It's like you're a detective in your own story. Teacher and student experiences of teaching and learning with e-portfolio based learning in the context of a DEIS Post-Primary school.

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Abstract

The use of portfolios, including e-portfolios, as an innovative and learner-centred strategy in effective teaching and learning has risen in popularity over recent years. The majority of research undertaken in this area relates to developments in higher education. In shifting the focus toward those in post-primary education, this study endeavoured to cover new ground and develop insights on the experiences of students and teachers in an Irish second-level setting. More specifically the work focused on those involved in the Delivering Equality of opportunity in Schools (DEIS) programme, a post-primary level initiative which together with the PTech programme was designed to raise participation in education. The aim of this study was to investigate the way in which e-portfolios facilitate 21st century skills in order to overcome the constraints imposed by conventional pedagogical and assessment approaches. The objectives of this study centered around the impact of e-portfolios on reflective learning, identity formation, assessment and feedback processes and the part played by constructivist pedagogy in enabling students to take ownership of their learning. The research methodology was underpinned by an interpretivist paradigm and took a multi-method case study approach. Teachers and students in a DEIS post-primary school participated in joint and semi-structured interviews. The thematic analysis in turn revealed six overarching themes and a number of subthemes. These themes suggested that while the student population were largely viewed as being digital natives they struggled to learn effectively within the e-portfolio platform often exhibiting evidence of poor digital literacy skills, when teachers employed universal design for learning (UDL) the evidence suggested that this was seen as having limited success in helping

digital literacy unless appropriately integrated and designed into the curriculum. In addition, some students defaulted in relation to the laptop rental scheme in turn mitigating the benefits of e-portfolio learning and entrenching negative attitudes to learning. Nevertheless, a number of positive research outcomes were identified. The potential for e-portfolios to strengthen student identity leading to the creation of a transformative pedagogic space, thus empowering DEIS post-primary students to involve themselves in a wider culture and discourse around learning. Student observations of their teachers actively engaging and modelling their own CPD learning around e-portfolios evoked interest in lifelong learning. The question of e-portfolios as non-traditional forms of assessment prompted a discussion on the need to integrate assessment within the teaching and learning process making a case for e-portfolios as providing complimentary forms of evidence-based assessment. An awareness and sensitivity for the need to adopt differentiated strategies to e-portfolio learning in turn pointed to the need to share good practice and grow the community of e-portfolio practitioners.

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List of Acronyms

BOM	Board of Management
CC	Community College
CDETB	City of Dublin Education and Training Board
CPD	Continuous Professional Development
DEIS	Delivering Equality of opportunity in Schools.
DoE	Department of Education
DLF	Digital Learning Framework
DLP	Digital Learning Plan
DTP	Desktop Publishing
EQI	The Centre for Evaluation, Quality and Inspection, DCU Institute of Education, Ireland
ERC	Economic Research Centre
EU	European Union
HSCL	Home School Community Liaison
IBM	International Business Machines
ICT	Information and Communication Technology
JC	Junior Cycle
JCPA	Junior Cycle Profile of Achievement
LCE	Leaving Certificate (Established)
LCA	Leaving Certificate Applied
LCC	Larkin Community College
NEIC	North-East Inner City
NCIRL	National College of Ireland
OECD	Organization for Economic Cooperation and Development
Oide	National body supporting professional learning of teachers & school leaders in Ireland.

PDST	Professional Development Support Service for Teachers
PTech	Pathways to Technology
PTR	Pupil Teacher Ratio
QQI	Quality and Qualifications Ireland
SCP	School Completion Programme
SEN	Special Education Needs
SES	Socio-economic Status
SJI	Social Justice Ireland
TA	Thematic Analysis
TLT	Transformative Learning Theory
TUD	Technical University of Dublin
TY	Transition Year
UDL	Universal Design for Learning
UI	User Interface

Chapter 1: Introduction

1.1. Introduction

This chapter introduces the dissertation topic of "Teacher and student experiences of teaching and learning with e-portfolio based learning in the context of a DEIS Post-Primary school". It provides background detail describing the context as well as the researcher's rationale for undertaking the research topic. The chapter then sets out the intention for the study by stating the research objectives and their justification. Finally, there is a presentation of the dissertation structure aimed at showing the means whereby the research arguments are constructed as well as data assembled and analysed.

1.2. Background and Rationale

This research study is set within the context of the Delivering Equality of opportunity in Schools (DEIS) scheme. The aim of the scheme being to break the cycle of inter-generational educational disadvantage through targeted, long-term investment in resources. Adam & Wright, (2022) highlight the fact that being marginalized and excluded from, and within, education is more likely to lead to "poor educational outcomes", (p. 661). The importance of e-portfolios to effect change in educational opportunities for DEIS status students lies in activating their ability to access their intrinsic motivation for learning and in so doing find their voice within the process of education. Fahey & Cronen, (2016) suggest that e-portfolios equip students to access their voice by documenting "their own personal creative process … reflecting on that process, to give students a voice in the assessment of their learning", (p. 139).

My story of teaching with e-portfolios is set in the context of the Pathways to Technology (PTech) programme at a DEIS post-primary school in Dublin's North-East inner-city (NEIC). The PTech programme commenced in 2018 and the initial student cohort studied Coding and Robotics from 1st to 3rd yr. as part of their Junior Cycle (JC) programme. Students received a Junior Cycle Profile of Achievement (JCPA) descriptor having completed their JC assessment. In 2021 when these students progressed into Transition Year (TY), they embarked on a Quality and Qualifications Ireland (QQI) accredited Level 6 Special Purpose award under the licenced approval of National College of Ireland (NCIRL) which they would complete in parallel with their Leaving Certificate 'Established' (LCE) or Leaving Certificate Applied (LCA) in 2024.

The e-portfolio I teach forms part of the curriculum for the QQI Level 6, PTech Skills for the Digital World module. In the PTech programme the e-portfolio is hosted on the CampusPress platform which is largely modelled on the WordPress User Interface (UI). In assessing the e-portfolio as part of the Skills for the Digital World module students are set structured assignments. This enables students to learn and apply creative digital technologies to express their individuality and identity as well as record and reflect on their learning. Examples of the type of digital artefacts produced by students in the e-portfolio included video presentations, written blogs and reflections on their experiences in senior cycle, as well as showcasing micro-credentials earned in areas of technology and human centred design.

It must be acknowledged that the PTech initiative together with the move to e-portfolio based learning at the school where I teach forms part of the Department of Education, (2018a) Digital Learning Framework, (DLF) initiative which supports the Digital Strategy for Schools

policy and seeks to address areas of "curriculum reform and implementation, skills development, teacher education and learner outcomes", (p. 1). In response to the Digital Strategy for Schools 2027 the school has undertaken a consultative process between school management and staff to develop a Digital Learning Plan (DLP). Arising from this consultative process a decision was agreed to implement specific improvement goals as follows:

1. Embedding digital technology – in 2019 the adopted the City of Dublin Education and Training Board (CDETB) online learning management platform Microsoft 365.
2. Digital technology infrastructure – in Jan. 2022 rolled out a student laptop rental scheme.
3. Digital technologies to support ongoing and formative assessment – in Sep. 2022 the school adopted the School Wise application to monitor student attainment.

In responding to the Department of Education's (DoE) Digital Strategy for Schools 2027 teaching staff and management sought to make a positive intervention in students' learning. This Aslan et al., (2015) suggest is necessary in order to improve "equity of access to digital resources … reduce the digital divide [and] … improve the quality of education through new practices such as student-centred learning", (p. 54).

1.3. Purpose

In the research question I asked, "What were the experiences of students and teachers using e-portfolio in a DEIS post-primary school?" What prompted this study into e-portfolio based learning was an interest in gaining an understanding of the challenges faced by students and teachers to provide appropriate solutions to the problems associated with preparing a curriculum suited to the needs of 21st century learners. The teaching of 21st century skills was

seen by the World Economic Forum, (2016) as being necessary to help young people become "adept at collaboration, communication and problem-solving", (p. 4). With that in mind the aim of the research was to inquire into the capacity of e-portfolios to address 21st century skills by transcending potential limitations of conventional pedagogical and assessment approaches. An objective of the study was to inquire into the capacity of e-portfolios to foster critical reflective writing as part of a process to construct meaning and gain confidence by completing experiential learning tasks. The next objective examined the theoretical aspects of e-portfolio learning looking at the role played by constructivist pedagogy in helping to unlock students understanding of their capabilities and potential as learners. Following on from this the next objective centred on the capacity of e-portfolios to offer tools with which to develop student identity and voice. A final objective centred on e-portfolios as assessment instruments looking at ways in which to measure student achievement while maintaining a process model of student-centred learning as its primary focus. The aims and objects as outlined provided a framework of e-portfolio based learning with which to inform curriculum development, programme planning and teaching practices. The focus of this research is about e-portfolio based learning as a way in which to pivot a moment of educational innovation into something lasting and positive for students and teachers. Walland & Shaw, (2022) described the potential which e-portfolio based learning offered as "opportunities for transformative practices in teaching, learning and assessment in secondary and higher education", (p. 376).

An additional justification for this research study lay in bridging the gap in the research into e-portfolio based learning at post-primary level. It must be noted that not since an Evaluation,

Quality and Inspection, Ireland (EQI) study into a Professional Development Support Service for Teachers (PDST) e-portfolio initiative by Brown et al., (2017) has there been any systematic research into e-portfolio based learning at post-primary education in Ireland. Further research conducted by Poole et al., (2018) with Irish school principals and the DoE inspectorate made it clear the stark reality preventing a step change in teaching and learning with e-portfolios which was identified as follows:

> … teaching and learning at post-primary level are circumscribed by the requirements of externally devised curriculum specifications and recommendations for effective assessment practices. Principal 2 (P2) pointed to a continuing weakness in the Irish teaching model at senior cycle post-primary level, in that 'it is content driven and factual, rather than explanatory and developmental'. P2 stated that 'our [traditional] teaching model does not lend itself well to the ePortfolio model. (Poole et al., 2018, p. 12)

Interestingly in commenting on the 2017 PDST e-portfolio study Brown et al., (2017) remarked that the TY e-portfolio initiative worked well in the "absence of a high-stakes exam focus", (p. 78) as it allowed opportunities for both the student and teacher "to innovate and explore", (p. 78). A point noted by the authors of the study was the challenge of transitioning the new knowledge, skills and approaches to learning acquired in TY to the high stakes Leaving Certificate curriculum. A challenge which will necessitate bringing stakeholders and examination authorities onboard.

In drawing together this section on research purpose I wish to emphasise the role played by constructivist pedagogy in this study. E-portfolio based learning I believe is underpinned by a

constructivist pedagogy which is rooted in the work of Jean Piaget (1936; cognitive constructivism) and Lev Vygotsky (1978; social constructivism), (Chun-Burbank et al., 2023). Classrooms that value a constructivist approach are spaces that Teo, (2019) suggested where "… the teacher and students work[ed] together to co-construct meaning by critically questioning and filtering ideas through their own knowledge, perspectives, and lived experiences", (p. 172). In this sense e-portfolios are as Watty & McKay, (2015) maintain objects that "embody constructivist pedagogies because they enable students to be 'actively engaged in their own learning'", (p. 195). When framed in this way e-portfolios enable as Erice, (2008): Yastibas & Yastibas, (2015) suggest "students to be owners of their own learning processes and help them to reflect on their learning by improving their self-assessment skills, [identify what] motivated them, and also allow them to follow the progress of their own learning", (p. 6).

1.4. Outline of Dissertation

This thesis is set out into five chapters as follows:

Chapter 1: Gives some background into the research by outlining the context and justification for the research. It sets out how this study contributes to educational practice through identifying the research motivation and likely outcomes. The research journey is mapped out through summarising each chapter and thereby providing an outline of how the research is constructed and operationalised.

Chapter 2: Surveys the literature on the topic of e-portfolio based learning. Initially the study looks at the post-primary DEIS school system. It then examines portfolio-based learning. The research into constructivist teaching and learning methodologies is further explored. The chapter then seeks to understand how e-portfolios strike a between learning as 'process' and learning as 'product' and how these impact on students of

differentiated abilities. There is then an investigation of e-portfolio learning in Ireland, Europe, the United Kingdom and Canada taking examples of best practice in post-primary, further, higher education and employment training schemes. The final part of the chapter looks into theories of transformative learning to ask if e-portfolio based learning might provide an insight into how students express their voice and explore their identity.

Chapter 3: In this chapter I examine the research methods and methodology. The theoretical framework used to observe research phenomena is underpinned by an interpretivist approach. A case study research design is justified together with the choice of a multi-method approach when collecting data. The chapter then outlines the steps taken to examine the data by using a process of thematic analysis with which to draw conclusions and frame a discussion. Finally, I provide statements as to ethical safeguards, researcher positionality and qualitative rigor to protect participants and lend integrity to the research.

Chapter 4: Sets out the findings and discussion based on an analysis of the data collected from participants. It identified six themes which I arrived at using the Braun & Clarke, (2013); Damayanthi, (2019) method. The chapter is written in a narrative style making extensive use of participant testimonies to develop a picture of how students and teachers understood, and valued e-portfolio based learning as part of the curriculum.

Chapter 5: Draws together the various aspects of the research. It considers the main conclusions arising from the research, how this has contributed to the field of research into e-portfolio based learning in DEIS post-primary schools, outlines implications and recommendations for future practice, policy and research.

1.5. Conclusion

This chapter has provided an introduction to my research thesis on the topic of "Student and teacher experiences of teaching and learning with e-portfolios in a DEIS post-primary school". In doing so I have described the background to the topic as well as and my connection with e-portfolio teaching and learning in a DEIS post-primary school. Having set out the background and rationale for the research I then outlined the research purpose and discussed the implications and challenges of e-portfolio innovation in a system where vested interest often stymie change. In addition, I state the guiding principles of my educational philosophy namely one of constructivist pedagogy and explain the relevance this philosophy had for e-portfolio teaching and learning. Next, I provided an outline of the research sketching out each of the thesis chapters by giving an overview of the literature, methods and methodology, an analysis of the research data ending with a summary of the research findings. Under the closing heading I outline the conclusion which provides a summary of the key findings together with research recommendations.

Chapter 2: Literature Review

2.1. Introduction

This chapter gives an overview of the literature on e-portfolio based teaching and learning to achieve what Mihai et al., (2021) describe as an understanding of the way in which e-portfolios "combine knowledge production with skills development in an integrated manner", (p. 13). In doing so it first examines educational disadvantage as it relates to the research population involved in the study. Next it defines portfolio-based learning which it compares and contrasts with e-portfolio based learning. Following this it surveys the use of e-portfolios in post-primary, further and higher education. Lastly it uses a theoretical framework of transformative learning to explore ways in which learning with e-portfolios helps students to make meaning of their world.

2.2. Educational disadvantage – setting the scene.

The issue of disadvantage in education is one that has beset Irish society since the inception of the state in 1922. The initial period after the foundation of the state in 1922-1959 was characterised by a dominant conservative narrative and a failure to acknowledge the transformative and democratising potential of education (Harford et al., 2023). It was only since the late 1960s that there was an increased awareness and discourse around issues of equality of opportunity in educational policy-making which resulted in reforms to tackle educational disadvantage (Fleming & Harford, 2014). An Organization for Economic Cooperation and Development (OECD) report, entitled "Investment in Education" (OECD, 1965), played a significant role in informing the state's policy for educational reform (Hyland, 2014). It was

followed soon after by Donogh O'Malley's introduction of free second level education in September 1967, which was seen as an important steppingstone in the improvement of equality of access to education (FitzGerald, 2019).

Yet in spite of continued investment and reform in education since the 1960s, educational inequality persists within Ireland. Research conducted recently by the ERC referenced a 2018 OECD survey of 41 countries showed that Ireland had the second lowest level of educational inequality among all 41 countries assessed (UNICEF, 2018; Weir & Kavanagh, 2018). Another 2022 report by the pan-European agency PioneerED into educational disadvantage in Ireland highlighted discrete factors mitigating disadvantage, e.g., socioeconomic background, gender, race, sexual orientation, religion, etc., that were seen to contribute to inequality (Alonso-Carmona et al., 2022).

