils in groups. Although, Participant F stated that their role consists of

> 'Supporting groups of children with differentiated learning outside of the classroom.'

This finding may indicate that pupils are taken out of the lesson for this group work to take place. Webster et al., (2016) recognise a disadvantage to pupils being taken out of lessons for group work or interventions as it being time taken away from the teacher. Therefore, TAs taking pupils out of the class may be viewed as a negative due to the children missing the taught lessons delivered by the teacher.

Day to Day Preparedness

In terms of day-to-day preparedness, evidence suggests that there is not an adequate amount of allocated time for teachers and TAs to meet to discuss daily plans. Webster et al., (2013) highlighted the concern around the limited time for TAs to be informed of lesson plans prior to the lesson being taught. Regarding this, Participant A stated,

> 'I am usually debriefed each morning however it is only brief as school is so busy and there is little time to communicate'.

In addition to this, Participant G stated,

> 'Sometimes the timetable of the day is briefly explained to me in the morning of that day'.

These responses may be implying that they are informed of the bare minimum information for the day ahead due to the lack of time for teachers to meet with their TAs. In relation to this, Webster et al., (2016) identified that many TAs are often under-prepared for daily tasks and lessons due to the insufficient amount of allocated time for TAs to meet with their teacher.

Another key finding suggested that teachers are not prioritising the need for TAs to be made aware of lesson plans which may lead to resources not being prepared. According to Participant F

> 'If it is maths or another lesson usually, I only find out moments before the lesson what the children I am supporting are doing, therefore I do not have time to plan ahead and get additional resources ready'.

Additionally, Participant G

> 'Most times I'm made aware of the lesson/tasks at the start of each lesson or after the input'.

Participant A also stated,

> 'I may sometimes only be told about an activity I am doing quickly during the lesson'.

Therefore, these findings may be suggesting that they are unable to prepare resources to assist the pupils, or to be able to enhance their knowledge by reviewing the lesson plan prior to the lesson being taught. This may lead to them not being able to support the pupils effectively. Webster et al., (2016) recognised the issue of TAs going into lesson unprepared with regard to not knowing the lesson plan or the expectations for that lesson. The Department for Education (2019) suggested that the inefficient amount of time given to TAs to allow them to prepare for the lessons can act as a barrier to them being able to effectively support the pupils' learning.

Conversely, a key finding has found that most participants do have access to lesson plans, despite the insufficient amount of time for teachers and TAs to talk. According to Participant D

> 'Planning is shared and left out for reference'.

In addition to this, Participant E stated,

> 'I am sent planning and smart notebook presentations'.

Participant B further stated,

> 'There is a lesson plan available to read'.

Therefore, these findings suggest that TAs are provided with lesson plans prior to the lessons which take place. Blatchford et al., (2012) recognised the importance for TAs to have access to planning. Additionally, the findings suggest that the lesson plans are emailed or left out which may be a way for teachers to provide planning to their TAs without having to worry about the limited time to talk during the school hours. Although, Sharples et al., (2021) suggested alternate methods for teacher and TAs to provide extra time to meet during assembly time or during PPA time. However, Bentham et al., (2019) recognised that it is the responsibility of school leaders to ensure teachers and TAs are provided dedicated time to discuss plans and feedback. Webster et al., (2016) stressed that TAs not receiving dedicated liaison time may lead them to feeling undervalued. Through the plans being emailed, this may imply that TAs do not have the dedicated time for them to verbally discuss the plans with their teachers prior to the lesson. In addition to this, lesson plans being emailed may indicate that it is the TA's obligation to check these plans prior to the lessons taking place, in their own time.

Subject Knowledge

Another key finding from this research suggests the requirement of subject knowledge to allow TAs to support the pupils effectively. The research findings suggested that most participants felt confident with regard to their subject knowledge. However, Participant B recognised

> 'As a TA with many years' experience, my subject knowledge is good'.

Additionally, Participant H stated,

> 'I have been able to enhance my subject knowledge by working in the same year group before as I can look back on what I remember/learnt in previous years'.

According to Participant A

> 'Not always, I do in most subjects but that is because I have been in that year group for five years now'.

Therefore, these findings suggest that the TAs felt more confident with their subject knowledge after working with the year group in previous years, allowing them to recap prior knowledge. Although, Participant A further stated,

> 'Recently the RE curriculum has changed and I do not feel confident delivering it with my limited subject knowledge'.

Bentham et al., (2019) highlighted the crucial need for TAs to have understanding and knowledge of the relevant curriculum areas. In addition to this, Ofsted (2021) argued the need for TAs to have good subject knowledge to allow them to effectively support the pupils.

One of the key findings implied that TAs depend on discussions with their class teacher as a way of developing their subject knowledge. According to Participant E

> 'In areas where I am less confident, I will discuss with my class teacher'.

Additionally, Participant F stated,

> 'If I was not sure of something I would ask the class teacher for additional information'.

Although, it has previously been highlighted the lack of dedicated time for teachers and TAs to communicate with each other, this may imply that TAs relying on their class teacher may not be beneficial due to the insufficient amount of time allowed for these conversations to take place. Regarding TAs not being given specific information and instruction on the subject knowledge which they require, Webster et al., (2016) stressed the importance for TAs to have clear guidance on their expectations to allow them to positively impact on the pupils they support. Furthermore, Webster et al., (2016) also identified the issue of TAs not receiving the same training opportunities as teachers which may hinder the support they provide to pupils. According to Sharples et al., (2021) school leaders should be responsible in providing TAs with opportunities for development. Therefore, it may be suggested that school leaders are responsible for enhancing TAs' subject knowledge through offering more developmental opportunities.

