CURATED CAREFULLY: SHIFTING PEDAGOGIES THROUGH E-PORTFOLIO USE IN ELEMENTARY CLASSROOMS

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Abstract

Although many studies have been conducted looking at the use of electronic portfolios (e-Portfolios) in higher education, there is a lack of research looking at them as an integrated system for assessing, documenting, and reporting on student work in elementary school settings. This study examines teachers' perceptions of the advantages and disadvantages of using e-Portfolios in elementary school, what teachers are using them for, and how using e-Portfolios is affecting teacher pedagogy.

The study took place in a school district in British Columbia that has adopted e-Portfolios as a replacement for traditional report cards and where they are being used to document student work, give feedback, communicate with parents, assess students, and express learning. This qualitative research study was designed to gain insights into teachers' attitudes and beliefs about using e-Portfolios and to uncover if their use was shifting teacher practice and pedagogy. It also aimed to examine why some teachers were choosing to continue with traditional report cards and had decided to forego using e-Portfolios altogether. Thirty-one teachers participated in the study which consisted of an online questionnaire and a small group sample of follow-up interviews with six respondents.

Key findings from the research include that teachers felt: e-Portfolios changed their pedagogy in a positive way, e-Portfolios enhanced their assessment practices and communication with parents, and using them was making students more self-reflective. For those who chose not to use e-Portfolios, the main reason cited was difficulty with the chosen platform, while a small group explained that they felt e-Portfolios were not as meaningful as a form of assessment and reporting as traditional report cards were. This study provides insight into how the design of an e-Portfolio platform can negatively impact teachers' usage of it as an educational tool and presents ideas for future research into e-Portfolio use at the elementary level. It also provides a glimpse into how teachers are carefully curating these digital containers of student work by creating what they felt were more meaningful learning experiences for their students.

Lay Summary

This study looked at teachers' ideas and opinions about using e-Portfolios with their students in elementary school. There is quite a lot of research into e-Portfolios at the postsecondary level that state the benefits of using e-Portfolios in education but very few studies have been done with the elementary years. This study found that there are many benefits to using e-Portfolios for teachers including making assessment more flexible and ongoing, communicating student learning to parents, and increased student involvement in and reflection on their learning. This work provides insights into how e-Portfolios are being used and what the advantages and disadvantages of using them are.

Preface

This thesis is original, unpublished, independent work by the author, H. Borthwick. The study design and findings described in Chapters 2-4 represent research covered by UBC ethics certificate H20-01847.

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Chapter 1: Introduction

1.1 Introduction

This thesis explores the use of electronic portfolios (e-Portfolios, ePs) at the elementary school level to document, assess, and communicate student learning. According to Barrett (2007), who is widely cited throughout the literature as an expert on portfolios, "an educational portfolio contains work that a learner has collected, reflected upon, selected, and presented to show growth and change over time (p. 436). An electronic portfolio is an extension of the paper one described as it can house a variety of different forms of evidence of learning including ones that combine text, video, images, sound, and animation. Meyer et al. (2011), describe e-Portfolios as "among the most interesting and exciting new developments in educational technologies" (p. 191). Though the excitement over the potential of e-Portfolios in education may be present in the minds of some, there is still a gap in research looking at their benefits in younger years (kindergarten to grade 7). Many studies have been conducted into the use of e-Portfolios at the post-secondary level (Boulton, 2014; Chaudhuri & Cabau, 2017; Cleveland, 2018; Herner-Patnode & Lee, 2009; Hopper et al., 2018; Marinho et al., 2021; Pelliccione & Dixon, 2008; Roberts et al., 2016; Wicks & Lumpe, 2015; Yanti et al., 2018) and have uncovered many uses and benefits from integrating ePs into education. The hope in many school districts is that by implementing e-Portfolios in younger grade levels, we can capitalize on their affordances at an earlier time in children's school careers fostering better self-reflection, more holistic assessment practices, more meaningful and timely communication with parents, and also creating a long-lasting continuum of student work. My thesis looks to investigate if the benefits seen at the post-secondary level transfer to younger learners.