In examining educational disadvantage consideration needs to be given to the role of the home environment in developing what Molloy et al. (2016) term a child's "competencies and dispositions" which arise out of "an absence of economic, social and cultural capital in the home", (p. 214). As defined by the OECD (2019) an individual's socio-economic status (SES) is "the relative position for the family or individual on a hierarchical social structure, based on their access to, or control over, wealth, prestige and power", (p. 52) and by association the role of education largely determines social mobility and transfer of wealth, prestige and power between generations.

Studies have raised interesting findings with regard to education as an agent of inter-generational change. Rata (2016) suggested that where educational resources were transferred

to students of lower socio-economic background the chances of "interrupting" the cycle of disadvantage were greater. Nevertheless, the cycle of disadvantage persists. Evidence from a longitudinal report by Bynner (1998) into inter-generational benefit of education found that parents with poor basic skills, in the lower range of income distribution, were three times more likely to have children with poor cognitive test scores than parents with good basic skills, in the higher income range. In seeking to interrupt the cycle of inter-generational educational disadvantage long-term investment in resources is essential. A Focus Ireland report 2017 pointed out that if provided with access to resources students from low socio-economic status (SES) are capable of achieving success citing an OECD 2011 report OECD, (2011); Loftus, (2017) which stated that "disadvantage is not destiny: socio-economically disadvantaged students are found amongst the highest performers internationally", (p. 2).

2.2.1. DEIS - combating educational disadvantage.

The DoE DEIS scheme has played a part in intervening to address the educational needs of students from socially disadvantaged communities. Established in 2005 the DEIS scheme was designed to support the educational needs of students from communities where SES was deemed severely disadvantaged (Department of Education, 2017a). Through the DEIS scheme the DoE sought to set targets to improve literacy & numeracy standards, track attendance, monitor retention rates as well as promote progression throughout the educational system (Department of Education, 2005). The aim of these targets being to address educational disadvantage in a multifaceted and strategic manner (Nelis et al., 2021). To support the implementation of DEIS additional resources were provided to reduce pupil teacher ratio (PTR),

recruit Home School Community Liaison (HSCL) posts together with Special Education Needs (SEN) assistants and fund programmes such as the School Completion Programme (SCP) designed to help students engage more effectively with education (Department of Education, 2017a).

We have seen that the DEIS scheme has played a role in helping to turn the tide of social inequity and improve inter-generational educational attainment. Nevertheless, a recent report by Bennet et al., (2020) for Social Justice Ireland (SJI), investigated the recent COVID-19 school closures and the move to digital learning served to highlight the attainment gap that persists between DEIS and non-DEIS schools, and argued for additional resourcing to be made available to support "new ambitious targets and to mitigate the impact of school closures and the digital divide on students in DEIS schools", (p. 127). This call for additional resources echoed the claim made by O'Connor & Staunton (2015) who argued for greater investment in DEIS on the basis that "a higher level of resources [for] those who are most disadvantaged" is necessary in order to "rebalance economic inequality", (p. 74).

One of the hallmarks of the DEIS system is a progressive approach towards teaching and learning with a willingness to explore innovative pedagogies. To address the problems of student attainment and educational inequality especially in areas of literacy and numeracy, the DEIS teacher often requires greater pedagogical capacities to meet the cognitive needs associated with disadvantaged, vulnerable communities (Lupton & Hempel-Jorgensen 2012; Devine & McGillicuddy 2016; Fleming & Harford, 2021). It also follows in the context of DEIS, teaching and learning that innovative pedagogy is especially necessary to motivate students and

help them engage with the curriculum. In its review of DEIS the DoE (2017b) highlighted the potential for both innovation and integration of best practice within and between schools to motivate student learning. In this regard the DoE (2017b) identified areas in the curriculum such as the arts and sciences as being impactful to student learning. In relation to the arts the DoE cited aspects of the arts curriculum as helping students to nurture a motivation to learn by emphasising active engagement, creativity and innovation.

As discussed, curriculum innovation is a feature of effective teaching and learning in DEIS settings. What is also critical is the need for teachers to intervene where students of differentiated ability struggle to make sense of their learning and access the curriculum. Shevlin et al. (2009) describe differentiation as, "learning things differently according to learners' unique differences", (p. 3). In terms of teaching for differentiation the approach favoured by Tomlinson et al. (2003) is an "academically responsive", (p. 134) one which considers the range of needs presented by each student in a mixed ability class. A more comprehensive view of differentiation refers to embracing differences but also noted that:

> Differentiation provides a framework for responding to differences in students' current and developing levels of readiness, their learning profiles, and their interests, to optimize the match between students and learning opportunities. These three dimensions of student difference can be addressed through adjustments to the content, process, products, and environments of student-learning, and each is justified by a research-based rationale. (Tomlinson & Jarvis, 2009; Dixon et al., 2014, pp. 112-113)

In devising differentiated teaching approaches, the goal is ultimately to find the best way to allow every student to make continuous progress and learn something new every day (Pereira et al., 2021). Nevertheless, it must be understood that challenges to differentiated learning and instruction exist not only in practice, but also in terms of what differentiation actually means (Shareefa et al., 2019). In making accommodation for students of differentiated ability, schools need to take into account a range of factors including the competences of teachers, resources available, as well as the flexibility of the curriculum (Lindner & Schwab, 2020).

One specific mechanism for addressing the needs of students with differentiated ability is the use of digital technology in education. The European Commission policy document 2021 – 2027 identified, digital competence as, "a 'life skill', crucial for playing an active role in society, engaging in further education and training, and accessing the labour market" (European Commission, 2020, p. 6). This use of digital technology as a tool to enable access to opportunity and lifelong learning is further developed by the Department of Education, (2022) in its strategy paper in which it states that the "effective and pedagogical use of digital technologies is a key enabling factor in improving the quality, inclusivity and effectiveness of education and training", (p. 22). When it comes to implementing digital technology in the curriculum the literature favours a first principles approach. This means adopting a pedagogy that takes into account the student's needs as well as learning goals before considering if and how technology could be used to support innovation and change (Flynn et al., 2020).

2.3. Portfolio based learning.

In this section I will provide a definition of portfolios and consider how portfolios work as learning tools. In addition, I have explored constructivist learning theory and applied a constructivist pedagogy to portfolio-based learning. I see constructivist pedagogy as being helpful to students of differentiated abilities. This view is backed up by the literature citing a range of constructivist practices as being recommended for cognitive development. These practices include collaborative project work, social interaction and scaffolding, active learning and multi-sensory experiences, gamification, as well as authentic tasks (Kiesler, 2022).

In considering portfolio-based learning it is helpful to start with a definition of the term. Arter & Spandel, (2005), have defined a portfolio as a "purposeful collection of student work that exhibits to the student, or others, her efforts or achievement in one or more areas", (p. 36). Zubizarreta, (2008) has provided a more nuanced definition, describing the portfolio as, "a flexible tool that engages students in a process of continuous reflection and collaboration focused on selective evidence of learning", (p. 3). Any definition of portfolio-based learning is contingent on exploring the key aspects of portfolios in education, namely portfolios as tools for teaching, portfolios as opportunities for learning and portfolios as instruments for assessment.

2.3.1. Portfolio and a pedagogy of constructivism.

In fundamental terms constructivism is a theory about how people learn. Krahenbuhl (2016) describes constructivist pedagogy as having three distinct characteristics, firstly it is a pedagogy that is "focused on active learning of the students", secondly it is based on an

epistemology of knowledge in which "knowledge is not discovered but is rather constructed by the human mind" and thirdly as a theory of learning it is firmly centred on student learning and takes into account "student learning and student interests", (p. 98).

An understanding of constructivist pedagogy sees the portfolio as a learning tool which helps students become independent learners (Büyükduman & Şirin, 2010). A constructivist portfolio enables students to participate in a learning environment where they get to construct meaning. The constructivist portfolio is said to be a democratic learning space in that as Crehan et al., (2012) suggest it is, "owned by the learner, structured by the learner and told in the learners' own voice (literally and rhetorically)", (p. 25.343.4).

Portfolio-based learning has the capacity to support learning through capturing a range of student competencies. As we have learned a constructivist pedagogy enables students to take ownership of the learning process which according to Feyzi Behnagh & Yasrebi (2020) empowers students to assume responsibility for their learning and provide a framework for students of differentiated ability.

2.3.2. Portfolios – tools for teaching, learning and assessment.

As stated previously portfolios are tools for teaching, opportunities for learning and instruments for assessment. When viewed as tools for teaching portfolios are adaptable and can be used across a range of teaching and learning settings (Kulski, 2000), allowing teachers the opportunity to tailor their content to the particular learning needs of their students. Martin et al., (2019) argue that portfolios as teaching tools serve to challenge the teacher's preconceived ideas through the use of "innovative and research-led pedagogical approaches", (p. 307). This

not only provides tangible evidence of personal engagement with one's teaching practice but also contributes to the scholarship of teaching and learning itself (Swart, 2018).

Portfolio based learning is also challenging in that it seeks to take the student on a journey characterised by open ended inquiry-based, constructivist learning and critical reflection. At its core portfolio learning as Zubizarreta, (2008) stated "… involve[s] students in the power of reflection, the critically challenging act of thinking about their learning, and constructing (and communicating) a sense of the learning experience as a coherent, unified, developmental process", (p. 2). This understanding of portfolio learning draws on a pedagogy of active learning which is connected to constructivist pedagogy (Conole et al., 2004; Okoli et al., 2019). Portfolio based learning is suited to active experiential learning because it is set within pedagogical approaches which Okoli et al. describe as, "the 'how' element, which is related to the operationalization of theory into practice", (p. 222).

In considering the role of assessment several criteria must be fulfilled. Firstly, portfolios need to align teaching with assessment (Huot 2002; Klenowski, 2002; Lam & Lee, 2010). Secondly portfolios should follow a clear structure (Moya & O'Malley, 1994; Chere-Masopha & Mothetsi-Mothiba, 2022). Third, portfolios of assessment must offer students choice in what they can submit for assessment. Students who therefore show evidence in their e-portfolios of a range of skills and capabilities can expect a fair assessment (Roman & Raoul, 2016). Furthermore, a constructivist approach to assessment, one which takes into account students' prior learning, their problem-solving skills and their collaborative learning (Baki, 1994; Birgin &

Baki, 2007), embodies what Zubizarreta, (2008) identify as “authentic” and “educative” models of assessment, (p. 4).

2.3.3. Portfolios – challenges and opportunities

Portfolio based learning presents both challenges and opportunities for students. They challenge the student’s ability to learn, retain their learning, apply their learning to solve problems in new contexts and in so doing enable students to unlock new learning. A significant opportunity for portfolio-based learning and portfolio-based assessment is that it allows as van Wyk & Carl, (2009) suggests students to, “… participate actively with their teacher in the evaluation process.”, (p. 145). In this way the feedback loop encourages students to examine both their strengths and weaknesses providing opportunities for progress and growth (Kemp & Toperoff, 1998; van Wyk & Carl, 2009). This approach supports the view that teachers who communicate clear learning objectives and expectations to their students also provide feedback related to those expectations (Skinner & Pitzer, 2012; Ramos, De Fraine, et al., 2021). With regard to the pedagogical benefits of portfolio-based learning studies show that students who participated in portfolio-based learning were able to apply what they learned better than those who did not (Johnson et al., 2013). This benefit also extended to student capacity to retain skills and use them at other times and in other settings. These skills, termed transferable skills examples of which Sinche et al., (2017) cited as including, “communication skills, time management, teamwork, decision-making, creativity/innovation, etc …”, (p. 6).

For all the notable opportunities associated with portfolio-based learning there are students of differentiated abilities who often struggle to manage being independent learners in a feature

rich e-learning platform. This is more acute where the portfolio is conceived as a static online repository and one which does not fully consider the potential of portfolios as dynamic tools to engage students in active learning. This focus on an evidence-based learning or portfolio as "product" rather than an artefact representing the learning "process" is one that Walland & Shaw, (2022) have described as being "more akin to presentation or assessment portfolios, rather than learning portfolios", (p. 368). In this situation assessment of learning tends to default to "product" over "process" and favours summative assessment in preference to the pedagogical approach of assessing learning processes (Child & Shaw, 2019; Walland & Shaw, 2022). While pedagogically challenging the process approach to learning nevertheless positions the student in the role not as passive consumer of knowledge but rather someone involved in a knowledge creation process. A classroom in which active knowledge creation processes are supported by teachers becomes in the words of Moya & O'Malley, (1994); Chere-Masopha & Mothetsi-Mothiba, (2022) "a collaborative effort between a teacher and a learner", in which "teaching, learning, and assessment … are correctly aligned with the curriculum objectives", (p. 4).

2.3.4. Portfolios – tools for reflective and critical thinking.

A key feature of portfolio-based learning is reflective/ critical thinking. In this regard portfolios play an important role in nurturing reflective and critical thinking among students. Unfortunately, when it comes to portfolio-based learning there is sometimes a tendency to view reflective thinking as an add-on activity. The reasons suggested for this are due to the higher order nature of reflective and critical thinking which entails according to Leslie & Camargo-

Borges (2017) both integrative complexity and adaptive flexibility. Reflective thinking takes time to teach, model, and integrate into one's experience to begin to see educational benefits.

In the context of constructivist, collaborative and reflective learning we are encouraged to ask our students to "put on their metacognitive caps to delve deeper into the process and product of their learning" (Song, 2021, p. 68). The term metacognition here is as defined by Weil et al., (2013) is, "the ability to reflect upon our own thoughts and behaviour", (p. 264) and also derived from what Dutemple et al., (2023) describe as an "awareness of one's own cognitive processes, that is, thinking about thinking", (p. 3). Reflective writing has been shown to improve student's metacognitive abilities, a skill which Miller and Morgaine (2009) maintain benefits learning by, enhancing student achievement and developing in students the ability to learn independently.

The ability to think and act metacognitively also has implications for student assessment especially formative assessment. Formative assessment often referred to as "assessment for learning" a term synonymous with what Hattie, (2012); Fu et al., (2022) who also provided an alternative "assessment as feedback", (p. 2) to support the student's ongoing learning through constructive feedback. Constructive feedback also enables students to reflect on the learning process and have a voice in the assessment of their learning (Fahey & Cronen, 2016).

The ability to reflect is difficult for students especially for students of differentiated abilities since they often struggle to attach value or importance to their learning experiences (Usman et al., 2023). Experience after all as suggested by Kolb, (1984); Leslie & Camargo-Borges, (2017), "is in essence a form of reflective practice", (p. 202). Freire (1968) too in his work entitled,

"Pedagogy of the Oppressed", saw experience as being important in restoring a sense of self-worth for students of differentiated abilities from marginalised communities (Carmen, 1998). For Freire enacting a critical pedagogy with the marginalised required students to access their experiences and having done so to speak and act to influence the social and political order that shaped those very experiences (Giroux, 2010). Critical reflection according to Freire starts with teachers developing themselves as critically reflective practitioners where, as Benade, (2016) suggests they practice and model reflection in both "words and deeds and theory and practice", (p. 6). Reflective learning according to Wain, (2017) makes a fundamental shift in the reflective process from simply an account of the event at the time of it's happening, i.e., "reflection-in-action" to a consideration of the consequences of the event after it had happened, i.e., "reflection-on-action", (663).

2.4. Learning with and through e-portfolios

It is important to differentiate between e-portfolio-based artefacts and their analogue counterparts. E-portfolios are not just digital copies of a paper-based repository stored online. To think of e-portfolios in this way serves to limit the possibilities available. As discussed earlier focusing on e-portfolio as product as opposed to process misses out on the opportunity for learning with e-portfolios.

While there are several definitions of e-portfolios, I like the definition the EuFolio - Lifelong Learning Programme, (2015) put forward to encapsulate a model of e-portfolio learning as follows; "ePortfolios are student-owned dynamic digital workspaces wherein students can capture their learning and their ideas, access their collections of work, reflect on their learning,

share it, set goals, seek feedback and showcase their learning and achievements", (p. 4). The EuFolio e-portfolio model clearly sees the student as an active participant, engaging in a process of managing their learning, reflecting on their accomplishments and identifying areas for improvement. Helen Barret a well know champion of e-portfolio based-learning described in Barret, (2010); Dunne & Logue, (2021) how e-portfolios represented, "a balance between process and product", (p. 59). Winsor and Ellefson, (1995); Walland & Shaw (2022) unpicked the features of e-portfolios to distinguish between the process of "reflection, selection, rationalization, and evaluation, together with the product of those processes", (p. 363).