Lastly, another key research finding suggests that TAs are not provided with specific training. According to Participant A

> 'We don't often have training'.

The Department for Education (2019) stressed how training opportunities for TAs have been neglected. Webster et al., (2016) further identified the need for TAs to receive specific training to allow them to develop their subject knowledge. Another key finding implied that TAs are responsible for conducting their own research to allow them to develop within their role. In relation to this, Participant D stated

> 'If unsure about subject knowledge, this can be easily researched using books/ access to the internet in school'.

Participant G stated,

> 'Look into the subject further at home'.

Participant E referred to this as

> 'Self-directed learning'.

Webster et al., (2013) recognised that TAs may develop their subject knowledge through reading lesson plans, tuning into the teacher's lesson input or by informal and formal training. It may be suggested that TAs conducting their own research could be deemed as informal training. A problem with TAs conducting their own research may be that there are inconsistencies in their findings. This may result in the pupils being taught inaccurate information rather than TAs all receiving the same formal training which could provide them with accurate expectations for what they need in order to teach the pupils effectively.

Conclusion

It is evident that Teaching Assistants hold a crucial role in supporting children's learning within the classroom. However, this small-scale research project presents the findings of the perceptions of TAs from one setting. Therefore, it cannot be used to generalise.

The research found that TAs view one of their main responsibilities as supporting pupils who are struggling within lessons and providing them with additional support. However, this led to the finding that the majority of TAs are used as an informal teaching resource for lower ability pupils through the use of teaching the pupils in small groups either inside or outside the classroom.

Furthermore, research found that TAs viewed the importance of being aware of the lesson plans prior to the lesson taking place to ensure they are aware of expectations and given enough time to prepare resources. Conversely, these plans were not always shared with TAs or it was down to the TA to access these plans in their own time. This resulted in a key finding that TAs are not provided with dedicated time for them to meet with their teacher to communicate plans. Finally, research also found that TAs who had previously experienced working in the same year group viewed themselves as feeling confident with regard to their subject knowledge. Nevertheless, most of the TAs portrayed that they had to conduct their own research to enhance their subject knowledge due to the negligence of subject specific training sessions for TAs.

Recommendations

- It is recommended that more time is set aside for teachers to meet with TAs to discuss lesson plans, and to communicate expectations.

- Teachers to share the responsibility of teaching lower ability pupils with their TA to allow the pupils to be taught by a mixture of practitioners along with the TA being given opportunities to work with a variety of mixed ability pupils.

- TAs to be provided with opportunities for more subject specific training to allow them to develop within their role without having to conduct their own research or having to rely on the teacher to inform them of subject specific lesson content.

- As a Teaching Assistant, a recommendation for personal practice would be to ensure that time is set aside for myself and the class teacher to share information, discuss plans and prepare resources.

- Moving forward, a personal recommendation based on own development with regard to being a researcher would be to ensure that questions asked are open questions to allow for practitioners to share their views without it being a 'yes' or 'no' answer.

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Beyond the rhetoric of readiness: An exploration into school readiness from teachers' perspectives

Abstract:

School readiness is increasingly becoming the rationale for early years provision in England, endorsed in the Early Years Foundation Stage framework (Department for Education, 2021) as a way of preparing children for their subsequent education in compulsory schooling. However, without a clear definition, school readiness remains a contested concept with disparate interpretations arising between policymakers and teachers. This study explored teachers' perspectives of school readiness as children transition from the Early Years Foundation Stage to the National Curriculum and considered the impact of school readiness on pedagogical practices. Data were collected through surveys (n=22) and semi-structured interviews (n=4). The data exemplified the complex nature of readiness and illustrated a disparity between teachers' perceptions of readiness and their pedagogical practices, driven by curricular expectations and assessment frameworks. The study contributes to the growing body of literature concerned with school readiness and is of particular interest to early years educators working within a framework which emphasises the notion of school readiness.

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Introduction

Over recent years, school readiness has gained prominence in political discourse, progressively becoming the rationale for early years education and care (ECEC) in England (Ang, 2014; Brooks & Murray, 2018; Kay, 2018b; Moss, 2013). Featuring in several reviews (Allen, 2011; Field, 2010; Tickell, 2011) and recent iterations of the Early Years Foundation Stage (EYFS) (Department for Education [DfE], 2012, 2014a, 2017a, 2021), the school readiness agenda has become a significant driver in informing education policy and practice for young children. Despite its widespread application, school readiness is plagued by definitional ambiguity and thus, disparate interpretations arise from a range of stakeholders. Previous research has highlighted the complexities of establishing a definition of school readiness as it is interpreted through different lenses (Kay, 2018b; Ofsted, 2014; Snow, 2006). This lack of consensus exemplifies how school readiness is a subjective construct formed within the stakeholder's beliefs of children, learning and teaching, encapsulating a 'fundamental difference in conception of the purpose of early years education' (Bingham & Whitebread, 2012, p. 4).

This study offers important insights into teachers' perspectives of school readiness as children transition from the EYFS to the National Curriculum. Moreover, it builds on Kay's (2018b) recommendations to explore year one teachers' perspectives, an underrepresented demographic within the research base. The objectives of this study are to ascertain how reception and year one teachers perceive school readiness, identifying their priorities for ensuring children's school readiness, and to explore tensions between school readiness and early years pedagogy. The research sets out to answer the following questions:

What are teachers' perceptions of school readiness?