1.2 Study Background

My study took place in British Columbia (B.C.) on the unceded traditional territories of the First Nation's people. In this province, a redesigned curriculum was introduced in 2016. According to the Province's curriculum website, one of the motivations behind the new design was the "technology-rich world" students are being prepared for "where communication is instant and information is immediately accessible" (BC's Curriculum: Education for the 21st Century, n.d.). Prior to the redevelopment, the curriculum centred on prescribed learning outcomes from distinct subject areas. One of the main rationales driving this change was to create a new, more cross-curricular and integrated curriculum that would encourage more connections between different subject areas while also encouraging a fluid and more meaningful approach to assessment. The "Education for the 21st Century" section of B.C.'s curriculum website states that the new curriculum must be "learner-centred and flexible and maintain a focus on literacy and numeracy, while supporting deeper learning through concept- based and competency-driven approaches" (BC's Curriculum: Education for the 21st Century, n.d.). This new focus brought with it new technology to assist teachers in adapting their practice to be more in-line with the changing landscape of the digital world school is preparing students for.

One way that school districts in British Columbia are encouraging teachers to change their practice to align with the new curriculum is to offer the use of electronic portfolios. My study was performed in a school district where, beginning in 2016 (the same year the redesigned curriculum was released), every learner was provided with an e-Portfolio that is active for the duration of a student's time in school from kindergarten until grade 12 (K-12). The district website describes how the shift away from "reporting" towards Communicating Student Learning (CSL) is linked to the new curriculum. It reads, "BC's redesigned curriculum is

transforming the way we teach and assess our students. As a result, we are beginning to shift from reporting to communicating student learning" (*¹ School District: Assessment and Communicating Learning, n.d.). It goes on further to describe the role that e-Portfolios play stating that "Communicating Student Learning (CSL) includes a wide variety of methods in which teachers and students can share students' learning" and that these "may include timely and specific descriptions of learning through e-portfolios, learning check-ins, summaries, and/or conferences" (* School District: Assessment and Communicating Learning, n.d.).

In a page only accessible to teachers in the district, the benefits of using an e-Portfolio to document student learning are outlined. The benefits provided include: "multiple ways to document work; ability to capture the process; seamless communication between students/parents/teachers; and formative assessment" (* School District: Integrating Technology for Teachers, n.d.). While the district is moving towards changing their reporting format to CSL, it is not yet mandatory for teachers to use e-Portfolios and they are able to opt in or out of the reporting pilot.

1.2.1 Reporting Pilot

Beginning in the 2018-2019 school year, fourteen school districts (including the one in my study) began participation in a reporting pilot that aimed to move away from traditional "reporting" towards "communicating" student learning. In B.C., the traditional method of reporting has included three report cards which provided written descriptive feedback and some form of assessment as to where the student was at in each subject (K-3 had a 4-point scale indicating to what degree they were meeting commonly held expectations of their grade and

¹ The name of the school district has been removed to preserve the anonymity of the study. References only provided to the supervisory committee and are not included in the reference list.

grades 4-12 received letter grades A-C-). In the traditional method, teachers were also required to host two parent-teacher conferences at pre-determined times in the year. According to the government of British Columbia's curriculum website, the reporting pilot "was created to support new approaches to reporting, which included a move from event-style report cards to more timely and flexible communication with parents; a replacement of letter grades with a strength-based four-point provincial proficiency scale and descriptive feedback; and greater emphasis on student reflection and self-assessment of the Core Competencies to increase student engagement and ownership" (* School District: K-9 Reporting Policy Pilot in *, n.d.). Figure 1 shows the 4-point proficiency scale that is being used in the pilot and largely communicated via the e-Portfolios.



Figure 1 Proficiency Scale used as a part of reporting pilot (British Columbia Ministry of Education, 2019, p.6)

Each district that is participating in the reporting pilot is responsible for deciding how student learning is communicated to parents from within the guidelines that the government has developed. One of the suggested methods for communicating progress and assessments to parents is through the use of students' e-Portfolios.