Bangalan & Hipona (2020) described e-portfolios as a "paradigm in constructivist learning", (p. 32) supporting deep learning and outcomes-based assessment. Just as Bangalan & Hipona (2020) saw e-portfolio learning as being fundamentally constructivist in nature so too did Parlakyildiz (2015) describe e-portfolio learning as representing a "constructivist approach". Under the constructivist theory of learning, e-portfolios enable students to continuously enrich their understanding of the world by critically interpreting, analysing, organizing, evaluating and reflecting (Fong et al., 2014; P. Wang & Jeffrey, 2017). Constructivism is seen as enabling a better understanding of the relationship between what goes on in the classroom and the real world, in turn helping students to make sense of what has been learned (Lavrinoviča, 2021). A constructivist pedagogy of e-portfolio learning therefore acknowledges the inherent importance of reflection and critical thinking (Garthwait and Verrill, 2003; Barret, 2010; Song, 2021).

2.5. E-portfolios in education - Experiences in post-primary and higher education settings both nationally and internationally

In this section I will look at studies into e-portfolio learning in Ireland, Europe, the United Kingdom and Canada. These studies provide a sample of e-portfolio learning at post-primary, further education and training and higher education levels. To begin with I have examined a three-year study by Brown et al. (2017) carried out on behalf of the PDST in 2015 which concluded in 2017 and investigated e-portfolio learning in 40 Irish schools with TY students. The report published two findings. First, the value of Continuous Professional Development (CPD) to teachers in ensuring the success of the project. Second, the opportunity for teachers to innovate with their pedagogy contributed to achieving quality student learning outcomes. The report concluded that to use e-portfolios as summative instruments of assessment in state examinations such as the LC would necessitate buy-in from stakeholders and examination authorities, an unlikely outcome given the high-stakes nature of the Leaving Certificate exam (Brown et al., 2017).

In the same way as the PDST TY e-portfolio project helped teachers develop innovative practice so did the ATS2020 (2015-2018) a European wide classroom research project which sought to promote transversal skills in 10 to15 year-old students. Implemented across 250 schools, 1000 teachers and 10,000 students both at primary and post-primary levels the ATS2020 study involved students learning with e-portfolios and was structured under a three-level developmental process, i.e., repository, workspace and showcase (Economou, 2018). As teaching with e-portfolios requires innovation and creativity the leveraging of transversal skills extends the range and potential of e-portfolio based-learning by providing students with what Economou, (2016) suggests is the opportunity "to think critically, take initiative, use digital

tools, solve problems and work collaboratively", (p. 8). Whereas with the PDST project critical thinking and problem-solving skills were also considered as being beneficial to the teacher's capacity to teach using e-portfolio based learning, the emphasis was placed more on teacher CPD or what Brown et al., (2017) described as, "increasing teacher knowledge and skills and improving their practice, and which hold promise for increasing student achievement", (p. 17). The point was also made that e-portfolios were seen as a strong element of the ATS2020 learning and assessment model. In this regard e-portfolios were important in not only leveraging transversal skills as evidenced by innovation in teaching and learning but also in the process of learning itself, by incorporating new learning and assessment approaches (Economou, 2018). This contrasted with the PDST findings which viewed the e-portfolio as existing apart from what it termed high-stakes terminal examinations which on the one hand afforded teachers and students what Brown et al., (2017) described as the "opportunity to innovate and explore" also represented a "challenge … to be addressed if the ePortfolio initiative is to have a wider systemic impact beyond TY", (p. 78).

A further project closer to home by the National Forum for the Enhancement of Teaching and Learning in Higher Education, with partner institutions involving the TUD and Hibernia College surveyed 412 students (Eportfolio Hub, 2016b) and 293 faculty (Eportfolio Hub, 2016a). The project showed that 44% of students used e-portfolios and of that number more than half had only been using e-portfolios for less than a year suggesting a growing interest in the use of e-portfolios at that time (Eportfolio Hub, 2016b). In the context of young people transitioning to using e-portfolios it is worth noting the lag in uptake in e-portfolio based-learning at post-

primary level, the roots of which appear to stem from factors identified in an evaluation by Poole et al. (2018) into the 2017 PDST e-portfolio project, and reported by Kok and Blignaut, (2009); Poole et al., (2018) as poor "socio-economic status and lack of integrated understanding of ICT, skills and confidence", (p. 6). And in returning to the outcomes that arose from the Eportfolio Hub research the recommendations for improvement favoured better communication to students around the benefits and added value of e-portfolios to learning (Eportfolio Hub, 2016b). It was also a commonly held belief among faculty that e-portfolios were instrumental in achieving student centred learning and acquisition of digital skills (Eportfolio Hub, 2016a). This would echo what McCloud, (2004); Brown et al., (2017) identified as the potential for e-portfolios to "shift from course-centred learning to student-centred learning", (p. 5).

From the world of vocational education, in the UK the JISC a body charged with providing networking, IT services and digital resources in support of further and higher education institutions published case studies examining the effective use of e-portfolios in further education and training schemes. Two particular studies one from Barnsley College (2016) and the other from ISA Training (2016) described the use of e-portfolio systems to enhance documentation and assessment of on-the-job training. In the case of ISA Training their use of an e-portfolio platform was seen as integral to better tracking of trainee performance compared with existing analogue assessment systems (ISA Training, 2016). Trainee participants at Barnsley College also reported satisfaction with their college-based e-portfolio system which it was felt gave them direct access to a repository of their learning, remarking that the access to

the e-portfolio during their work experience placement prompted one trainee at JISC - Barnsley College: Rethinking assessment of work-based learning, (2016) to remark that they, "appreciate[ed] the feeling of being "at work" and managing their own e-portfolio evidence", (p. 4). Similarities could also be drawn with the Dublin Eportfolio Hub project in that 64% of the student cohort agreed or strongly agreed that e-portfolios had allowed them to keep track of their learning as well as providing an opportunity to reflect on areas for improvement (Eportfolio Hub, 2016b).

Finally, a 2018 study at the University of Waterloo Canada with 800 undergraduate students focused on a range of faculty specialisms and sought to examine e-portfolio best practice, together with developing an understanding of the importance of e-portfolio learning for students. The study took into account both the students' expectations about their e-portfolio learning and the lecturer's professional capacity to communicate an understanding of the e-portfolio assessment, (Tse et al., 2018). The importance of clear communication to students was also cited by Tosh et al., (2005); Eportfolio Hub, (2016b) where it was seen as necessary to "clearly explain the benefits and added value of e-portfolios in order to increase the likelihood of student engagement", (p. 15). A distinction was drawn between lecturers who took either a structured, scaffolded approach to learning, and those who took a more strategic approach making capturing the students' interest in the e-portfolio by allowing them more control over the creation process. A similar strategy in terms of offering a structured and a more open teaching support in e-portfolio learning was adopted in another international 2005 higher education study in a collaboration between the University of Edinburgh, the University of British

Columbia and the University of Waterloo. In this study it was interesting to compare student perceived skill level at commencement of the e-portfolio project with that of students' confidence in their skill levels once they had begun their e-portfolio project. It was shown at the outset of the project that the majority (80.5%) of students preferred a highly structured system whereas a post-use survey revealed a that the percentage seeking a structured approach had decreased to 59.8%, matched by a c.20% increase in those expressing comfort in being given more creative control over the population of content (Tosh et al., 2005).

The key learning from these significant research projects showed the impact of e-portfolios on both behaviour and attitudes to learning. In the case of PDST (national) and ATS2020 (EU) this research considered a range of indicators impacting e-portfolio success such as e-portfolio design, student prior learning, student motivation to learn and the general desirability of the e-portfolio project. One common factor among the examples cited is the influence of the teacher in learning about e-portfolio technology. This was seen as being important when it came to students investing time in their learning as students who do not see the value in what they are learning were less inclined to make the effort to learn (Sunney Quaicoe et al., 2023). In the next section I will explore the theoretical underpinnings of e-portfolio learning with a view to further building my research epistemology by drawing together some of the constructivist philosophies already touched on.

2.6. Transformative Learning Theory (TLT) - A theoretical framework for exploring e-portfolio based learning.

This particular research project is underpinned by constructivist sensibilities as it deals with how students understand the curriculum and create meaning (Triantafyllou, 2022). Constructivism fosters learning through a process which Lagrimas & Buenaventura, (2023) termed "mental construction", allowing students to learn “by fitting new information together with what they already know”, (p. 98). Furthermore, the relationship between technology and constructivist pedagogy is a key component of e-portfolio based-learning (Barrett, 2005; Stefani et al., 2007; Lewis, 2017). This is due in large part to the way in which the constructivist approach activates student prior learning when working with technology (Isik, 2018).

The potential for e-portfolio based-learning in offering students a space to reflect is central to capturing student identity and voice. In order to support students in developing the skills to articulate their individuality and identity Stock & Koeppel, (2012); Slepcevic-Zach & Stock, (2018) argue for a structured methodology to improve student ability to reflect and self-reflect, teaching them to “reflect on their own learning behaviour, their own learning processes and products, … and promote their motivation to engage in sustainable reflective practice beyond their studies”, (294). Configuring the e-portfolio in this way involves what Fuglík, (2013) termed an iterative cycle of “creating, reflecting, seeking feedback, …” to set in train a “process of powerful personalized learning often through reflective blogging, and with a strong developmental focus over a period of time”, (p. 73).

Given the capacity for e-portfolios to amplify student voice, encourage critical reflection, and shape student identity, a constructivist theoretical framework has in recent literature sought to engage with features of Transformative Learning Theory (TLT) to develop 21st century pedagogy

adapted to differentiated e-portfolio learning. As a learning epistemology TLT seeks to create what Hoggan (2016) termed a change in the student's "mental model" or experience of the world which impacts their "worldview", (p. 65). This change in the student's outlook or worldview is intrinsic to e-portfolio based learning.

As stated, TLT is aligned with constructivist learning theory. TLT approaches the student's cognitive adaptation to new "mental models" by taking advantage of what Şahin & Doğantay, (2018, p. 106) described as "prior knowledge or schemes … to interpret and construct a new meaning and understanding of a word or action". TLT originated with Mezirow in 1978 when he used it in a study of American women returning to study or the workplace after an extended time away from education or employment (Kitchenham, 2008). While most TLT research has focused on adult populations the theory of learning is itself one that Wang et al., (2019) describe as being "under construction", (p. 235). That said there is little research about the adolescent experience of transformative learning, although some researchers have postulated ways in which TLT might apply to young people (Illeris, 2014; Kegan, 2000; Merriam, 2004; Mezirow, 2000; Meerts-Brandsma & Sibthorp, 2021). E-portfolio learning is seen as embodying TLT through the processes of learning, i.e., inserted tasks, lack of linearity, and moreover in the critical reflective writing which facilitates students in making meaning of their world. In this regard the development of student reflective skills within e-portfolios supports what Calderón-Garrido et al., (2023) described as student "identity, creativity, metacognition and self-regulation of the teaching and learning process", (p. 8).

In setting out the position that e-portfolios are transformative learning tools we should acknowledge that e-portfolio based learning helps DEIS students to express their voice by making a space for their identity. Student voice in the context of DEIS is seen by Skerritt et al., (2023) as being connected to and contingent on a culture of inclusive learning where in order to ensure participation for all, "schools first need to offer opportunities to students to express their views and, more importantly, to act on those in some way" (p. 307). The relationship between transformative learning and student voice was one that Black & Mayes, (2020) viewed as enabling what they termed "dialogic, intergenerational, collective, inclusive, and transgressive" experiences impacting "everything from curriculum to the everyday practice of leadership in school and community life", (p. 1065). If as Mezirow, (2012); V. Wang et al., (2020) suggest transformative learning is defined as a "shift deep in perspective, resulting in a frame of reference that is more open, permeable, discriminating and better justified", (p. 337) then it follows that in keeping with Bangalan & Hiponas', (2020) view of e-portfolios as learning-centric technological tools, e-portfolios also offer an opportunity to provide emancipatory knowledge to the marginalised or disenfranchised members of society, (V. Wang et al., 2020).

2.7. Conclusion

This chapter has looked at research into e-portfolio based learning, in the context of DEIS post-primary education. It did this by first examining the particular learning needs of DEIS students with differentiated abilities. This was followed by an explanation of the various types and purposes of portfolio-based learning and how this contrasted with the features of e-

portfolio based learning. Examples of national and international practice were then used to show the range of applications for e-portfolio based learning. Finally, theories of transformative learning were enlarged upon to leverage student capacity for reflective and metacognitive learning. In the next chapter we will explore the methodological processes by which research evidence was elicited from key informants including students and teachers, the interview rationale as well as data collection and interpretation.

Chapter 3: Methodology

3.1. Introduction

In this chapter I will expand on the research methodology including the theoretical underpinnings, the methods applied, the process of data analysis, the process of selecting case study informants, measures to ensure validity, reliability and relevance to the field of educational practice. The research question arose out of the experiences of the researcher teaching using e-portfolios, it looked at the lessons learnt from other teachers and students using e-portfolios and incorporated these into the research process (Gomez, 2010). The guiding research question for this study was: "What are the teacher and student experiences of teaching and learning with e-portfolio based learning in the context of a DEIS Post-Primary school?". In addition, the following ancillary research questions were seen as germane to the study.

- How do teachers view and engage with e-portfolio based learning within the overall curriculum?
- What are the challenges encountered by students and teachers in working with e-portfolios?

  And

- How do students and teachers overcome these challenges?
- What features of e-portfolio based learning play a role in impacting student identity?
- How can students and teachers be supported in capitalising on e-portfolio based learning as an innovative pedagogy?

3.2. Philosophical underpinnings

Social research operates along a continuum extending from positivist to interpretivist. The positivist approach uses a deductive method to verify a research question which is often stated quantitatively with the data being generated examined to either prove or disprove the phenomena in question (Park et al., 2020). On the other hand, interpretivism favours an inductive approach, focusing on understanding and meaning-making processes and is mainly qualitative in nature (Bhattacharya, 2008). In interpretivist research the goal is to reveal socially constructed meaning through identifying what Benner, (2008) describes as, "particularities, situated actions, and thinking in action", (p. 3) to observe and capture research phenomena. Interpretivists, therefore, consider that the person or group being studied as being critically important to the quality of research (Willis, 2007). In the context of educational research an interpretivist approach is justified given that schools as seen as socially constructed entities where students and teachers are viewed as both interdependent and dependent on each other (Capper, 2018). In considering the research question, "Teacher and student experiences of teaching and learning with e-portfolios in the context of a DEIS Post-Primary school" I have decided to adopt an interpretivist perspective for the purposes of this research methodology.

3.2.1. Interpretivist paradigm

The purpose of a paradigm is to provide a philosophical grounding also termed a framework that MacKenzie & Knipe, (2006) describe as "the intent, motivation and expectations for the research", (p. 194). Paradigms and their relationship to methods are expressed in terms of research assumptions which in turn implicate the choice of research methods. These

assumptions consist of commonly held understandings and conventions that inform the research paradigm (Guba & Lincoln, 1994 in Matta, 2022). Bogdan & Biklen (1998); MacKenzie & Knipe (2006) refer to the connection between paradigm and methods as "a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research", (p. 194).

Interpretivism or an interpretivist approach acknowledges both the researcher's innate subjectivity as well as the subjectivity of the research subjects too. Interpretivists are interested in the interactions that occur between people who according to Chowdhury, (2014) attribute "meanings and motives", to the research subjects' "behaviour and interactions with others in the society and culture", (p. 433).

The interpretivist paradigm is associated with the qualitative tradition which is characterised by semi-structured interviews amongst other methods to build up a picture of particular issues or experiences (Tight, 2017). The experiences being examined in this study are the student and teacher experiences of teaching and learning with e-portfolios. By taking into account what Creswell, (2003); MacKenzie & Knipe, (2006) describe as "participants' views of the situation being studied", (p. 195) the interpretivist paradigm acknowledges the impact of the participants' own background and experiences on the research. The constructivist-interpretivist paradigm which is used in this research operates out of the guiding assumption that reality and interpretations are socially constructed (Bhattacharya, 2008). Constructivists do not generally begin with a theory (as with post-positivists) rather according to Creswell, (2003); MacKenzie &

Knipe, (2006) they "generate or inductively develop a theory or pattern of meanings", (p. 195) throughout the research process.