What are the implications of school readiness for early years pedagogy?

Literature review

Readiness in policy framework

School readiness is a dominant feature within the EYFS, which governs early years practice and provision for children from birth to five years old (DfE, 2021). A review of the various iterations of the EYFS (Department for Children, Schools and Families, 2008; DfE, 2012, 2014a, 2017a, 2021) demonstrates a clear shift towards the school readiness agenda as its prominence gains leverage in progressive reforms. In the revised EYFS, the concept of school readiness permeates the document and is a continuing theme from the outset, asserting that it 'promotes teaching and learning to ensure children's school readiness' (DfE, 2021, p. 5). The explicit reference to school readiness is pertinent in defining the main purpose of the reception year as preparing children for their subsequent experiences in year one. Despite there being no clear definition of readiness within the framework, the Good Level of Development (GLD) (DfE, 2022) indicator provides an assessment tool to measure children's readiness for year one. This conception of readiness reduces the complexity of readiness to a fixed measure of skills and knowledge that a child should have acquired to successfully negotiate the transition to year one (Bingham & Whitebread, 2012; Kay, 2018b). It is contended, however, that this simplified perspective could be problematic for a significant number of children as it assumes a pre-defined standard that all children should achieve (Bingham & Whitebread, 2012; Kay, 2018a).

A neoliberal discourse of readiness

It could be argued that the dominant discourse of readiness which pervades ECEC emanates from neoliberal political discourse, ensuring that children are prepared with the essential skills and knowledge to succeed in compulsory school education (CSE) (Organisation for Economic Co-operation and Development [OECD], 2017), and to contribute to an economic society (Kay, 2018a, 2021; Sims, 2017). According to the OECD (2006), this perspective is driven by governmental economic interests in reducing poverty, closing the attainment gap, and achieving greater labour market success. Within this discourse, reception classrooms are reconceptualised as a place to prepare children for CSE and to succeed within schools' test-based culture (Moss & Cameron, 2020; Roberts-Holmes, 2019). Consequently, academic achievement becomes the driving force of school readiness, offering security to the government that children will be starting year one prepared to succeed academically (Whitebread & Bingham, 2014). Reforms of the EYFS, as constructed under a coalition government (DfE, 2012, 2014a) and a Conservative government (DfE, 2017a, 2021), emphasise this notion through an increased focus on teaching the 'essential skills and knowledge…[to] help children to prepare for year 1' (DfE, 2021, p. 16). Moreover, Kay (2021) asserts that the latest reform of the EYFS is pertinent in emphasising academic outcomes through refined early learning goals (ELGs) in literacy and numeracy. A significant change in the framework mirrors the language of the year one curriculum through expectations such as 'comprehension', 'handwriting', 'transcription' and 'composition' (DfE, 2021, p. 9). This construction of readiness within an academic framework holds out the promise that children are already prepared to read, write, and conform to classroom procedures upon entry to CSE (OECD, 2006; Professional Association for Childcare and Early Years [Pacey], 2013; Tactyc, 2017).

Ofsted have been instrumental in perpetuating the rhetoric of readiness that is concerned with academic outcomes. Ofsted's Bold Beginnings report (2017) investigated the provision and curriculum in the reception year across good and outstanding primary schools, and the 'extent to which it was preparing four- and five-year olds for their years of schooling and life ahead' (Ofsted, 2017, p. 4). The report undoubtedly situates the reception year as a period to prepare children for the more formal learning of primary schooling (Kay, 2018a) through the narrow perception of teaching literacy and mathematics as the 'core purpose of the reception year' (Ofsted, 2017, p. 7). Within their research, Ofsted (2017) questioned whether the EYFS was appropriately designed to prepare pupils for year one, suggesting that the standards for literacy and mathematics were insufficient. The rhetoric of readiness as exemplified in the report conveys a strong connection between a good reception year and teaching for mathematics and literacy outcomes (Kay, 2018a). Moreover, the report emphasised how successful reception classes were 'preparing children very effectively for mathematics in year one' (Ofsted, 2017, p. 24) by using content from the year one curriculum, thus promoting a push down of outcomes into the reception year. Within this interpretation, it could be argued that Ofsted have discursively constructed and exacerbated the narrow perception of readiness as embodied in political discourse.

The influential power of Ofsted cannot be underestimated. The Bold Beginnings report considers the reception year to be a 'missed opportunity' with 'painful and unnecessary consequences' (Ofsted, 2017, p. 4) for many children. Such emotive language acts as a powerful catalyst in constructing the reception year as a problem space and consequently enforcing a solution that is considered good practice (Wood, 2019). As the 'sole arbiter of quality' (DfE, 2014b, p. 4), Ofsted maintains a disciplinary power (Hoffman, 2011) in colonising ECEC through regimented inspections, reports and surveys (Neaum, 2016; Wood, 2019), thus providing a lens in which inspectors make their judgements and influencing the everyday lives and discourses of educators.

A social and emotional perspective

In contrast, the literature base has established an alternative discourse that embodies a social pedagogic approach (Bingham &

Whitebread, 2012), promoting children's holistic development. Previous studies have demonstrated a positive relationship between children's social and emotional proficiencies and their subsequent academic achievement (Raver & Knitze, 2002; Hartas, 2011). Contrasting with the predominance of academic readiness in political discourse, Hartas (2011) asserts that 'the ability of young children to manage their emotions and behaviours is an important prerequisite for social adjustment and school readiness' (p. 83). From this perspective, it is argued that social and emotional competencies provide the foundations for children to be capable of adapting to the formal requirements and expectations of the year one classroom (Thompson & Raikes, 2007), thus benefitting from the academic opportunities. The Hundred Review (Dubiel & Kilner, 2017) exemplified this notion as teachers perceived children's learning behaviours and their ability to adapt to the expectations, routine, and culture of the school, as a core purpose of the reception year, and a fundamental aspect in preparing children for year one.