1.2.2 e-Portfolios and Scholantis

There have been many benefits outlined to the use of digital tools to create portfolios (e-Portfolios). Hopper et al (2018) state that: "digital tools can allow the eP to offer multiple forms of assessment that documents: (a) attainment of standards (accreditation portfolio); (b) digital stories of deep learning (a learning or process portfolio); and (c) digital resumes to highlight competence (a showcase of best works/marketing/employment portfolio)" (2018, p. 2-3).

The platform used in in my study was created specifically for the district and was developed by the software company Scholantis. This e-portfolio platform is an integrated system where teachers can access their email as well as HR information (T4s, job postings and applications, sick leave applications), staff room discussion boards, district-based sites, shared documents, and also student e-Portfolios. For the purpose of the study, I will only be looking at the portion of Scholantis that houses the student e-Portfolios and the functions of the platform that allow teachers report on, document, assess, and showcase student work while also communicating with parents. Figure 2 shows the parent view when you log into your child's account. There is an area beside the profile picture where students can say something about themselves to personalize the page (in this case left blank), the tags below it can be clicked on to narrow your search for specific posts. Below the tags, you can scroll through and click on the posts you would like to see which are ordered chronologically with the newest posts at the top left. Parents, students, and teachers can use the comment feature to discuss and celebrate progress. The comment feature can also be used for student self-assessment and reflection.



Figure 2 Example parent view of e-Portfolio

Posts can contain pictures, video clips, audio clips, documents and/or text. The e-Portfolios can also be used for a variety of purposes such as to show parents pictures of events/activities, to provide formative and summative assessment evidence, and to document progress such as reading improvements throughout the year. It is also possible for teachers who did not participate in the reporting pilot to use the e-Portfolios to compliment to their traditional report cards. Figure 3 shows a summative assessment with a highlighted proficiency scale for a grade 5 student. The same student's work is displayed in the next two figures which show a formative post (Figure 4) and an example of student self-reflection (Figure 5).



Figure 3 Summative assessment post with proficiency scale



Figure 4 Formative assessment post



Figure 5 Student reflection on formative post

In the student and teacher views you can also see other tabs that help navigate the platform. Each teacher can choose which features they want to include depending on the needs/age of their students/classes (Figure 6). The optional features include: a home page where general class information can be housed; an assignments tab where teachers can post assignments for students to submit electronically; a student list to access student information; a gallery to post class pictures; student and teacher blogs; class discussion board; the e-Portfolios; and a shared document area.

Home Assignments Student List Gallery Blog Discussion Portfolios Shared Documents Figure 6 Teacher view of Scholantis features by tab

1.2.3 Context of the Study

The context of the study was unique in that it was carried out in the 2019/2020 school year after the onset of the global Covid-19 pandemic. After beginning the 2019 school year under regular circumstances and completing two-thirds of their teaching in classrooms, the sudden onset of the Covid-19 pandemic effectively shut down in-person learning for March-June 2020 which made it necessary for teachers to teach the remaining third of the year using digital platforms and resources. This study was conducted after the school year had ended and therefore included questions for teachers about how the pandemic affected their use of the e-Portfolio platform. Some teachers who had chosen traditional reporting switched to using e-Portfolios after the onset of Covid-19, for example. Many of these teachers had very little time to learn the new system before they were expected to use it (1-2 weeks).

Though the situation surrounding the global pandemic was overall not a benefit to the study, the necessity to learn many new technologies and use new digital tools as a way to cope with changed work demands likely compelled teachers to gain a wider knowledge-base about e-Portfolio system. Many teachers who had not looked at the system before began using it when schools were shut down and brought that knowledge to the study.