3.2.2. Epistemological considerations

The word epistemology originating from two Greek words episteme and logos, episteme meaning as defined by Sol & Heng, (2022) a “knowledge” and logos “the study of” sets up a construct with which to interrogate data and interpret findings, (p. 92). Epistemology is therefore concerned with the process of knowledge making by providing researchers with a methodology to discuss reality (Kivunja & Kuyini, 2017). Epistemological assumptions it must also be understood exist within a constructivist/interpretivist paradigm and are particular to qualitative research. In using a constructivist/interpretivist lens to examine the research data I as researcher am seeking to understand the problem rather than making predictions as to the possible outcomes. Tomaszewski et al., (2020) have drawn a clear distinction between the terms constructivist and interpretivist to state that interpretivism on the one hand “seeks to build knowledge from understanding individuals’ unique viewpoints and the meaning attached to those viewpoints”, while constructivism “views knowledge as constructed as people work to make sense of their experience”, (pp. 1 - 2). The inherent premise in the constructivist/interpretivist paradigm is both qualitative and is in line with case study research which Cuthbertson et al., (2020) describes as “an in-depth analysis of a case, event, activity, process from one or more individuals”, (p. 97).

The research epistemology adopted in this study looks at the knowledge gained from academic research on the topic of e-portfolio learning, together with evidence gathered from interviews with students and teachers to arrive at the research question (O'Leary, 2007). The aim being to make explicit implicit knowledge associated with characteristics and user experiences of e-portfolios. The knowledge and experiences that key informants speak to arises out of what Barger et al., (2018) term a "personal epistemology" a term which is used to "describe on how individuals think about knowledge themselves", (p. 90). Barger et al., (2018) also contend that such personal epistemologies are often held as "implicit" beliefs and that key informants will in general not give them too much thought "until they are explicitly asked to articulate them", (p. 90).

3.2.3. Ontology

Ontology is a branch of philosophy that deals with the existential nature of reality. Ontology makes assumptions about existential truths relating to as Crotty, (1998); Snape & Spencer, (2003); Al-Saadi, (2014) describe "the nature of being" which includes "the nature of existence and structure of reality … or what it is possible to know about the world", (p. 1). Ontological assumptions also underpin all social theories and methodological positions, including the researcher's domain of interest (Blaikie, 2004). From an interpretivist perspective ontology posits a socially constructed, subjective view of reality (Al-Ababneh, 2020).

The ontology of this research inquiry is relativistic which is designed to enable the treatment of research data as a corpus of knowledge made subject to multiple interpretations rather than an objective determination arrived at by a process of measurement (Pham, 2018). Relativism

assumes an ontological perspective which holds that each person has a different view of reality that is considered correct (Toritseju, 2019). It also follows that qualitative data captured through interviews is underpinned by a relativist ontological position (O'Reilly & Kiyimba, 2015).

3.3. Methodology and Methodological approach

The choice of a multi-method research approach is justified as it is seen as strengthening the quality of the research. By using different qualitative methods, through interviews with research participants supported by artefact elicitation using student e-portfolios at the time of interviews taking place knowledge otherwise inaccessible to the researcher is enhanced (Mik-Meyer, 2020). It is this convergence or amalgamation of subject references and data sources that makes multi-method approach the appropriate choice when gathering and assembling data.

Within the research design the choice of a case study is also justified. Case studies form the basis of what Priya, (2020) term, "a research strategy, and not just a method/technique/process of data collection", (p. 95). This therefore means that case studies allow flexibility in the choice of method of data collection which suits the research purpose. The decision here to use multi-method data instruments within a case study strategy aligns with the research focus which seeks to examine experiences of teaching and learning with e-portfolios in a Post-Primary DEIS school setting. The aim being to capture a range of evidence from practitioners of portfolio-based learning in the school curriculum. Two features of case study research that fit with the overall research design include 1.) an understanding of the phenomena being observed, i.e.,

researching the e-portfolio learning in a DEIS (status) post-primary school, 2.) the ability to pose existential questions as to the purpose of e-portfolios and in so doing gain a better understanding of the phenomena being observed (Farquhar, 2012).

Case studies lend themselves to practice-based problems where the experiences of key informants are pertinent to the context. In justifying the decision to collect data from multiple sources, i.e., interviews with students and teachers, Eisenhardt, (1989), Yin, (2009); Patnaik & Pandey, (2019) suggest that such an approach provides "An important advantage is that the multiple sources of evidence help in the triangulation process and increases the richness and quality of the findings" (p. 169).

The research focus being adopted here is that of an institutional case study. This has been chosen in order to trace the process of e-portfolio teaching and learning within the post-primary educational setting. The aim of the institutional case study being to learn more about what Skarbek, (2020) describe as the factors that influence "institutional change … and … [the] factors that sustain institutional outcomes", (p. 416). An institutional case study looked at through an interpretivist lens according to Berger & Luckmann, (1966); Putnam & Banghart, (2017) seeks to align "with a particular perspective on organizational reality, one based on the belief that reality is socially constructed or made meaningful through actors' understandings and interpretations of events", (p. 2). This view of reality as being socially constructed takes into account research variables within the institutional case study that Stake, (1998); Hyett et al., (2014) point to as including, "… physical setting, and or institutional and political contextual factors", (p. 2).

3.3.1. Context

The question of context has particular relevance due to the value research informants attribute to their experiences and by association to the research topic. These experiences are logged by means of observed phenomena, i.e., semi-structured interviews with students and teachers using e-portfolios. This approach constitutes empirical research using data collected in the field and contrasts with a deductive approach in which quantitate data is used to prove a theory (Punch, 2005; Tight, 2017). Context as used here reflects the fact that research takes place in the school where I teach. From a methodological perspective this type of setting is viewed as a natural setting i.e., the school community and therefore it is within this context that I as researcher situate myself (Lincoln & Denzin, 2005; Tight, 2017). The emphasis in the collection of data is on collecting what Geertz, (1973) terms "thick descriptions", providing details from conversations with students and staff that make as Stahl & King, (2020) describe "the event or the object of description palpable", (p. 26).

3.3.2. Participant selection

The relationship between researcher and research participants within qualitative research lends its own particular dynamic to the methodology. Interviews and the interview process place researchers and research participants, interviewer and interviewee in particular roles. Often the interviewee adopts the role of "storyteller", enabling interviewees the opportunity to raise issues that are important but may not have occurred to the researcher (Kozleski, 2017). Another dynamic observed among interviewer/ interviewee relationship is that of student/ teacher where the interviewer enacts the role of "student", to the participant's positionality as "teacher",

teaching the interviewer from a perspective of having knowledge to share about the research topic (Hoffmann, 2007).

A range of selection processes can be used by researchers employing institutional case studies. Typically, these are purposive in nature as they seek to use interviews with key informants when developing both interpretative qualitative research assumptions and case studies in general. Key informants will share knowledge that is particular to and contingent on a community perspective developed over time. The community perspective of informants referred to in this research study are connected to my status as teacher within the school institution where this research study took place. This position has afforded me unique access and insight into the informants selected, i.e., students and teachers. Informants according to Tremblay, (1982); Lokot, (2021) acquire their status within an institution, "by the nature of their position in a culture, their information-rich connection to the research topic, and by their relationship to the researcher", (p. 3).

Ultimately rebalancing power dynamics requires a sense of reflexivity on the part of the researcher. Reflexivity within research necessitates an awareness to the sensitivities within the relationship between the researcher and an 'other' in order to provide balance to perceived biases (Chiseri-Stater, 1996; Pillow, 2003; Bourke, 2014). In considering the selection process the decision to use key informants favours a process in which as Lokot, (2021) pointed out "knowledge is allowed to emerge in a more natural way than other research methods, which may inadvertently result in this kind of knowledge being privileged over other knowledge", (p. 4).

3.3.3. Key informant - inclusion criteria

In developing both interview schedules and selecting informants it is important to consider the inclusion criteria for selection of key research informants. Inclusion criteria entailed the selection of students and teachers either enrolled in or teaching at Larkin Community College (LCC) a DEIS Post-Primary school. The students selected qualified for inclusion on the basis of that they were 16yrs and have been involved in the PTech QQI Level 6 (Special Purpose) programme who have had experience creating e-portfolios using CampusPress. The teachers selected qualified for inclusion on the basis that they had direct experience of e-portfolio teaching and learning either with the PTech programme using CampusPress or using Office365 ClassNote to support e-portfolio learning across the school curriculum.

Before recruitment of informants could begin approval was sought from institutional gatekeepers, namely the school Principal and school Board of Management (BOM). By gaining the confidence of institutional gatekeepers there was a greater chance that research informants will engage positively. This view is backed up by Negrin et al., (2022) who state that "gatekeepers who are supportive of a research endeavour can positively impact recruitment", (p. 2). This means that the interview process should give researchers scope to carry out interviews while at the same time adhering to a robust methodology.

3.4. Methods

The methods chosen for this research study include key informant interviews with both teachers and students involved in teaching and learning with e-portfolios. Key informant interviews are used because key informants are believed to have the most knowledge on the

subject matter and this enables an assessment together with a broad overview of the issues relevant to the research question (Parsons, 2011). The objective in interviewing key informants is to elicit best practice around e-portfolio use within the educational setting.

Artifact elicitation was also used to supplement the inquiry methods. In this case elicitation using the students' e-portfolio artifacts was used. This was done by making e-portfolios available as a reference during the interview process which consisted as Douglas et al., (2015) suggest "some type of artifact, usually visual, to help gain a direct understanding of the participant on an abstract topic", (p. 26.235.3). The use of artefact elicitation in combination with participant interview data enabled what Reischauer, (2015) termed the capture of a "more comprehensive picture … compared to just relying on a single qualitative method", (p. 286).

As mentioned previously a multi-method qualitative approach was applied. The multi-method approach combines either two or more qualitative or two or more quantitative methods to investigate a research question or phenomenon. Mik-Meyer, (2020) defines multi-method research as "research that uses multiple forms of qualitative data (e.g., interviews and observations) or multiple forms of quantitative data (e.g., survey data and experimental data)", (p. 2). The benefits of multi-method studies have been outlined by V. Yadav et al., (2022) who described the multi-method approach as a "simple yet powerful research strategy because it combines the strengths of more than one research method in a study", (p. 36).

3.5. The interview; semi-structured interviews producing situated accounts.

The qualitative research interview is an important data collection tool supporting the researcher in understanding the interviewee's subjective perspective of a given phenomenon

(McGrath et al., 2019). The interviews that took place selected participants from two cohort's students and teachers. These consisted of semi-structured interviews producing what Netshitangani, (2014) described as "situated accounts", which are in turn "… shaped by the fact that the 'cast' is the researcher, … and that [the interview] is happening in a particular place, at a particular time, in response to particular shaping questions", (p. 235).

When it came to interviewing students, the decision was made to opt for joint interview panels consisting of pairs of students which were considered both practical and convenient. The benefits this afforded proved helpful in managing issues around informed consent among interview participants, in addition joint interview participants provided a space for interaction as well as opportunities for reflection and disagreement which in turn helped to produce rich observable data (Roulston, 2022).

While having conducted joint interviews with students, teacher interviews on the other hand followed a one-to-one format. This format was selected for the reason that the researcher sought to gain what Frances et al., (2009) described as "an understanding of participants' personal meanings and experiences of a given phenomenon", (p. 313). The aim here being to elicit from three individual teacher's experiences of having delivered and assessed a range of post-primary curricula with e-portfolios and in so doing gain an insight into the challenges encountered (Stofer, 2019).

The interviews themselves required planning and preparation. The first step being the development of the interview schedule bearing in mind the need as Frances et al., (2009) suggests, to ensure that the "interview is congruent with the research question and aims and

objectives of the study", (p. 310). This involved gaining an understanding of the research topic in order to as Qu & Dumay, (2011) state "[to] develop as much expertise in [the] relevant topic areas as possible so [that I the researcher could] ask informed questions", (p. 239). Further immersion in the literature associated with the pedagogy of e-portfolio based learning including student and teacher perspectives on e-portfolio based learning contributed to the interview schedule. The resultant interview questions encompassed theoretical as well as pragmatic aspects of e-portfolio based learning and acted as a lens with which as Gao et al., (2023) suggest to "inform how data [was] collected and analysed and provide[d] a call for action or change", (p. 2).

As stated, the tools used in this study consisted of semi-structured interviews with teachers and students together with examples of student e-portfolios which facilitated a process of elicitation of opinions and experiences. The interviewer, in this case the researcher is relying on their relationship and experience with both students and teachers as participants to gather accounts of teaching and learning with e-portfolios. In this context the researcher brings to bear all his previous knowledge and professional experience in teaching and learning with e-portfolios when devising research instruments. To this extent the researcher as Lingard & Kennedy, (2010); McGrath et al., (2019) point out, "is not a passive player in the interview, but an instrument using his and her abilities, experiences and competencies in the interview situation", (p. 1004).

3.6. Positionality

Positionality describes the perspective taken by the researcher in approaching the research. According to Finlay, (2008), "positionality is about the situatedness of knowledge", on the supposition that knowledge arises from the context of our lived experience and "… shapes each of our understandings of the world, our knowledge, and our actions", (p. 99). Insider and outsider research are characteristic of positionality. The outsider researcher is seen as neutral and detached while the insider researcher is at once participant and researcher (Secules et al., 2021). Whereas outsider status favours objectivity insider status is seen as having the potential to source rich and nuanced data (George, 2023). The characteristics of insider research are threefold; 1). Researcher familiarity with the context lends authority and legitimacy, 2). Immersion in the research environment predisposes the researcher to ask meaningful questions, and 3). Insider positionality helps the researcher understand the background history and appreciate the practical context of the research topic (Collins & McNulty, 2020).

I set out herein measures adopted to ensure quality and probity when conducting insider researcher: 1). Interviews with participants were held during the regular school day and not after school to avoid inconveniencing participants which also meant that there was openness, transparency in the interview process. 2). Permission was sought from the teachers of students being interviewed so that their absence from class did not present problems for their learning. 3). Students were purposely selected from 5th year which the researcher does not currently teach. This was done so as to avoid a conflict of interest or a perceived power dynamic due to the researcher's position as assessor of the same students. 4). Participants were reassured that

their opinions and statements would be respected as part of the research study. 5). Participants were also made aware that their contribution to the research was valued and as such their voices would play a part in helping to improve teaching and learning with e-portfolio for staff and students alike.

3.7. Data analysis

The method chosen here was thematic analysis (TA) which has been widely used across a range of epistemologies and research projects. Braun & Clarke, (2013); Damayanthi, (2019) describe TA as a "method that helps … to identify themes and patterns of meanings across a dataset in relation to a particular research question", (pp. 3 - 4). The process around data analysis applied followed an iterative sequence. This was designed to observe meanings in the dataset. The process began with a transcription of a total of seven hours of interview recordings. Following this the transcriptions were read and re-read to identify recurring patterns or key ideas, which were in turn codified as keywords and sorted under categories. Lower and higher order codes were filtered for relevance to the topic. A checklist was used to map recurring data code across all participants. A process of triangulation then entailed an examination of data patterns across the dataset to decipher themes for analysis. A process which Aronson, (1994); Nowell et al., (2017) describe as "bringing together components or fragments of ideas or experiences, which often are meaningless when viewed alone", (p. 8). The use of e-portfolio digital artefacts was found to be beneficial in grounding of participants' experiences during the interview process, e.g., Elaine and Arianna recalling in their entry into their Reflective Blog of time spent on work placement with Community Garda. Their response

also showed the place artefacts have in evoking an emotional response which, Copeland & Agosto, (2012) describe as "useful in eliciting participants' emotions and emotional experiences", (p. 516).

A narrative format was adopted to capture the details of the phenomena with supporting descriptive quotations. These details provided the reader with an understanding of the perceptions of participants regarding e-portfolio learning, how it supports themes such as critical reflection, language and literacy and the acquisition of transferrable skills. When presenting the findings participant quotations were embedded within the analytic narrative which as Braun & Clarke, (2006); Nowell et al., (2017) suggest help to "illustrate the complex story of the data, going beyond a description of the data and convincing the reader of the validity and merit of the analysis", (p. 11).