Previous research into the perspectives of teachers, parents and childcare professionals suggest that they perceived readiness within this social pedagogic model. Miller and Kehl (2019) identified that teachers and parents considered children's social and emotional competencies as more important than children's cognitive abilities. Similarly, Pacey (2013) established that teachers, parents, and childcare professionals believed that school readiness should be defined by social and emotional competencies such as independence, curiosity, a desire to learn and strong social skills. It is important to clarify that these studies considered school readiness as the institutional transition into reception and therefore, the findings may emphasise different priorities rather than academic outcomes. Notwithstanding this, research into the perspectives of readiness from reception to year one yielded similar results. Kay (2018b) identified that reception teachers regarded children's dispositions for learning as important factors for school readiness, including confidence, curiosity, eagerness, and happiness. Similarly, Brooks and Murray (2018) found that teachers believed personal, social, and emotional development played a significant role in children's school readiness, suggesting that children need to have developed proficiencies in self-help, relationships, and emotional maturity to successfully negotiate the transition to year one. Notwithstanding this, Rouse et al. (2020) found that although pre-primary teachers tended to align more within this social and emotional framework, primary teachers were less likely to consider these skills as they favoured academic knowledge, thus highlighting a dissonance between the priorities of teachers as they work within distinctly separate sectors and curriculum frameworks.

'Schoolification'

The transition from reception to year one highlights a significant transition in children's early educational experience, which according to Moss (2013), represents a longstanding issue in education. The literature establishes a significant discontinuity between the two curriculum frameworks which govern practice as children move from a holistic EYFS framework, to a compartmentalised and prescribed National Curriculum (Fisher, 2011; Nicholson & Hendry, 2020). Moss (2013) suggests that this fragmented relationship assumes a hierarchical position between ECEC and CSE, whereby ECEC is reduced to a subordinate role, with its purpose to prepare children for their succeeding schooling experience. ECEC pedagogies can therefore become vulnerable to more formal teaching practices, leading to what is commonly referred to as the schoolification of the early years (Bradbury, 2019; Brogaard Clausen, 2015; Brooks & Murray, 2018; Dubiel & Kilner, 2017; Moss, 2013; Moss & Cameron, 2020; OECD, 2017; Roberts-Holmes, 2019). Despite suggestions of extending ECEC practices into key stage one as a way of bridging pedagogical discontinuity (Fisher, 2011; Moss, 2013; Roberts-Holmes, 2012), the imposition of more formal learning practices have permeated the reception year as a way of readying children for their succeeding experiences in year one. This has been constructed in reception classrooms through pedagogies which align more closely with a primary model of education, emphasising teacher directed activities, academic content, and a reduction of play (OECD, 2017; Pacey, 2013).

Policy initiatives have been instrumental in advocating a push down curriculum in the reception year. Within a consultation of primary assessment, the DfE (2017b) recognised the disparity between the ELGs and the expectations of the year one curriculum. As a result, it was asserted that 'We will ensure that the ELGs are appropriately aligned with the year 1 curriculum…and we will undertake work to strengthen the teaching of literacy and numeracy in the early years' (DfE, 2017b, p. 6). This was further exemplified in a review of effective primary teaching practice (Keeble, 2016), which asserted that the most effective schools introduced year one approaches into reception to effectively manage the transition to year one. Despite Ofsted's (2021) assertion that 'Teaching should not be taken to imply a 'top down' or formal way of working' (p. 28), these reviews discursively construct a pre-primary approach through the direct teaching of literacy and numeracy as a successful pedagogy in the reception year, thus creating a 'regime of truth' (Lewis, 2018, p. 331; Spencer-Woodley, 2013, p. 39) that pervades ECEC practice.

Teachers' tensions

The school readiness agenda can have an influential impact on reception classrooms (Lewis, 2018), leading to what Neaum (2016) describes as a 'troubled relationship' (p. 245) between early years pedagogy and the political rhetoric of academic readiness. The EYFS itself is situated in a paradoxical space, advocating for a child-centred approach, yet requiring the achievement of a prescribed set of outcomes (DfE, 2021). Despite asserting that it 'does not prescribe a particular teaching approach' (DfE, 2021, p. 16), the EYFS recommends a greater emphasis on direct teaching to prepare children for year one (DfE, 2021), resulting in tensions between a policy that advocates school readiness, and the ideology of early years pedagogy (Bradbury & Roberts-Holmes, 2018). Kay (2018b) and Wood and Chesworth (2017) suggest that these contradictions can cause uneasy pedagogies for reception teachers as they are torn between their pedagogical beliefs and the demands of the school readiness metanarrative as perpetuated in political discourse.

Further tensions arise from the increasing culture of performativity and accountability in ECEC (Roberts-Holmes, 2015). It could be suggested that the GLD indicator serves as a disciplinary mechanism (Hoffman, 2011; Lewis, 2018), whereby reception teachers are bound by the pressures to ensure that children achieve the expected outcomes. This discourse consequently challenges teachers' pedagogical values and beliefs as they work within a framework of performativity (Ball, 2003; Ball, 2016; Roberts-Holmes & Bradbury, 2016). These tensions were exemplified in the Hundred Review, whereby reception teachers indicated that they felt increasingly pressured by the school readiness agenda to ensure children's progress and attainment (Dubiel & Kilner, 2017). Similarly, Mitchell (2019) identified that despite their endeavours to focus on a child centred education, teachers felt pressured by the expectations to produce data, thus conforming to increased direct teaching practices so that children could achieve a GLD in literacy and numeracy. These findings highlight a significant dissonance between teachers' pedagogical values and their classroom practices as they negotiate a prescriptive framework that endorses the academic notion of readiness.