3.8. Ensuring Quality

Jarzabkowski et al., (2021) described quality in research as "enabling creativity, innovation and discovery while simultaneously promoting rigour and accountability", (p. 73). Hammell, (2002) outlined the case for quality, stating that "quality of qualitative research does not focus solely on technical questions of research design and data adequacy" but must include, "issues of epistemology", (p. 176). Philosophical assumptions not only help to define what falls within the limits of legitimate inquiry but also determine what Guba & Lincoln, (1994) term "authenticity criteria" (p. 114), which impact paradigmatic frameworks in turn contributing to quality in qualitative research.

The data collection process used a sample of six students and three teachers involving a total of six participant interviews. In the process of data analysis, a "saturation point" in the data was achieved which Guest et al., (2020) describe as "the point during data analysis at which incoming data points (interviews) produce little or no new useful information relative to the study objectives", (p. 5). Formatting the dataset required transcribing c. 7 hrs. of audio recordings taking a line-by-line approach in order to clean up the autocue document raised by MS Word transcription software. Initial common themes that arose during interviews indicated experiences with, reflective learning, differentiated instruction, language and literacy, process vs. product and the presence of transferable skills. Once transcription was complete the dataset was read through to gain familiarity and identify recurring codes or patterns of meaning. What followed was a sifting of the codes, to gain an understanding of patterns through probing into data leading to the emergence of meaningful themes and categories. This forensic treatment of the data as described was designed to support research rigour and accuracy.

In evaluating the data, I undertook a process of immersion and crystallization. The immersion technique required an immersion in the data to gain an understanding of the meaning of the data. Coupled with immersion is the process of crystallization which Stewart et al., (2017) maintained sought to "embed the researcher further in a reflexive process", (p. 7). Crystallization is about what Borkan, (2022) termed the researcher's "attempt to identify and articulate patterns or themes noticed during the immersion process", (p. 3).

To further ensure rigour and quality of the data analysis I employed reflexivity techniques in which I outlined the nature and specificity of the researcher participant relationship in order to

achieve what Berger, (2015); Dodgson, (2019) as an increased "creditability of the findings … but also a deepen[ing] of our understanding of the work", (p. 220). This was illustrated by a sustained engagement in the field. As a researcher and teacher, I have 27yrs. teaching experience of which the last 6yrs. have involved teaching the PTech programme with the most recent 2yrs. teaching with e-portfolios as part of the PTech senior cycle QQI Level 6 programme. Given this experience I have been able to learn the culture, understand the context, and build a rapport with students and teachers involved in the e-portfolio project which in turn enabled the capture of different perspectives to better understand the experience of e-portfolio based learning. Smit & Onwuegbuzie, (2018) referred to prolonged engagement as being characterised by "observation … in the field" which made possible the "discovery of unanticipated phenomena … with the help of a research participant", (p. 2).

The next two criteria that supported credibility in research were the application of persistent observation and data triangulation. In the process of data analysis persistent observation consisted of deciphering codes and concepts to achieve what Korstjens & Moser, (2017) described as an understanding of the data to enable an "insight" or a "final theory", (p. 3). When it came to data triangulation the input of a range of participants, i.e., teachers and students helped as suggested by (Carter et al., 2014) to firstly broaden the research canvas in terms of methods but secondly according to Lincoln & Guba, (1986) their input added a layer of objectivity which in turn improved "trustworthiness" (p. 73), enabling cross checking of data from different sources. Indeed, given the range of paradigmatic constructs within the

interpretivist approach it is logical if some say desirable to require a diverse dataset when doing qualitative research (D. Yadav, 2022).

3.9. Ethics

Ethical safeguards and processes are about ensuring participants feel that their independence and dignity are respected when participating in research. It is necessary therefore to put measures in place so that contributions from participants are voluntary, that they remain fully informed, and are treated in a safe manner (Bhandari, 2022). To ensure participants were appropriately informed, treated with dignity and respect I discussed the research topic and purpose with participants beforehand and provided them with a copy of a summary document outlining the research topic too so that they had an opportunity to both examine the topic as well as return with any questions or seek clarification throughout.

Before interviews or discussions with participants commenced it was necessary to seek and receive ethical approval to ensure safety and protection of participants. In this regard the role of the ethics committee and institutional gatekeepers such as the school BOM was pivotal in granting access to key informants. Despite the rigors that this entails regulation of ethical space is important to ensure integrity. The regulatory role of gatekeepers such as ethics committees and school BOM nevertheless functions to re-balance what Dingwall, (2016) refer to as “a marked asymmetry of knowledge between parties”, (p. 30).

When it came to arranging and conducting interviews questions relating to power dynamics needed to be considered. As insider researcher I am aware that in my position as teacher interacting with student participants that I exert an authority role which could be perceived as

an imbalance in relations. Power dynamics in interviews can shift significantly especially when studying children, who Kaaristo, (2022) describes as being "habitually regarded as having much less power than the researcher", (p. 746).

3.10. Conclusion

I researched the topic, "Teacher and student experiences of teaching and learning with e-portfolios in the context of a DEIS Post-Primary school" using a constructivist/interpretivist research paradigm to inform methodological assumptions. This involved a multi-method approach set within an institutional case study research design or strategy. Interviews with key informants, i.e., teachers and students together with artefact elicitation, i.e., examples of participant e-portfolios enabled data analysis.

A systematic data analysis employed three simple steps: reading, coding, and theming to elicit discrete or identifiable patterns. The objective being as Denzin & Lincoln, (2000); Maykut & Morehouse, (1994); Neuman & Guterman, (2016) outline to get a "sense of the interviewee's authentic experience", (p. 4). Measures taken to ensure rigour, authenticity and trustworthiness were outlined and detailed.

In the next chapter, I have provided a discussion on the themes and sub-themes that emerged from the data analysis. In doing so I have selected verbatim views expressed by participants to support thematic discussion in an effort to resolve research questions around e-portfolio based learning. Through this discussion I have sought to address the research objectives in order to lay the groundwork for a further discussion on how this research contributes to the field of research into e-portfolio based learning.

Chapter 4: Findings and Discussion

4.1. Introduction

This chapter takes participant experiences to construct a discussion and provide an analysis of the research into e-portfolio based learning. It does this by making clear a rationale for the themes and subthemes that emerged from the data collected. In exploring the themes, the research used verbatim quotes drawn from the transcripts. Pseudonyms were assigned to the quotations attributed to key informants in order to preserve their anonymity and track their contributions. Student group members are codified as Student Pair A, Student Pair B and Student Pair C. The contributions from teachers are codified as Teacher A, Teacher B and Teacher C. The themes and subthemes presented are also discussed in light of the wider literature.

4.2. Thematic Analysis

The following themes emerged from analysis of the transcripts which were captured in interviews with research participants:

Table 1.

Research Findings – Thematic Headings		
	Theme	Sub-theme
1.	Digital Literacy	• Digital natives • Language and literacy
2.	Cross-curricular learning	• Transferable learning • Reflective/Critical learning
3.	Barriers to Participation	• Access to technology • Cognitive load
4.	Continuous Professional Development (CPD)	• Peer to peer teacher learning • CPD for inclusive learning

5.	Supports to Learning	• Active learning • Threshold concepts • Peer-to-peer learning
6.	Process vs Product	• Student identity • Learning journey • Assessment for learning

4.2.1. Theme One: Digital Literacy

The research narratives revealed mixed experiences which included problems around of e-portfolio based learning faced by students in relation to digital literacy. These problems related to students being labelled digital natives in turn affecting teachers' perceptions of their capacity to function as digital citizens. In addition, deficits in language and literacy negatively impacted digital literacy skills which in turn influenced students' ability to engage with e-portfolio learning. Notwithstanding the benefits of e-portfolio learning for digital literacy Calderón-Garrido et al., (2023) suggested that there are limits to the capacity for e-portfolio learning to improve digital literacy stating that, "with respect to digital competence, the digital portfolio is generally considered as a catalyst for increasing users' digital literacy, rather than as a way to develop these skills" (p. 9).

Digital Natives

As mentioned, the research narratives opened up a conversation about digital natives and problems associated with teaching and learning. Students' felt labelled by their teachers. Students (Student Pair C) referred to being labelled a digital native saying, "adults assume that because we are growing up in a digital age that we automatically know how to navigate, manage and create digital content". Research into digital natives suggests that students have

encountered problems directly transferring their personal digital competencies to their learning and might not be as digitally competent as expected (Janschitz & Penker, 2022). Digital natives Davis, (2018) suggests have gaps in their digital literacy because “agencies and institutions … operate under the misunderstanding that digital natives are already equipped to be functioning digital citizens by virtue of their prolonged exposure to the cybersphere” (p. 51).

Language and literacy

The research identified problems with learning associated with language & literacy. This was seen as an issue effecting DEIS students in particular. The need for literacy support as part of the e-portfolio meant providing students with rubrics and scaffolding which a student (Student Pair B) referred to when she said that "writing is difficult, ... especially for me cause ... generating ideas is not my strong suit. I can't think of words, ... I need to have like a jump!" Teachers in supporting language and literacy skills were aware of the potential to foster independent thinking skills as well. One teacher (Teacher A) remarked, "It's not about spoon-feeding students, ... (instead, it's about) making them feel that it’s their own words, you know, you're not giving them the answers." The research also observed a connection between digital literacy skills and language learning citing language learning as a sociocultural process, in which reading, writing, and communicating were considered, goal-oriented activities, closely associated to the e-portfolio context (Hafner et al., 2015).

4.2.2. Cross-curricular learning

The experiences recounted in the research suggested that the e-portfolio offered opportunities for cross-curricular learning. In adapting and re-applying their digital literacy

skills in new contexts teachers observed a growth in their students independent learning skills. Student accounts also suggested a change in student perceptions of their own learning as a result of using reflective thinking in their work. This positioned the e-portfolio within a process model as opposed to a product model of learning in turn shifting the emphasis from course-centred learning to student-centred learning. (Poole et al., 2018)

Transferable learning

Despite evidence of problems with digital literacy skills the general experiences of students with e-portfolio based learning were nevertheless positive. In one example a teacher spoke about how students carried out a review of their total year's work. This showed students transferring skills from their PTech e-portfolio to a general TY e-portfolio. In addition, one teacher (Teacher A) described this process as follows:

> So, when you're starting off with the PTech CampusPress, you're running from September up to Easter ... so you don't just jump into an e-portfolio. There's a lot of skills that you need to develop, you know, [for instance], how to meet a deadline. How to read the checklist and the standards and expectations ... ehm. So, I went in with one hour classes to each of the 4th year, year groups and I gave them a rundown of what ClassNote is, how do you use ClassNote but they had already gained skills (from the e-portfolio) in organisation, in presentation, visual communication and research even, researching something and cross-referencing and making sure it's reliable, not just looking at the first thing and putting it in [without checking it].

This example affirms how teaching independent learning skills enabled students to apply their learning in the context of e-portfolio based learning. When teaching students new skills Brownfield & Wilkinson, (2018) suggest an approach that develops students' ability to "internalize specifics of the task as well as its process so it can be applied independently in novel situations", (p. 180). Using e-portfolio based learning to help students to adapt and acquire skills is one that (Lam, 2020) also referred to as a process-oriented curriculum model in which the e-portfolio afforded opportunities for "highlighting creativity, revision, autonomy, and higher-order thinking skills to be exhibited in portfolio assessment programmes", (p. 178).

Reflective and critical learning

Having looked at independent learning skills, the research examined the theme of reflective and critical thinking, how reflection influenced students' ability to self-actualise their thinking and shape their cognitive mental models around their learning. The theme of reflection is relevant to the research question as e-portfolio based learning provides an opportunity for DEIS Post-Primary to students and teachers is students to leverage student voice and shape identity. In this regard reflective and critical learning played a role in transforming student thinking in the context of e-portfolio based learning. An example being where one student (Student Pair C) spoke about how they adapted their study skills.

> We were doing reflections on different classes, so like, even in history class I found myself reflecting on some of the lessons ... and asking questions, such as ... What do I need to [do] to work on that more? Am I communicating my understanding? ... What have I improved on? Did I improve on anything? ... What could I improve? I think it was really good for me

> [because] I didn't realise I wasn't good at it, and ... I found myself that my notes were very haphazard. I found myself ... trying to write down everything, every single word that the Sir/ Miss was saying. But as I was reflecting, I found myself thinking I really could just make it shorter, but also make it clearer and ... I do think the reflections helped me with this, ... and it's actually helped my notes for 5th year. I found my notes looking clearer, looking more structured as well, by having those points [and] great[er] structure as well. You know what I'm saying!

This example showed how students used reflective learning to critically analyse their own learning process. Reflection as applied to e-portfolio based learning was shown in the wider research as be in linked to formative feedback. Sartor-Harada et al., (2022) described reflective learning as being "integrated into the educational portfolio" and functioned as a "dialogic process between teachers and students based on Feed Up, Feed Back, Feed Forward, evaluation of the student himself, peer evaluation and evaluation of the teacher", (p. 546). This approach supports the view held by Wain, (2017) that good reflective learning marks a shift from simply reporting what happened at a given time, i.e., "reflection-in-action" to offering a deeper understanding about the consequences of what had happened, i.e., "reflection-on-action", (p. 663). As was shown through the research narrative teaching students to critically reflect using e-portfolios made a significant difference to students understanding of their capabilities and potential as learners.

4.2.3. Barriers to Participation

The research discovered an underlying narrative around barriers to participation in e-portfolio learning. This included problems associated with access to technology. One such example given was participation in the student laptop scheme. The problems this raised related to students either neglecting to bring their laptops to school or being distracted by easy access to a web browser and as a result missing out on their learning.

The research also showed that students encountered barriers to participation in the form of cognitive load. This manifested in students experiencing difficulty in navigating aspects of the e-portfolio user-interface which posed challenges to learning due to the complexity of the e-portfolio technology. In addition, students sometimes internalised the stumbling blocks they encountered when coping with the demands of e-portfolio learning leading them to experience stress and anxiety in processing their learning. This threw into focus the impact of the affective domain on the student's ability to be learn effectively.

Access to Technology

As stated, student access to hardware emerged as an issue effecting participation. This resulted in students not participating in technology support schemes such as the laptop scheme organised by the school. In addition, there were problems where students chose not to opt into the school laptop scheme. Where students did opt into the scheme problems arose when students chose not to bring their laptop to school. Another factor increasing poor participation was students being distracted by access to an internet browser, i.e., gaming, etc.

These points were expressed by one student (Student Pair B) who spoke about the challenges she encountered when engaging with the school laptop scheme:

> In a way, because you're not being trusted as much because, you rent a laptop and all you do is keep it at home and you don't get to do your work in school, but by the time you get home, you kind of forget what you're meant to do. So, it's useful to have laptops and such, but at the same time ... you could use them for other things and some people can't concentrate on stuff like this and ... all they use it for is to play games. So, it's kinda like ... some students just don't take it as seriously as they should do.

These experiences echoed existing research into how students accessed hardware in schools' and the consequent effect this had on schools' capacity to implement a digital learning policy. To address this situation the wider research suggested establishing good culture, policies, infrastructure as well as digital competencies within the school community to deal with problems of participation (Timotheou et al., 2023).

Within the Irish post-primary sector research into digital learning looked at the inconsistent uptake in school laptop schemes. This was most prominent in DEIS schools where access to broadband and ICT was sub-optimal in addition to issues around poor motivation to learn (Mohan et al., 2020), further illustrating the inequalities presented by the digital divide between disadvantaged and mainstream schools.