This section has provided a summary of the literature relating to school readiness, highlighting two competing discourses and identifying how these contrasting perspectives manifest as tensions and contradictions in reception practice.

Methodology

The underpinning methodology which informs this research project is a mixed-method approach, ascertaining both qualitative and quantitative data (Biesta, 2021). This methodology embodies both an interpretivist and positivist paradigm, whereby the strengths of differing approaches are used to provide a more accurate representation of complex and non-linear research questions (Biesta, 2021; Plano Clark & Ivankova, 2016). Despite requiring an interpretivist paradigm to explore the socially constructed nature of school readiness, numerical data can be beneficial in providing a broader insight into phenomena. Furthermore, a mixed-method approach allows for the convergence of data from different methods, thus enhancing the strength and credibility of the findings through triangulation (Denzin, 2017).

Methods

A survey was used at the preliminary stage of data collection to provide a broader perspective, and to ascertain key themes and categories of school readiness. Considering the complex nature of school readiness, the survey elicited both quantitative and qualitative data through a variety of questions. Prior to distribution, the survey was piloted with two individuals who scrutinised the format, questioning and functionality of the survey. Walker and Solsavon (2014) suggest that this can strengthen the credibility of the research and allows adjustments to be made before distribution. Based on the feedback, two questions were amended to ensure clarity for the participants. Surveys can be beneficial in reaching a wide range of respondents, thus obtaining data that represents a broader population (Mukherji & Albon, 2018). Limitations arise, however, when considering that surveys fail to elicit the complexities surrounding their contexts (Denscombe, 2010). Notwithstanding this, when used in conjunction with other methods, surveys can strengthen and support the findings of the research.

Semi-structured interviews were used as the main method within the study, ascertaining qualitative data through the perspectives of two reception and two year one teachers. Considering that school readiness is concerned with the transition to year one (DfE, 2021), it is important to ascertain the perspectives of year one teachers and their priorities for children entering their classrooms. For the aims of this research, interviews were beneficial for eliciting narrative data and thus ascertaining individual's beliefs in greater depth (Alshenqeeti, 2014). Moreover, a semi-structured format provided the context for the researcher to direct the interview (Creswell, 2013), but also allowed flexibility to delve into issues (Mukherji & Albon, 2018). The interview questions aimed to build upon the findings from the survey data and were adapted from Kay's (2018b) study to meet the needs of this research project. The questions were therefore internally validated from Kay's study. To minimise interviewer bias (Guthrie, 2010), open-ended questions were used to allow the teachers to voice their perspectives, unconstrained by the influence of the researcher (Creswell, 2013).

Ethics

Prior to conducting the research, consideration was given to any ethical issues which may arise during the process. A research ethics proposal was submitted to Bishop Grosseteste University (BGU) which adhered to the principles of the university's research ethics policy (BGU, 2019). The proposal gained approval by the university and the placement school prior to data collection. In line with ethical guidelines (British Educational Research Association, 2019; BGU, 2019), the researcher upheld the right for participants to decline or withdraw their participation in the study. Due to the confidential nature of the survey, however, withdrawal was not possible after participants had submitted their response. Preceding data collection, participants were fully informed of the study and what their participation entailed via a participant information sheet. Moreover, participants were required to give their informed consent to participate in the research. The data were stored confidentially on a password protected device in line with BGU ethics policy (2019). Participant anonymity was upheld and any personal information that could identify the participant was removed and replaced with a pseudonym.

Sample

Participants for the study were recruited via opportunity sampling (Mukherji & Albon, 2018). The surveys were distributed via email to five local schools in Lincolnshire in which a prior relationship had been established. The survey remained open for a three-week period in which 22 responses were returned for analysis. Following the surveys, interviews were conducted with two reception and two year one teachers at the placement setting, an urban primary school located in Lincoln. Participants were identified by numbers 1-22 for survey responses and by alphabetical letters for interview responses. Due to the small sample size, it is recognised that the findings may not be reliably representative of the broader population.

Findings and Discussion

The following section will present the analysis and discussion of the data to answer the following research questions:

What are teachers' perceptions of school readiness?

What are the implications of school readiness for early years pedagogy?

The data analysis is based on 22 survey responses from reception teachers (n=10), year one teachers (n=10), and senior leadership staff (n=2), alongside interview data from two reception teachers and two year one teachers. The data were organised into common themes using axial coding.

Teachers' perceptions of school readiness

The literature review has already recognised that there is no clear definition of school readiness (Kay, 2018b), which could be problematic for educators. In order to identify how teachers perceive school readiness, participants were asked to consider what school readiness means to them. Within the data, two important and contrasting discourses emerged that traverse both a social pedagogic model and a pre-primary approach, which will now be discussed in turn.