Cognitive Load

In examining barriers to participation, the participants in this study showed evidence of challenges presented by cognitive load when learning with e-portfolios. One student cited

cognitive load when working with the e-portfolio user interface (UI). This experience the student (Student Pair C) described as follows, “it was something that I struggled with cuz I didn't know the technical aspect of say, how do I make my background, etc... Okay, I had a lot of ideas, but I didn't know how to execute them". This experience chimes with existing research into cognitive load theory (CLT) within the field of digital learning in that it highlighted the fact that challenges to learning "stemmed from perceptual obstacles induced by learning materials ....", it also supports the fact that a complex UI is challenging for students’ "working memory" (Skulmowski & Xu, 2022, p. 176). In this regard the relationship between UI and universal design for learning (UDL) was seen as having the capacity to alleviate student cognitive load. UDL Rogers-Shaw et al., (2017) saw as instrumental in addressing “learner limitations” by effectively offering learners “multiple means of representation … to acquire information and knowledge; multiple means of engagement … to challenge and motivate; and multiple means of expression that help learners … demonstrate what they know”, all of which are approaches designed to “meet all learners’ needs more effectively”, (p. 21). Nevertheless, it must be acknowledged that UDL itself has limitations which Bray et al., (2023) suggest can lead to an “increase in cognitive load imposed by multiple means of representation” as referred to by Rogers-Shaw et al. (2017) and that unless the learning environment is “well-designed, [or] integrated and scaffolded appropriately, it can place an additional cognitive load on learners which can be distracting and detrimental to learning”, (p. 15).

What also emerged from the research was the relationship between cognitive load and affective learning. When opportunities for deep learning and higher-order thinking presented

themselves students who encountered challenges to their working memory responded by internalising their emotions. This in turn impacted their motivation to learn. One student illustrated this by speaking about their struggle when managing a challenge to their working memory:

> I think that struggle is … needed. I think that in order to learn and grow you need to have that struggling process. But I feel that the struggle that went with the e-portfolio, … was very negative. So, because we had our deadlines ... so quick together and we needed to boost our points … to improve our e-portfolio [grade]. I felt that that struggle was more stressful than … it could have been.

In defining working memory Anmarkrud et al., (2019) used the term "mental workspace", when describing the experiences of students working with multimedia who regularly experienced "limited capacity" in processing "the storage of information while simultaneously manipulating information for brief periods of time", (p. 6). This finding aligned with Apostolou & Linardatos, (2023) and their research into students creating digital comics which also showed that working memory is challenged when the task "exceeds the available [mental] processing capacity", (p. 8). The impact of challenging working memory in this way effected student performance meaning students experienced "more stress and insecurity due to the limited available time; and, finally, frustration and effort … indicating that the higher the frustration was, the higher the effort that students exerted", (p. 8).

4.2.4. Continuous Professional Development (CPD)

The research discovered that while CPD impacted teachers and students differently when viewed in the context of e-portfolio based learning it was nevertheless seen as an agent for curriculum change. When taking into account teachers' opinions on the effectiveness of CPD there was a view expressed that CPD initiatives emanating from peer-to-peer professional relationships were beneficial to teachers. These peer-to-peer initiatives were also seen as complimenting CPD offered by DoE support services.

The student perspective on CPD suggested an awareness by students of the importance of lifelong learning by observing their teachers actively engage and model their own learning. It was clear from speaking with the students that they saw CPD as part of a continuum of teaching and learning and by extension the e-portfolio itself represented a "lifelong learning tool" (Modise & Mudau, 2021, p. 2). Within that continuum it is apparent from the views elicited from research participants that both teachers and students valued opportunities for collaborative peer-to-peer learning. In this regard student participants responded positively to opportunities for peer-to-peer learning which they viewed as an inclusive exchange between teachers and students.

Peer to peer teacher learning

In reflecting on the effectiveness of CPD in the context of e-portfolio based learning to their professional practice one teacher (Teacher B) spoke about their preference for a collaborative, teacher led, or teacher owned approach to professional development. This was described as a process whereby teachers provided a supportive network consisting of as follows:

> ... peer-to-peer or peer to several peers rather than a formal training. Yeah, and that was very much, I think more useful than a formal, 'This is OneNote and we're ... going to give you the ... official Microsoft training on it', or something!

Supporting on the ground or "grassroots" Professional Learning Communities has been found to be more effective than centralised CPD training. This approach to CPD is distinct and localised and is aligned with research by Holme et al., (2020) who described grassroots CPD as a, "developmental activity that is instigated by the teacher or educator and is not primarily organised or controlled by a formal body or organisation", (p. 28).

CPD for Inclusive Lifelong Learning

The fact that teachers were both teaching and gaining skills in e-portfolio learning concurrently demonstrated engagement in lifelong learning. Furthermore, students understood this process as a collaborative effort. CPD and teaching and learning came to be seen as taking place within the context of the e-portfolio. This was accepted by students as an inclusive exchange between teachers and students. One student (Student Pair C) described how she experienced this inclusive exchange stating.

> I think, because the teachers were also learning at the same time as us, it was more of a like a collaborative effort rather than just ... there's a teacher and they know what to do so ... they're going to, tell you, ... but I think ... it was more kind of doing everything together rather than listening to someone and then do what they tell you.

This statement also supports the research conducted by Holmqvist & Lelinge, (2021) who indicated that CPD helped in the creation of "knowledge development for both teachers and

students", (p. 829). The same research also suggested a strong link between "teachers' enhanced knowledge and changed attitudes, and how this effects students' feeling of inclusiveness", (p. 829).

4.2.5. Supports to Learning

Creating a supportive learning environment within the context of e-portfolio based learning has a number of objectives most notably that of participation and engagement of students in learning. The research considered the effectiveness of constructivist teaching and learning methodologies in supporting e-portfolio based learning. Techniques applied when implementing constructivist teaching and learning methodologies included active learning, threshold learning and student peer-to-peer learning.

In looking at active learning the wider research drew on constructivist theories as outlined by Crehan et al., (2012) who viewed e-portfolios as tools to "promote student-centred learning where students become constructers of their own meaning", (p. 25.343.4). It is important to remember that constructivist approaches form a key component within a larger framework of supports to learning such as scaffolded, collaborative and differentiated learning which are essential to making the curriculum accessible to students.

On the subject of threshold learning we are reminded in the existing research of the definition provided by Lewis, (2017) who said threshold learning is a "core concept, considered essential for deep subject knowledge" adding that it provided a transformative experience for students with the potential to "open up a new and previously inaccessible way of knowing", (p. 74). Indeed, threshold learning was also seen as related to active learning in which the e-

portfolio was viewed as a “pedagogic tool” suited to a “constructivist” approach, perceived as being compatible with “authentic” learning (Lewis, 2017, p. 80).

Peer-to-peer learning was another sub-theme that featured within the research which prompted discussion around student collaborative learning. What it showed was that students liked to work collaboratively because they understood the opportunities groupwork presented for communication and problem solving.

Active Learning

The sub-theme of active learning arose within the research narratives. Students spoke about how they benefited from active learning experiences as well as the opportunities provided to integrate new and meaningful experiences into their pre-existing knowledge. One student (Student Pair B) described her preference for active learning stating that, "I learn through interacting, listening and visual stuff most of the time, ... some teachers are like, talk, talk, talk". Research in the area of active learning showed that when students adopted a constructivist and active approach to learning that this was found to be beneficial to the acquisition of digital competencies (Skulmowski & Xu, 2022). We can therefore infer that a constructivist approach aligns with what Lewis, (2017) described as “reporting the student voice”, to enable students to become “active participants in their learning and meaning making”, (p. 75).

Active learning also relates to experiential learning which too emerged from the research. Students spoke of real-life learning experiences as being meaningful to their learning. One

student (Student Pair A) shared how her visit to PTech industry and academic partners impacted her stating as follows.

> Rather than like reflecting on a clip from a movie that shows growth mindset. Actually, going out to NCI or going out to IBM. Reflecting on what you did there because it'd be more to write about and you'd actually remember more stuff, it's more important.

This statement aligned with the extant research by Yang et al., (2015) in which the role of e-portfolios was seen as assisting students to pursue "authentic tasks to develop learning interests", which also included engagement of students in "reflective and self-regulative learning … constructive feedback for sustained learning … [and] facilitation of collaborative knowledge building …", (p. 1). While authentic learning is relevant to e-portfolio based learning it is justified on the grounds of the student's cognitive and affective development. A point argued by Wood et al., (2018) who saw authentic/experiential learning as helping students understand the relevance of "real-world problems and projects" adding that experiential learning was truly meaningful when it facilitated "fruitful and creative subsequent experiences", (p. 261).

Threshold Learning

The research findings as stated highlighted opportunities for threshold learning.in the context of e-portfolio based learning. When discussing threshold learning the research elicited responses from teachers relating to their students' cognitive competence and internalization of their learning. This was most prominent in the area of reflective/ critical learning. One teacher

(Teacher A) highlighted an example of threshold in which she saw students take ownership of their learning as follows.

> Well for me, it looks like students developing independent skills. Yeah, and not negative ones at all. It really puts the ownership back on them. Like the majority of my students would reflect at the middle and reflect at the end and you'd like to think that both reflections would be different and there would have been continual learning there. So, it's interesting for them to see that. So, it's about students' kind of taking ownership and kind of learning from their own reflections. That's what it looks like to me, and I support that by talking to them about [it], 'Well, let's look at your first one, that leads into your second one'. Do you know what I mean.

A recent Irish study into second level students engaged in threshold learning showed that teaching students threshold concepts helped them to develop what Maloney et al., (2021) termed "competency even when faced with negative feedback when engaged in difficult learning", which has the potential to facilitate students in "transition[ing] more easily into higher [and further] education", (p. 109).

Peer to Peer Learning

Student peer-to-peer learning also provided an insight into the modalities of e-portfolio based collaborative learning. When discussing peer learning it is important to bear in mind that peer learning is about helping students to "master self-learning and self-evaluation skills", to enable them "to co-learn and co-produce knowledge with peers" (Holme et al., 2020, p. 28).

One student (Student Pair B) spoke in a positive way about how peer-to-peer learning supported their learning describing how she valued opportunities for peer learning.

> I enjoyed it personally. It's kind of who you group with that matters. If you group with the wrong people, you're not going to have as much fun and you're not going to have a good experience. But if you group with people that you know you can, like, bounce off ideas from. Yeah, and like, actually get into a conversation about work with ... well that is beneficial.

Such opportunities for collaborative and peer-to-peer learning were also cited in studies. This showed the effects of peer interaction, critical thinking and the capacity of groupwork to enhance "problem-solving performance and … promote conceptual change" (Anderson & Soden, 2001, p. 38).

The dynamic of groupwork played a role in teaching methodologies too. One teacher explained that groupwork while part of the culture of teaching and learning with e-portfolios was also a useful strategy in helping students leverage their learning and in so doing expand possibilities for learning. This the teacher (Teacher C) illustrated as follows.

> Groupwork and probably PTech in particular, I don't know about the other subjects as much but certainly, groupwork is a big thing within PTech, and I suppose the e-portfolios allow for that too. You're all doing the same thing. You all have the same sort of thing and you're taking advice from each other and ... you can work with each other and ask; how do you do this? How do you do that? Oh, that's great. That looks great. How do you? So, it does encourage a huge amount of group work, peer learning, peer assessing and self-assessing".

What this testimony tells us is that groupwork while developing necessary skills such as teamwork, empathising with others' point of view and communication fundamentally helps students to learn to identify learning in their peers and share in that learning dynamic. This experience of groupwork Néstor & Roselli, (2017) identify in their research as going "beyond mere collectivism (doing everything in groups)", to include "connecting individual learning to others' learning", (p. 119).

4.2.6. Process vs Product

The relationship between process versus product is central to explaining e-portfolio based learning. Walland & Shaw, (2022) define this relationship as "reflection, selection, rationalization, and evaluation, together with [the] product of those processes", (p. 363). The three key sub-themes emerging out of the process vs product theme relate to student identity, student learning journey and assessment for learning.

An analysis of the transcripts also revealed the sub-theme of student identity. This meant valuing student success and critical reflection. The e-portfolio gave students the digital creative tools to display and express their voice and take ownership of their learning. Given the duality of process vs product e-portfolio design, Fahey & Cronen, (2016) contended that the optimal outcome for the student is to "allow for student choice and voice in merging both types of portfolios", (p. 138).

In exploring the synergies of the process vs product model, the question of e-portfolio learning being extended over a longer period of time emerged as a sub-theme. This meant giving students and teachers the space to evaluate their learning journey and examine their

progress as independent learners in the context of e-portfolio based learning. Chau & Cheng, (2010) outlined the potential for independent learning with e-portfolios "as the way students make use of an iterative process to regulate their own learning", (p. 933 - 934).

The last sub-theme of the product vs process theme centred on e-portfolios as assessment instruments. This placed the range of e-portfolio artefacts and activities within a context that López-Crespo et al., (2022) described as encouraging "critical reflection, facilitate[ing] both formative and summative assessment, and reveal[ing] the acquisition of [digital] competences", (p. 5234). In this regard e-portfolios according to Yang et al., (2015) helped to focus on "learning processes rather than learning products", (p. 6) which they deemed as providing a "strengthened formative role … through coherent assessment design", (p. 9). To compliment this re-evaluation of formative assessment and assessment outcomes there is the need to bring on board both teacher opinions around matters of accountability and transparency as well as the approval of various stakeholders in the assessment landscape.

Student Identity

The research revealed student identity as a live issue in e-portfolio learning. Student identity according to Meerts-Brandsma & Sibthorp, (2021) is achieved through students learning to "explore and select or commit to aspects of their identity", (p. 23). While identity formation is a challenging process for students' it is justified because it enables what Carson et al., (2014) described as pedagogical practices around e-portfolio learning that "push change in a particular direction, disrupting users toward more integrative, constructivist, and social teaching and learning and supporting movement toward a learning paradigm", (p. 81). In the

research one student's response when asked to create an "About Me" webpage in her e-portfolio illustrated how the challenge to express their voice through the use of creative digital technology represented a moment of disruption or change in direction in that student's (Student Pair B) learning.

> It was kind of the first piece of work that we really did, so it's easy to remember. Yeah. And I just remembered all the confusion I had when I first started it. Cause I was like, 'about me'. What's so interesting about me?

For pedagogical practices to be impactful let alone disruptive the e-portfolio needs to provide opportunities described by Allen et al., (2021) as supporting "learner-centred teacher practices, which honour student voices, promote higher-order thinking, align teaching with individual needs, adapt instructions [and are] associated with positive student outcomes", (p. 536). If DEIS schools are to adopt what Skerritt et al., (2023) refer to as "student-centred approaches" to learning that allow for more "creativity, expression and voice in the classroom" (p. 307), then to achieve this we must make room for what McCormack et al., (2019) propose in terms of "a relational and transformative pedagogic space . . . [that] allow participants to act outside the role-boundaries that typically confine their teaching and learning activities, and potentially create a path to cultural change", (p. 11). What this research points to here particularly in the context of DEIS schools is that e-portfolios can contribute to creating this transformative pedagogic space by providing students with an opportunity to leverage the emancipatory potential of e-portfolio based learning.

E-portfolio learning capitalises on what Fahey & Cronen, (2016) term the capacity of digital portfolios to help students become more "intrinsically motivated to challenge themselves in new and engaging ways", (p. 136). One student's testimony echoes this view in acknowledging that the e-portfolio provides a platform to express her views. In describing her attitude to e-portfolio learning (Student Pair A) stated:

> "[When I write in] my "About me" page … You can't do anything wrong because if … I put something in "My PTech Learning", that's wrong! You can't be wrong, when you talk [about] yourself … and if someone reads it, they just read what you think. They're not being like oh, she got that question wrong."

This statement would also suggest that the e-portfolio is a space where the student's voice was valued and if students are to have a voice in marginalised DEIS post-primary communities, then learning should as Robinson & Taylor, (2007) contend enable students to acquire "mastery of other discourses including the ability to criticize these discourses", (p. 13). For student voice to resonate and impact the curriculum there needs to be what Glowacki-Dudka et al., (2012) point to as a transformational learning theory to emancipate student identity through a process that "responds to marginality" by using e-portfolio based learning to help create a "transcendent experience", (p. 130).

Learning Journey

E-portfolio based learning facilitates the learning journey through making room for learning processes which Walland & Shaw, (2022) describe as the "synthesis of ideas; reflection on achievements; and self-awareness and planning, through reflective writing and planning, with

the potential for educational, developmental or other benefits" (p. 367). To achieve this e-portfolios provide students with creative multimedia tools and the opportunity to curate their learning over time. This experience was described by one student (Student Pair B) as follows; "You can see the full story cause you were there and now afterwards you can look at where you went wrong and see [what lessons you learnt]."