A social emotional perspective

The dominant theme that prevailed in the data was the importance of children's social and emotional competencies. Aligning with a social pedagogic model (Bingham & Whitebread, 2012) and congruent with previous research (Brooks & Murray, 2018; Kay, 2018b; Miller & Kehl, 2019; Pacey, 2013; Rouse et al., 2020), the majority of responses alluded to children developing social and emotional proficiencies during their pre-school years in order to manage the expectations of the year one classroom. Within the survey, 77% of respondents (n=17) conceptualised readiness from the perspective of children's social and emotional competencies. Aligning with the findings from Kay (2018b) and Pacey (2013), references were made to specific skills that teachers deemed important for children's readiness, including independence (n=8), confidence (n=4), self-regulation (n=3) and the ability to form peer relationships (n=2). Additionally, 32% (n=7) of responses referred to children's self-sufficiency in hygiene, toileting, and taking care of their own belongings. These findings suggest that teachers perceive that children need a good level of independence (Pacey, 2013) and self-help skills (Brooks & Murray, 2018) to manage the expectations of the year one classroom.

The interviews established similar findings as both reception teachers spoke of how they perceived readiness through children's social and emotional competencies. Participant M asserted that school readiness is '*having developed all of those skills…learning skills. So, being able to sit and listen, taking turns, understanding rules and you know, even being able to sensibly walk through the corridors*.' These sentiments are congruent with the literature which asserts that social and emotional competencies and learning behaviours are a fundamental aspect in children's school readiness (Dubiel & Kilner, 2017), ensuring that children have acquired the necessary skills to cope with the expectations, routines, and culture of the school (Hartas, 2011; Thompson & Raikes, 2007). Similarly, Participant S articulated that she prioritised children's learning behaviours, '*we'd like them, obviously, to meet their early learning goals, but also, it's more about the learning behaviours, so…developing independence, having those social skills so you can share, take turns, cope with routines*.' Despite acknowledging that the ELGs (DfE, 2021) were an indicator of children's school readiness, it was clear that she prioritised children's learning behaviours and their social and emotional competencies.

Similar findings emerged from the perspective of Participant K (year one) as she emphasised the importance of children's learning behaviours:

> 'learning behaviours are key really…if we've got the learning behaviours, we can embed everything else, we can put that academic side into place, but if they're not sitting, they're not listening and are distracted all the time…then it's a battle.'

Participant K's sentiments highlighted how she perceived academic readiness as subservient to learning behaviours. In line with the literature (Brooks & Murray, 2018; Dubiel & Kilner, 2017; Hartas, 2011; Thompson & Raikes, 2007), she also asserted that learning behaviours provided the foundations for academic learning, thus suggesting that without these behaviours, children would struggle with the academic demands of year one. It could be suggested that from her experience, if children have not developed those foundational learning behaviours, the ability to secure academic knowledge becomes more difficult. The lack of emphasis on academic knowledge contrasts with the findings from Rouse et al. (2020) which highlighted how primary teachers tended to align more within an academic discourse. Furthermore, it contests the dominant discourse of readiness which asserts that children need to have strong literacy and numeracy skills to succeed academically in year one (Ofsted, 2017).

The image of readiness as constructed by the majority of teachers in this study is in stark contrast with the narrative of readiness as presented in political discourse (DfE, 2021; Ofsted, 2017) that is concerned with academic skills and knowledge (OECD, 2017). The data pertained to themes that align predominantly with a social pedagogy (Bingham & Whitebread, 2012), with an overwhelming and clear recognition that a school ready child needs to have developed social and emotional proficiencies and the necessary learning behaviours required for the more formal environment of the year one classroom. These findings are congruent with the existing research into the perspectives of school readiness from teachers, parents, and childcare professionals (Brooks & Murray, 2018; Kay, 2018b; Miller & Kehl, 2019), signifying the importance of children's social and emotional development. Aligning with the assertion from Hartas (2011) and Thompson and Raikes (2007), the ability for children to develop social and emotional proficiencies were seen as a significant prerequisite for school readiness, thus providing them with the foundational skills to adapt to the more formal aspects of compulsory schooling.

Academic readiness

In line with the expectations of readiness as embodied in political discourse (DfE, 2021), a small proportion of teachers alluded to academic expectations in their perspective of readiness. Within the survey, 18% (n=4) of teachers referred to school readiness as the acquisition of academic skills, considering phonetic awareness, mathematical concepts, and basic writing skills as an important factor in children's school readiness. Within the qualitative comments derived from the survey, Participant 2 conceptualised readiness as '*children have a basic knowledge of phonics and mathematical concepts*.'

Similarly, in the interviews, Participant H (year one) spoke of the academic knowledge that she would expect a school ready child to have acquired:

> 'I would, in an ideal world, expect them to be able to form letters and be able to at least write their names. With their reading, blending CVC words accurately. Maths wise, I would expect them to happily understand numbers up to 10, adding and subtracting and so on so forth.'

Considering the weighting of academic readiness as perpetuated in political discourse (DfE, 2021; Keeble, 2016; Ofsted, 2017), it was surprising to note the paucity of responses that mentioned children's academic skills and knowledge in both the survey and interview data. Moreover, an interesting finding is that the reference to academic skills mainly derived from year one teachers. Alongside the perspective of Participant H (year one), three out of the four survey responses referring to academic readiness were from year one teachers, thus denoting a disparity between year one and reception teachers. This dissimilarity concurs with the findings from Rouse et al. (2020) which found that primary teachers focused more on academic skills, whereas pre-primary teachers emphasised children's social and emotional development. This disparity could be problematic, considering that both parties play a significant contribution in children's transition, yet they hold differing beliefs on what the school ready child should look like. It could be suggested that despite both reception and year one teachers working in parallel, they both operate within distinct pedagogies and cultures, therefore resulting in differing expectations. Although there is a dearth of research into the perspectives of year one teachers, a possible explanation could be that teachers are working within schools' test-based culture (Moss & Cameron, 2020; Roberts-Holmes, 2019), and therefore may feel bound by measures of accountability (Roberts-Holmes, 2015) to ensure children's academic progress.

Impact of school readiness on pedagogy

The data highlighted a dissonance between the pedagogical approaches of the EYFS and the National Curriculum, with 73% of survey respondents (n=16) stating that they perceived tensions between the two curriculum frameworks. Aligning with the literature which identifies a pedagogical discontinuity between the EYFS and the National Curriculum (Fisher, 2011; Moss, 2013; Nicholson & Hendry, 2020), the teachers spoke of the differing demands and expectations of the curriculum frameworks. Participant 4 stated, '*A lot of the time the EYFS does not sit in line with the National Curriculum. EYFS brings learning in a fun way. The National Curriculum tends to be stricter and gets bums on seats*.' Similarly, the interviews echoed these tensions as the teachers discussed the discontinuity between the curriculum frameworks. Supporting Moss' (2013) assertion that the transition to year one can be problematic, Participant H (year one) stated that the transition to year one was a '*tricky one*', as children transition from a play based framework to a more structured curriculum. Additionally, Participant S acknowledged the disjuncture in terms of academic demands, '*there is a big change from foundation stage to year one, in terms of the curriculum and the demands…the academic demands. When they go to year one it's all lessons, lessons, lessons*.' These findings highlight how a significant proportion of teachers perceive tensions between the two curriculum frameworks, in particular the pedagogical approaches and the academic expectations of the year one curriculum.

Pertaining to notions of schoolification in the reception year, the findings from the data indicated how reception pedagogies became more formalised throughout the year. Survey participants were asked what percentage of direct teaching they delivered throughout the year. Due to the nature of this question, only reception teachers' responses are included in this analysis (n=10). Within the autumn term, 80% of respondents (n=8) stated that their direct teaching time was between 20-40%, and a surprising finding was that 20% (n=2) of teachers stated that their direct teaching time was between 80-100%. The limitations of the survey, however, meant that further investigation could not be obtained to establish the reason for this. In contrast, the summer term became more formalised as 30% of respondents (n=3) stated that their direct teaching time rose to 40-60%, 50% (n=5) stated 60-80%, and 20% (n=2) stated 80-100%. Although the survey could not elicit a depth of insight into how readiness was constructed in the reception classroom, the quantitative findings denote an increasing trend in direct teaching practices over the academic year. This was exemplified by Participant 3 who asserted that '*direct teaching is gradually increased over the year to prepare children for year 1*.' The data from the interviews mirrored these findings. Participant S commented on how direct teaching was increased throughout the year, '*In September, phonics is the only thing we do, and it's 5-10 minutes…as you can see now, phonics is about 50 minutes. We ramp it up towards the end of the year*.' Additionally, Participant M alluded to an increase in academic learning, whereby children are gradually introduced to more '*key stage one type of things*' through increased writing tasks and exposure to more complex vocabulary to align '*more towards the learning they're going to be doing in year one*.' These practices are in line with the expectations of the EYFS, in which 'there should be a greater focus on teaching the essential skills and knowledge in the specific areas of learning' (DfE, 2021, p. 16).

The findings from the interviews highlighted how reception pedagogies became increasingly formalised throughout the year, with an intensified focus on direct teaching to prepare children for year one. It became evident how these practices were influenced by policy framework and a push down of academic content in the reception year. Participant S spoke about the pressures of the National Curriculum filtering into reception practice through the '*emphasis on daily phonics, daily maths…those kinds of things*.' Similarly, Participant M asserted that the outcomes for children in reception were mirroring the expectations of the year one curriculum, '*these new [ELGs], they've managed to bring a lot of targets I guess down from year one into reception, like number bonds to 10…things like that*.' These sentiments gave prominence to the imposition of increased academic expectations in

reception, aligning with the assertion that the reception year has become vulnerable to processes of schoolification (Bradbury, 2019; Brogaard Clausen, 2015; Brooks & Murray, 2018; Moss & Cameron, 2020; OECD, 2017). The practices as exemplified in the data align with the expectations of the EYFS, in which children's readiness is promoted through increased teaching across the specific areas of learning (DfE, 2021), thus highlighting how the political discourse produces a power that shapes and influences classroom pedagogies (Lewis, 2018).

Teachers' tensions

The interviews indicated a dissonance between the teachers' personal philosophies and their practices. The findings from the interview suggested that teachers have little autonomy in their pedagogical practices. Discussing the increasing formal pedagogies permeating her practice, Participant S delivered a powerful message in asserting '*we don't really have a choice*.' This sentiment mirrors the findings from Roberts-Holmes (2015), highlighting the increasing governance of political discourse on teachers' practices as they work within a 'performative culture of accountability' (Roberts-Holmes & Bradbury, 2016, p. 600), bound by the expectations of the EYFS (DfE, 2021) and ensuring that children achieve a GLD (DfE, 2022). Aligning with Lewis' (2018) assertion that political discourse acts as a 'regime of truth about what constitutes effective pedagogical practice' (p. 331), it could be pertinent to suggest that policy levers exert control over teachers' pedagogical practices, thus leaving them with little choice as to how they construct pedagogical practices in their classrooms.