Understanding e-portfolio based learning as a process and not solely a product is an idea in which Roberts, (2018) characterised e-portfolios as "learning environments rather than only a repository for evidence" (p. 315). E-portfolios conceived in this way offer students perspective on their learning a point which was illustrated in the testimony of one student (Student Pair C) reflecting back on their e-portfolio work in TY.

> I'm looking at it now for the first time in over a year and I'm actually proud of the work that I've done and looking at it and seeing my different pages. I was surprised and I'm looking at the stuff I could have done, like I could have added more pictures and ...

In helping students to engage with learning, to take ownership of their learning process there is the potential for students to achieve what Watty & McKay, (2015) suggest as "more intrinsic motivation to use the e-portfolio to support lifelong learning", (p. 199).

Assessment for learning

While e-portfolio based learning offers students' both a unique learning environment as well as a repository of evidence of learning they also constitute important assessment instruments as well. In this regard assessing student performance is achieved by operationalising, what

Aguirre de Cárcer & Mendoza Ramos, (2021) identified as “an assessment for learning process, [where] assessment becomes part of the teaching and learning process” (p. 105).

When teachers were asked for their remarks on the value of the e-portfolio to their students’ learning there was strong evidence supporting the view that e-portfolios were authentic and valid forms of learning and assessment. In addition to amplifying student voice e-portfolios capture what Bangalan & Hipona, (2020) recognise as important “authentic performances in multiple digital media”, which in turn offers “a clear advantage over more traditional forms of assessment”, (p. 33). One teacher (Teacher A) expressed her view on the capacity of e-portfolio assessment for authentic assessment and ventured that as a formative assessment tool e-portfolios could provide a radical approach to assessment.

> I think our students are quite proud and want the responsibility to do their own ... exams, so I think it could come down to a little bit of mistrust from the department and all that. They don't trust our students to hand in our e-portfolio, but I think that that's really not having a lot of faith in our young people because our young people love to take ownership, they love independence and they they'll rock up when it's needed.

While there is little empirical evidence supporting the roll-out of high-stakes e-portfolio assessment at post-primary level any preliminary moves to do so would require agreement among stakeholders to achieve what Gomendio & Wert, (2023) describe as, “accountability and transparency” in order to avoid the inevitable “rejection from defenders of the status quo”, (p. 18). The view that any change involving greater use of e-portfolio assessment would require consultation with stakeholders was articulated by another teacher (Teacher C).

> So, I think this could probably work well with us. It would have to be teased out with the subject departments and, we probably aren't using Office 365 to the optimal or you know, the obstacle with that [is that], it would have to be teased out [with the whole staff]. Certainly, it's something to look into, all right. It's certainly there. If it was me, yeah, I would love to have everything in one spot like that. Yeah. If I was a student, I think it would be just amazing!

It is teacher testimonies like this that illustrate a change in attitudes to assessment methods allowing for the possibility of e-portfolios to be used as evidence for assessment. This view aligns with the OECD, (2013) in their research into trends in school assessment in which they outline a redistribution of the assessment process where teachers and state examination authorities share the assessment load entailing a "balancing of external assessment standards and teacher-based assessments in the assessment of learning", (p. 22).

Putting an assessment framework in place to include external and local forms of assessment is already happening on the ground with the implementation of the new Junior Cycle reforms. In principle it marks a shift from what Calfee et al., (2014) term a process of "grading" to "growing" whereby schools employ, "summative tests [to] grade student achievement at the end of instruction [and] formative assessments [to] grow student learning as it is happening" a process that Calfee et al. mention as working with student cognitive understanding "while the 'clay is wet,' and while it is possible to take action to enhance learning", (p. 3).

4.3. Conclusion

This chapter has discussed the research findings as they relate to the research question, "Teacher and student experiences of teaching and learning with e-portfolio based learning in the context of a DEIS Post-Primary school". The findings were discussed under six themes to develop a picture of how students and teachers understood, and valued e-portfolio based learning within the curriculum. While set within the context of the school's PTech Transition Year programme the interview and data collection process also made use of student e-portfolios to aid in the elicitation of student views on their learning experiences. In the final concluding chapter, I will set out a summary of the main points, consider how the research has contributed to the field, as well as my thoughts on the possible consequences for practice, policy and future research.

Chapter 5: Conclusion

5.1. Introduction

This chapter offers some overall conclusions based on the findings from the research carried out in this thesis. It achieves this by studying the PTech programme and its progressive approach to e-portfolio based learning in the context of an inner-city DEIS post-primary school. Notable areas of interest included issues among the student population who though largely viewed as digital natives struggled to learn effectively due to digital skills deficits particularly in the area of digital literacy. In addition, the learning dynamics between students and their teachers revealed an awareness of the importance of lifelong learning among students on seeing their teachers actively engage and model their own CPD learning around e-portfolios. The implications contained within this research study for the school DLP also project an active role for e-portfolio based learning. This is further underpinned by a constructivist approach to teaching and learning as well as an openness to sharing professional practice as part of the researcher's commitment to building capacity in e-portfolio learning with the school community.

5.2. Overall Conclusion and Contribution

The research question delved into the experiences of teachers and students with e-portfolio based learning in a DEIS post-primary school. Set within the context of the PTech programme the e-portfolio is assessed as part of a senior cycle QQI Level 6 curriculum. Given my position as a teacher on the PTech programme I am fortunate to be involved in a process of curriculum innovation using e-portfolios, a process that Bangalan & Hipona, (2020) describe as one where

"e-portfolios are learning-centric" include opportunities to help the "development of the whole student" are characteristic of an "integrative" approach to education, while also "validating the distinctiveness of local institutions and communities", (p. 33).

Much of the analysis in this research echoed findings raised in the wider literature. Most notably these related to constructivist teaching and learning practices around active learning, collaborative peer to peer learning, reflective learning, and threshold learning characteristics such as transformative and integrative enhancement of the learning process. In addition to engagement by students and teachers with a constructivist learning methodology around e-portfolio based learning the thematic analysis also highlighted the importance of process vs product modalities and their relevance to questions relating to formative and summative assessment. Yang et al., (2015) addressed the process vs product modality citing "tensions between the formative and summative functions of assessment", which it was seen as important when striking a balance between "facilitating learning process and prioritizing end products of learning" this tension it was noted has attracted "considerable debates in current literature", (p. 2).

In evaluating the impact of e-portfolio based learning the theme of digital literacy raised particular questions around access and participation in learning. While students and teachers identified successful learning with digital media to represent student voice and identity, the research analysis also identified challenges hindering student progress with e-portfolios including gaps in language and literacy skills as well as poor digital literacy skills. In matters of language and literacy teachers reported that they needed to underpin their e-portfolio based

learning with the use of scaffolded rubrics to bridge deficits in students' language and literacy skills. In this regard teachers also identified the potential for universal design for learning (UDL) to exploit what Kingston et al., (2016) described as "a variety of [digital] modalities" (p. 18) to help students access learning and demonstrate their knowledge. This however contrasted with the student experience of adopting the same digital modalities and while UDL was seen by students as supporting language and literacy skills the view was that the addition of more digital media tools was not always better as this invariably contributed to cognitive overload. The optimum approach to integrating UDL was that favoured by Bray et al., (2023) involving an integrated and well-designed environment to minimise student distraction aiming to follow "design principles that support learners to avail of the options most appropriate to them", (p. 15).

We also got accounts from students of problems they identified around digital nativism in the context of e-portfolio learning. Students felt that their teachers assumed a level of knowledge in relation to digital literacy skills when it came to e-portfolio based learning. In reality students reported that they either did not have nor were adequately equipped with the skills to navigate or populate content in their e-portfolios.

By virtue of this research study being set within the context of a DEIS status post-primary school student attainment was affected by the challenges faced by disadvantaged communities. Chief among the challenges faced by DEIS student populations being problems of student attainment and educational inequality especially in areas of literacy and numeracy. To approach problems around cognitive attainment and e-portfolio learning teachers employed various

scaffolding and differentiation strategies which they adopted for mixed ability classes. Bondie et al., (2019) recommended a number of differentiation approaches including, "grouping students for small group or individual tasks", (p. 348) as well as "offering students different prompts … to increase student engagement through connecting to interests", (p. 348) in addition to adopting "the use of a self-directed assessment … to … determine appropriate learning tasks for students", (p. 349). The research analysis identified the following differentiation strategies teachers employed when teaching student e-portfolios:

1. Facilitating peer-to-peer collaborative learning classes.
2. Providing rubrics to prompt/guide learning.
3. Providing checklists to help maintain task integrity.

In addition to the theme of digital literacy the theme of learning supports specifically the sub-theme of student access to hardware emerged as an issue effecting participation in e-portfolio based learning. The challenges identified here again traced their roots back to the school's DEIS status and its disadvantaged student population. Despite the existence of hardware schemes such as the laptop rental scheme a small but a significant minority of numbers of students defaulted to opting out or else failed to buy into the scheme fully by not using the laptop provided. Hughes, (2008) in referring to her teaching practice using e-portfolio based learning students cited the fact that to effectively use the technology many students face insurmountable barriers to participation due to social inequality that they do "not have the tools, training or habits and need to be given access and time [and resources] to develop this", (p. 6).

Another theme warranting particular attention in the context of this research was that of teacher CPD. Teachers remarked that the CPD they received in e-portfolio learning took place concurrent with teaching the e-portfolio curriculum. Students also reported an awareness of the impact of CPD on their understanding of the way that teachers actively engaged with and modelled their own learning. This was seen by students not as an impediment to learning but rather as an inclusive process one characterised by shared discovery-based and open collaborative practices. In observing the reactions of students to this inclusive and open modelling of CPD by teachers the research revealed that students developed an understanding of CPD which showed an appreciation for the importance of lifelong learning. When considering teacher CPD within the context of disadvantaged DEIS communities the research literature argued for the use of innovative pedagogy to motivate students and help them engage with the curriculum.

5.3. Limitations

The research limitations encompass a range of logistical, pragmatic and positional factors. When considering the positional factors, I am aware that as a teacher researcher I am functioning as an insider researcher working at close proximity to the teachers and students whom I am conducting research with and on. While safeguards and ethical structures are in place to protect anonymity and agency of the research participants there is nevertheless the potential for participants to perceive my role as exerting certain power dynamics over their input to the research and ensuant data analysis process. To guard against insider researcher bias and preserve research trustworthiness additional measures have been put in place such as

consistency of approach in relation to the conducting of participant interviews, seeking participant feedback in relation to views elicited form participants and the application of systematic qualitative principles of inquiry.

On a logistical level constraining the research sample size represented a possible research limitation. The outcome of the representative study selected for this study it must be acknowledged was directly proportionate to the single school sample size. Opportunities to extend the sample size to include other DEIS post-primary populations or for that matter compare and contrast the results with non-DEIS post-primary populations would offer a greater range of data sources enabling comparative studies. Nevertheless, given that data points began to repeat and concur as the data collection progressed the researcher is of the view that while data collection may possibly not have been exhausted it was nearing or very close to saturation point. The fact that emergent themes helped to obtain meaningful answers to the research questions it was felt provided an inherent justification for the sample size selection.

The pragmatic aspects of this research study could also be interpreted as another ground where research limitations arose. While the research paradigm involved a multi-method case study technique the intention was to triangulate the data collection to include not just artefact elicitation from key informants during the interview process itself but also select artefacts from student e-portfolios. The purpose of using e-portfolio artefacts being to enrich the data analysis process and in so doing provide an insight into the relationships students formed with their learning as well as give examples to illustrate their learning. Such an approach to analysis can as suggested by Edwards & I'Anson, (2020) also provide the possibility to construct a "map

linking the student's artifacts and the meanings he or she ascribed to them", (p. 49). However, given time and resource constraints not to mention the volume of verbatim quotations available from the interview transcripts the decision to confine the data analysis process to the interview data was justified.

5.4. Implications and Recommendations

This research study while set in the context of the PTech programme nevertheless has implications for wider curriculum planning and innovation both in the context of LCC as well as within the context of my professional teaching practice. The research written about in this study has potential to make a positive contribution to the skills and approaches that inform both strategic goals as well as teaching methodologies around digital literacy. In this regard the Department of Education, (2022) in its Digital Strategy for Schools envisages e-portfolios as providing a "platform for student centred learning, particularly in Junior cycle and Transition Year", (p. 40). For the e-portfolio to impact student learning it must be what Roberts, (2018) described as a "learning centred environment", (p. 315). The inherent philosophy of e-portfolio learning centred environments is that they are a balance between e-portfolio as process and e-portfolio as product. The recommendation arising from this research centres on the fact that students value the opportunity to track their learning over an extended period of time and in so doing become more attuned to "reflection and self-assessment and contributing to the development of social and metacognitive skills", (p. 2) Haralabous & Maria, (2019).

E-portfolio based learning technology is portable learning tool that supports a constructivist teaching and learning methodology. The prospect of tracking the student's learning journey as

they progress through post-primary education has benefits not just for portfolio-based assessment but also for how students construct their knowledge. I will come to portfolio-based assessment later but first allow me to discuss the implications for the use of constructivist e-portfolio based learning. In contrast with more traditional methods of teaching and learning constructivist approaches seek to enable students to link their prior knowledge to their current knowledge thus integrating new knowledge into existing knowledge. For students to learn and construct meaning what is required are opportunities for students to exercise metacognition, formative feedback, knowledge integration, as well as the possibility for peer-to-peer learning. Babaee et al., (2014) believe that e-portfolio based learning located within a constructivist approach can provide learning activities that include: formative feedback, monitoring, reflection, using prior knowledge, student-focused conceptual change, and self-assessment.", (p. 6).

On the subject of e-portfolio assessment the findings that emerged under the sub-theme of formative assessment suggested a willingness on the part of teachers to consider including qualitative assessment techniques such as e-portfolio based assessment as part of evidence submitted to State examinations. While we already have external and local forms of assessment taking place in the context of the new Junior Cycle examination, the prospect of allowing e-portfolios to be considered as formative instruments of assessment presents a meaningful approach to state assessment. That said the research discussion anticipates the need to moderate stakeholder concerns from bodies such as teacher unions, parental bodies and award

licenced providers if accountability and transparency issues around assessment are to be addressed.

If progressing the assessment role of e-portfolio based learning is to result in a step change in the way students engage with assessment for learning, then it follows that the e-portfolio itself as envisaged in this research study be re-purposed. While the e-portfolio provides a useful tool to support teaching, learning and assessment on the PTech programme the research study identified scope to extend its application into other areas of the post-primary curriculum. Opportunities to integrate further the use of e-portfolio assessment tools into subject syllabi was thought of as worthy of further exploration. Nevertheless, as has already been noted by teachers in the study there is a need to for greater consultation with stakeholders if this is to progress.

Any recommendations for further development within e-portfolio based learning needs to acknowledge student voice and identity which emerged as a prominent theme in this research study. Among the findings it was discovered that the e-portfolio enabled students to express their voice through the use of creative digital technology. This together with constructivist approaches to teaching and learning with e-portfolios ensured positive student learning outcomes. The use of creative digital technology together with constructivist pedagogical practices in the context of e-portfolio based learning, generated what Carson et al., (2014) termed “disruptive moments” or change in direction in student learning. Within this change process students get an opportunity to express their voice, explore their identity and take ownership of their learning. The e-portfolio facilitated student voice through offering a

platform in which to value student success as well as critical reflection. In so doing the e-portfolio gave students the digital creative tools to express their voice. It is this very ability to express and articulate student voice that suggests a potential for e-portfolio based learning to carve out a "transformative pedagogic space" and in so doing emancipate what have too often been marginalised voices within DEIS school communities.