Additionally, the interviews gave rise to the 'troubled relationship' (Neaum, 2016, p. 245) between teachers' pedagogical beliefs and the political rhetoric of academic readiness. In the interviews, Participant M voiced concern about a government-initiated maths mastery scheme that she was expected to deliver, commenting on how the approach imitated a year one pedagogy, '*It takes away that exploration of maths. It's very…it's very you sit and listen, I'm speaking, you listen…lots of slides on the board. It's not very early years*.' Within the sentiments there was a clear expression of sadness that the focus on academic knowledge, to prepare children for year one, was taking precedence over children's play and experiential learning. Aligning with the findings from Mitchell (2019) and Kay (2018b), there appeared to be a dissonance between the teacher's deeply held values of ECEC pedagogy and the expectations to deliver the scheme. Intensifying these expectations, Participant M referred to the school's recent Ofsted visit, whereby the inspectors applauded their implementation of the scheme, suggesting that it was a good way to ensure children's mathematical progress. Considering that Ofsted holds a uniquely powerful position of governance (Neaum, 2016; Wood, 2019), and a disciplinary power (Hoffman, 2011) through regimented inspections and assessments, their comments further reinforced the expectations to conform to these pedagogical practices. It could be suggested that this powerful influence consequently made it challenging for the teachers to contest these practices.

Similar tensions were identified in the interview with Participant S as she suggested that the academic demands went against what she believed was developmentally appropriate practice. Referring to the writing ELGs, in which children are expected to 'write simple phrases and sentences that can be read by others' (DfE, 2021, p. 13), Participant S asserted, '*if a child isn't developmentally ready to hold a pencil…they physically haven't developed the bones in their fingers to hold a pencil, then they are physically not able to…but not only do they have to hold a pencil, they have to write in full sentences*.' Concurring with the literature, the interview indicated tensions between the teacher's pedagogical beliefs and their practices as they work within a framework which promotes academic expectations (Kay, 2018b; Mitchell, 2019; Wood & Chesworth, 2017). Although the teacher held firm beliefs about developmentally appropriate practice, these were at odds with their classroom practices as they adopted more formal methods of instruction to satisfy the requirements of the ELGs and to achieve a GLD (DfE, 2022). From this perspective, it could be argued that the GLD acted as a disciplinary mechanism (Hoffman, 2011), consequently challenging and shaping the teachers' pedagogies as they work within a framework that emphasises performativity and accountability (Roberts-Holmes, 2015).

In addition to the external conflict between teachers' beliefs and political discourse, the data gave prominence to internal tensions within the setting as a discord in pedagogical beliefs between the reception and year one teachers arose. In line with the literature which advocates for an extension of ECEC practices (Fisher, 2011; Moss, 2013; Roberts-Holmes, 2012), the reception teachers suggested that they would like to see an extension of the EYFS and play based provision into key stage one. Participant S asserted '*If I had my way, I would have an early years type curriculum going into year one*.' In contrast, Participant H, the year one teacher, advocated for a more formalised approach in reception to prepare children for year one:

'*If I were an EYFS teacher, I would want, towards the end of the year, a more formal structure. I feel in some respects that there is too much free play time, choosing time, and I get the point, I understand, but to go from all to nothing, that's half the battle*.'

It was evident that there was a disjuncture between the pedagogical beliefs of the reception and year one teachers, underpinning their beliefs and purpose of the reception year. Whereas the reception teachers held strong play based and child centred values, the year one teacher's sentiments embraced a hierarchical position, whereby ECEC assumes a subordinate role to compulsory schooling (Moss, 2013), with a focus on preparing them for the formalities of year one. The explicit references to 'If I had my way' and 'If I were an EYFS teacher' were pertinent in highlighting the disparity between their beliefs as they both asserted that if they had a choice, they would do things differently. Considering that both reception and year one teachers play a fundamental role in children's transition to year one, a lack of cohesion could be problematic as teachers on either side of the transition hold very different views on how readiness should be constructed.

Conclusion

This study explored the concept of school readiness from reception and year one teachers' perspectives. The study identified how dominant narratives of readiness are perpetuated through political discourse and are presented as a 'regime of truth' (Lewis, 2018, p. 331; Spencer-Woodley, 2013, p. 39), exerting an influence on pedagogical practices in the reception year. The findings from the study exemplified a dissonance between the construction of readiness as presented in political discourse and teachers' perceptions, which predominantly aligned with a social pedagogic model, valuing children's social and emotional competencies.

The study also aimed to identify how school readiness may have implications for ECEC pedagogy. The findings suggest that teachers' pedagogical beliefs were constrained by the dominant discourse of readiness, resulting in an increased focus on direct teaching to achieve academic outcomes. The school readiness agenda can therefore be problematic for teachers' autonomy as they are working within a framework of increased accountability and performativity, thus consequently placing them under pressure to undertake pedagogical practices that conflict with their beliefs and values of ECEC. It is recommended that there should be a greater coherence amongst policymakers and teachers, whereby policymakers should consider the voices and concerns of teachers working within the EYFS framework. Moreover, based on the findings from the research which indicated a disparity between the pedagogical beliefs of the reception and year one teachers, it is recommended that reception and year one teachers gain an insight into each other's practices and some of the challenges therein, to develop a shared and cohesive vision of school readiness.

This study makes a valuable contribution to the existing literature on school readiness by exploring teachers' experiences and the impact that school readiness has on their practice. Moreover, it has considered the perspective of readiness from year one teachers who remain a largely underrepresented demographic in the research base. Notwithstanding this, it is recognised that due to the constraints of this study, only a small sample size could be obtained and therefore, no claims of generalisability are made. Further research could be undertaken to strengthen these findings and provide further insight into the year one perspective. ■

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