The issue of the research gap that exists at post-primary level into e-portfolio based learning has been well documented here. The PDST since September 2023 has reformed as Oide, the national body of professional learning of teachers & school leaders in Ireland. It has dedicated resources available to help teachers with what it terms "digital portfolios", (Oide, 2023). At the time of writing this research no extant evidenced based research other than the 2017 PDST funded research into e-portfolio based learning by (Brown et al., 2017) and the 2018 EQI funded research into teacher and principal leaders using e-portfolio based learning by (Poole et al., 2018) exists to inform best-practice into e-portfolio based learning at post-primary level. While both studies widely acknowledged the importance of e-portfolio based learning in promoting innovation and exploration the evidence nevertheless suggests a shortfall in the implementation of e-portfolio practices to benefit students and teachers in post-primary education. In this regard Farrell, (2018) identified three factors impacting take up of e-portfolios in Irish education including "a lack of government policy drivers; no distinct Irish e-portfolio community; and a scarcity of funding", (p. 154). The experiences of teachers and students highlighted in this research indicated similar problems in terms of resource deficits as well as CPD input with e-portfolio based learning. The study observed teachers working to

develop e-portfolio skill tutorials, checklists, scaffolded lessons and assessment supports for their students. In doing so teachers pivoted their own skills and expertise around e-portfolio learning both collectively and individually. It is important therefore to acknowledge and capitalise on this expertise with e-portfolio based learning to achieve what Holme et al., (2020) termed a “grassroots” approach to CPD.

The benefits of this research to my professional practice relates to the impact of e-portfolios on my teaching in the classroom as well as the ways in which I choose to plan, reflect and share my teaching practice with the wider educational community. In looking at effective teaching strategies with e-portfolios it is important to highlight the value of feedback for learning to diverse and special needs students. By committing to a practice of effective feedback and working with colleagues to streamline and harmonise feedback methods teachers can maximise learning outcomes and mitigate the fall off in participation in e-portfolio learning so often associated with marginalised students. In order to achieve this, it is essential to support school management in sharing good practice and growing the community of e-portfolio practitioners.

5.5. Conclusion

This study explored the learning experiences of DEIS post-primary students and teachers engaging in e-portfolio based learning. A multi-method case study research approach was taken involving semi-structured interviews with students and teachers to collect research data. The findings emerged through an analysis of six themes and sub-themes. Chief among which was the sense that e-portfolios offered a creative space where students could explore their

identity and locate their voice within a wider culture and discourse, a culture that so often DEIS post-primary communities are marginalised from.

In addition to exploring student voice in the e-portfolio the research highlighted the problems students encountered with the acquisition of digital literacy skills. This issue reflected. Addressing problems of poor digital literacy associated with educational inequality in student e-portfolio learning required teachers to adopt differentiated and scaffolded approaches.

Another area that prompted discussion was the gap in research literature on the topic of e-portfolio based learning at post-primary level. In the absence of e-portfolio scholarship teachers identified the need for the support of a professional network with which to share and develop good teaching practice. In reflecting on own teaching practice, I see the possibility in collaboration with school leadership of developing e-portfolio resources underpinned by a commitment to constructivist teaching methodologies to grow e-portfolio teaching and learning at a grassroots level.

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Appendices

Appendix i: Interview Schedule – Student Sample

This interview schedule is targeted at a sample of c.6 post-primary students attending [redacted]. Interviews were held in groups of between two students and used examples of student e-portfolio work as a context for the discussion.

Student learning experience – setting the scene:

1. Tell me how you've used portfolios in the past.
2. Tell me how you use them now.
3. Do you enjoy learning with e-portfolios?
4. What were the key activities that stood out for you?
5. If we take a look at an example of your work, how did you create this?
    a. What would you like to say about the types of activities you were asked to do?
6. Tell me about the following e-portfolio pages. What do they say about you?
    a. "About Me"
    b. "My Career"
    c. "My PTech Learning"
    d. "Reflective Blog"
    e. "Useful Things and Other Learning"

The value of e-portfolio learning for the student:

7. Is your portfolio important to you?
    a. Why?

b. Why not?

c. Is it purely a task to complete for PTech or do you see it as having other uses?

8. If you were starting an e-portfolio again, what would you do differently?

a. Do you think you would put more emphasis on different areas?

9. What parts of the e-portfolio do you think you need more help with when starting off?

10. Tell me about when you started using your portfolio? Is it early enough?

a. What about carrying it from year to year. Is this a good idea?

i. Why?

ii. Why not?

<u>E-portfolios and student cognitive development:</u>

11. What supports did you find helpful in terms of working on your e-portfolios?

12. Did you get teacher feedback?

a. What did that look like?

b. Was the feedback helpful?

13. How did you manage writing your reflections?

a. Was it challenging or did you cope well with this?

b. What did you learn from doing them?

14. When you worked on your e-portfolios in groups did you find that helpful?

a. Tell me more about these group activities.

b. Do you have any suggestions to make groupwork even better?

Challenges to e-portfolio based learning:

15. What aspects of e-portfolio learning did you find the most challenging?
16. Do you think the e-portfolio is relevant to your overall learning?
    a. How is it relevant?
    b. What does it do for you and your learning?
17. Have you found yourself repeating similar tasks from your e-portfolio for different subject areas?
    a. What do you think of this?
18. If you were to reflect on the e-portfolio itself, what changes would you make to it?

Appendix ii: Interview Schedule – Teacher Sample

This interview schedule was targeted at a sample of three post-primary teachers working Larkin Community College City of Dublin ETB. The research sample consisted of teachers involved in using e-portfolios with senior cycle P-Tech students. The sample also included one teacher using e-portfolios within the broader school environment.

Familiarity with e-portfolios:

1. Could you give some background as to how you use e-portfolios in your teaching practice?

   Tell me more about this ...

2. Have you created an e-portfolio?

   Could you expand on this?

   a. How did you go about it?

   b. What software/platform did you use?

   c. How was the process for you?

      ... describe to me what that was like ...

3. Did creating an e-portfolio help you in your teaching and if so in what way?

   Tell me more about that ...

Teacher competence with e-portfolios:

4. What are the main factors that helped or influenced your use of e-portfolios?

Tell me more about this ...

5. If an opportunity for CPD training in the use of e-portfolios was offered, would you take it and why?
6. If you have received CPD?
    a. What format did it take?
    b. How was it organized?
    c. What sort of content was required?

        Tell me more about that ...

<u>E-portfolios and student learning:</u>

7. In your teaching practice how do you see e-portfolios as supporting student learning?
8. Do you see e-portfolios as supporting active learning for your students?
    a. How do e-portfolios help with this?
9. Can we turn to the matter of student feedback?
    a. Tell me about your use of feedback in e-portfolio learning?
    b. What does feedback look like (for your students)?
    c. In your view is it effective?

        Tell me about this/ Could you expand on this?
10. In what way/s do you think reflective blogs benefit student learning?
11. Have you considered the use of collaborative learning when using e-portfolios?

a. How does this work?

b. What sort of strategies have you used?

Tell me more about this ...

Challenges to e-portfolio based learning:

12. What aspects of e-portfolio learning present the greatest challenge/s to you as a teacher?

    a. What way/s do you think these challenges might be better addressed?

13. What aspects of e-portfolio learning present the greatest challenges to your students?

    a. What way/s do you think your students might better address these challenges?

14. Let's talk about the Junior Cycle (JC) and Senior Cycle (SC) framework.

    a. When you think about e-portfolio teaching and learning within the broader curriculum, i.e., Junior Cycle what Senior Cycle what comes to mind?

    b. In what way/s do you think e-portfolios support the key skills as set out in the frameworks?

        i. JC: Managing myself, Staying well, Communicating, Being creative, Working with others, Managing information and thinking.

        ii. SC: Information processing, Communicating, Critical and creative thinking, Working with others, Being personally effective and Working with others.

c. In the context of JC and SC reform what sort of changes would you like to see in relation to the use of e-portfolio learning?

15. As reflective/critical thinking features regularly in e-portfolio learning I was wondering what your thoughts were in relation to reflective/critical thinking and e-portfolios?

    a. What is your understanding of reflective/critical thinking and e-portfolio learning?

    b. What does reflective/critical thinking look like to you?

    c. What ways do you encourage your students to be reflective/critical thinkers?

    d. What do you think reflective/critical does for your students'?

    e. How does it help your students' learning?

<u>E-portfolios and DEIS students:</u>

16. Within the context of DEIS and the students attending [redacted] what would you see as the main challenges posed by the profile of DEIS students?

    a. What are your thoughts on teaching and learning with DEIS students in general?

    b. From your experience what does teaching and learning with DEIS students look like?

17. Do you see e-portfolio learning as having a role to play with DEIS students?

    a. Is e-portfolio learning suited to DEIS students?

    Tell me more about that ...

b. What are the advantages in using e-portfolios with DEIS students?

   Tell me more about that ...

c. What are the disadvantages of using e-portfolios with DEIS students?

   Tell me more about that ...

18. What aspects of e-portfolio learning have you encountered that stood out for you?

    a. Could you describe these?

        i. What did they look like?

19. What types of effective practice would help other DEIS teachers with e-portfolio teaching and learning?

    a. What approaches to e-portfolio learning worked well for you with DEIS students?

    b. What aspects of e-portfolio learning do you think DEIS students benefit from?

Appendix iii: Research project information sheet – Parents/Guardians

1. What?

This research study wants to look at digital projects that your son or daughter have been working on, to find out what learning has taken place and the skills that they have learnt. In doing this research the school wants to see if the skills that students are learning prepare them both for the workplace and for learning in the future.

2. How?

The information collected from this study will come from meetings with students and will include samples of your son's or daughter's work. Parents are asked to sign a consent from before their son or daughter takes part in the study. The information collected will be used to see patterns in relation to student learning. The conclusions drawn from this study will be available in the college library for consultation.

3. Why?

While most students enjoy learning with the help of digital technology and educational software it is true that some students struggle to concentrate and make sense of their learning. These students also risk becoming disinterested. The school wants to use this research to plan for the future and make improvements so that no student gets left behind and can reach their full potential.

Appendix iv: Research project information sheet – Students

1. What?

This research study looks at digital projects that you (as a student) have been working on. The aim being to find out what learning has taken place as well as the skills that students have learnt. In doing this research the school wants to see if the skills that students are learning prepares them for the workplace and for learning in the future.

2. How?

The information collected from this study will come from meetings with students and will include samples of their work. Students taking part in the study will need to sign a consent form before doing so. The information collected will be used to see patterns in relation to student learning. A copy of the research study will be available in the college library.

3. Why?

While most students enjoy learning with the help of digital technology and educational software it is true that some students struggle to concentrate and make sense of the work. It is these students who risk becoming disinterested. The school wants to use this research to plan for the future and make improvements so that no student gets left behind and can reach their full potential.

Appendix v: Research project information sheet – Teachers

1. What?

This research study looks at e-portfolios that you (as a teacher) have been using with your students. You may also have been using a personal portfolio to document your own practice, and if so, we can explore that too. The aim being to find out what learning has taken place both for you as a professional as well as the skills that your students have learnt in the process. In doing this research the school wants to know the relevance/ value of the skills that students are learning in using e-portfolios and ascertain the needs of teachers in order to implement the use of e-portfolios across programmes or year groups.

2. How?

The information collected from this study will come from interviews with teachers and students. It will also include examples of student e-portfolio work. Teachers taking part in the study will be asked to sign a consent form before doing so. The information collected will be used to identify the learning that is taking place with e-portfolios. This will in turn form part of the researcher's thesis and be submitted as part of the award of Maters in Education Practice NCIRL. A copy of the research study will be available in the college library.

3. Why?

While it is common for students to use technology or a blended approach to learning it is clear that some students struggle to concentrate and make sense of their work regardless of whether it is presented in paper or digital format. It is these students who risk becoming disinterested and lose out in the long run as society becomes increasingly digitized. The school wants to use this research to plan for the future and make improvements so that teachers feel equipped to support their students in reaching their full potential.

Appendix vi: Informed consent – Parent/Guardian

Dear parent/guardian,

I am writing to you to let you know that I am doing research with the aim of better understanding how [redacted] is meeting your son or daughter's learning needs through technology.

For this research study I want to talk with your son or daughter about to a digital project that they have been working on in class with myself and other teachers. I will also be asking your son or daughter if I can use examples of their digital projects in the research.

By agreeing to participate in this research your son or daughter will help the school to know what aspects of the digital curriculum are working well. This will enable [redacted] to plan for the future and make improvements in the supports needed for its students.

A copy of the research will be available in the school to parents should they wish to read it for themselves. The identities of the students who took part in the research will be removed and all information collected during the research will be secured for the next five years.

I will ask that you sign below to allow your son or daughter to participate in the research. If you have any questions about your son or daughter's participation, you may contact me at the college.

I hereby give consent for my son or daughter (please state their names),

_____ to participate in a research study at [redacted]:

Parent signature: _____ Date: _____

Declan Quinn
_____

Mr. Declan Quinn
Teacher, [redacted]

Appendix vii: Informed consent – Student

Dear student,

As you are aware I am doing research into the use of technology in [redacted]

For this research study I want to talk with you about digital projects that you have been working on in class. I also want to ask if I can use examples of your digital projects in the research.

By agreeing to take part in this research and share examples of your work you will help the school to know what aspects of the digital curriculum are working well. This will enable the college to plan for the future and make improvements in the supports needed for its students.

A copy of the research will be available in the school library should you wish to read it for yourself. The identities of the students who took part in the research will be removed and all information collected during the research will be kept safe for the next five years.

I will ask that you sign below to give your permission to take part in the research. If you have any questions about taking part in this research study, please speak with me.

I hereby give consent to participate in a research study at [redacted]:

Student signature: _____ Date: _____

Declan Quinn
_____

Mr. Declan Quinn
Teacher, [redacted]

Appendix viii: Informed consent – Teacher

Dear colleague,

As you are aware I am doing research into the use of e-portfolios in [redacted]

For my research study I would like to learn about your experience of teaching and learning with e-portfolios with your students.

In agreeing to take part in this research you will help the school understand how e-portfolios can support teaching and learning across the school community. This will enable the college to plan for the future as well as to provide the necessary support required to help teachers to consider the use of e-portfolio teaching and learning in the curriculum.

A copy of the research will be available in the school library should you wish to read it for yourself. The identities of the teachers who took part in the research will be removed and all information collected during the research will be kept safe for the next five years on a server hosted by the National College of Ireland.

I will ask that you sign below to give your permission to take part in the research. If you have any questions about taking part in this research study, please speak with me.

I hereby give consent to participate in a research study at [redacted]:

Teacher Signature: _____ Date: _____

Declan Quinn
_____

Mr. Declan Quinn
Teacher, [redacted]

Appendix ix: Letter to school Principal requesting permission to conduct research.

FAO. Principal, [redacted]
Chair Board of Management
[redacted]

Re: Request to conduct a research study in Larkin C.C.

Dear [redacted],

As you are aware, I have returned this year to complete the Level 9 Master's in Education from NCI which I had commenced in Sep. 2020. I am writing to request permission of the Board of Management, (BOM) to conduct a research study at Larkin C.C., [redacted]. The following sets out a description of the research activity proposed as well as the ethical safeguards in place to ensure academic integrity and transparency of the research process for the students involved.

Description of research activity:

The research looks at the college's approach to digital inclusion and effectiveness of e-learning as experienced by students and staff. The ongoing review of the school's digital learning plan will also inform the study and to this end members of the working group will be interviewed as part of the study. I intend to use a qualitative methodology to conduct interviews with staff members as well as focus group discussions with a research sample of students selected from Senior Cycle.

Information to students and parents:

Students invited to participate in the focus group will receive an explanatory document in advance to outline the purpose of the study. As part of my data collection process, I also wish to collect samples of student e-portfolio work. In addition to receiving the explanatory document students and parents will be asked to sign an informed consent letter when agreeing to participate in the research. There will be an opportunity available for students and parents to ask questions where further clarification may be required. The research will be carried out during school hours which I plan to complete before the school year ends in May '23. Should the BOM have any queries I am happy to discuss this with you at a time of your convenience.

Many thanks,

Regards,

Declan Quinn
_____

Declan Quinn, Masters in Education Practice Yr. 2,
National College of Ireland, e. x19227370@student.ncirl.ie
27/01/'23

Appendix x: Approval by School Board of Management granting permission to conduct research.

Declan Quinn, Teacher
[redacted]

Hi Declan,
Many thanks for submitting your request to carry out this research.
The BOM met on 7th February and approved your request to carry out this research and wish you the very best of luck with it.
The BOM would appreciate it if you would kindly share any findings that you consider would be of benefit for the school.
Best wishes,
[redacted]

Deirdre Doyle
Secretary [redacted] BOM
Deputy Principal
[redacted]

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