1.3 Statement of Problem

I have observed technology being integrated into teachers' practice and thereby students' learning journeys at younger grade levels. Electronic portfolios are increasing in popularity and are being provided as an option to assess and report on student work at all ages. Many studies investigating the use of electronic portfolios have been conducted at the post-secondary level, especially in teacher education and nursing programs (Boulton, 2014; Chaudhuri & Cabau, 2017; Cleveland, 2018; Herner-Patnode & Lee, 2009; Hopper et al., 2018; Pelliccione & Dixon, 2008; Roberts et al., 2016; Wicks & Lumpe, 2015; Yanti et al., 2018). However, there are currently very few studies involving the use of e-Portfolios in schools with younger students, specifically in kindergarten to grade 7. Without studies at the elementary level, it is difficult to effectively predict if the positive outcomes and benefits seen at the post-secondary level are transferable or even exist in the lower grades. It is also difficult for school districts and teacher education programs to guide teachers in using e-Portfolios to assess, showcase, document, and report on student progress without empirical evidence as to the effectiveness and benefits of using electronic portfolios. Given that e-Portfolios are being used more frequently in a variety of settings and can house valuable data on student work, it is important to examine the use of these portfolios at the elementary level.

1.4 Study Purpose

The purpose of my study was to investigate the use of electronic portfolios at the elementary school level with a specific focus on teachers' perceptions of their use. I was also interested in understanding what the advantages and disadvantages of using electronic portfolios were according to teachers, and how their use was shifting teacher practice and pedagogy, if at all.

1.5 Research Questions

The questions my study looked to illuminate are: (a) what do teachers perceive as the advantages and disadvantages of using e-Portfolios; (b) if teachers at the elementary level are using e-Portfolios, how and why are they being used and if they are not, why not; (c) for those using e-Portfolios, what pedagogical shifts (if any) did they make because they adopted this system?

1.6 Significance and Outcomes

It is my hope that this study will provide insight into the use of electronic portfolios at the elementary school level. This information has the potential to not only help shape the pedagogy surrounding the use of ePs but also to inform school districts and teachers themselves about the positive and negative aspects of these digital platforms so that they can make informed decisions about implementing them. It is also a hope that the study will add to the literature on the different forms of assessment that are possible when using ePs and how they can be used to increase self-reflection and self-assessment in student's learning journeys.

I also hope to uncover areas for further research into e-Portfolios as their popularity has increased in younger years without age-appropriate research as a guide. As noted by Chaudhuri and Cabau (2017), in the changing landscape of education "where a premium is placed on the acquisition of twenty-first century skills during personal learning journeys, and where learning can take manifold forms and be demonstrated in manifold ways, e-portfolios are taking on a new salience" (p. vi). What this means is that research into the use, effectiveness, and best practices of e-Portfolio implementation is important now more than ever.

1.6 Definition of Terms

Electronic Portfolio (e-Portfolio; eP): e-Portfolios are an electronic suppository for evidence of student learning, growth, and assessment. They can be teacher or student created/directed.

Technology: For the purposes of this study, technology refers to digital tools that are used in the classroom such as the e-Portfolios themselves as well as the devices that enable their use such as iPads, desktop computers, and phones. It also refers to other apps and tools that allow students to express themselves in an online environment.

Digital skills: Digital skills are the skills that allow students to access technology and communicate clearly and effectively in an online environment.

Reporting Pilot: A Province-wide pilot to support an update to the kindergarten to grade 9 reporting policy. The project aims to provide more responsive, strengths-based, timely assessment and communication to parents about their child's learning. Teachers participating in the pilot are responsible for communicating with parents five times a year but have flexibility in how they do so. They must provide four "point of progress" posts and one year-end summary report. For the points of progress teachers must use the newly developed 4-point proficiency scale (Figure 1).

Traditional Reporting: For the purposes of this study, the reporting method that has conventionally been used in B.C. schools will be called "traditional reporting". Those who chose traditional reporting over the reporting pilot are required to provide three written report cards and host two parent conferences at pre-determined times in the year.

Multimodality: In education, multimodality typically refers to the combination of different modes of communication in order to express learning. Examples of different modes that could be combined to express learning include: text, spoken words, images, sounds, gestures.

Pedagogy: Pedagogy is a term that refers to the theoretical underpinning of teaching. The pedagogy of a particular teacher is typically reflected in their classroom practices. For example, a teacher who believes that children with special educational needs should be included in all classroom activities through adapting classroom materials could be said to be following the pedagogy of inclusive learning environments.

1.7 Summary

This chapter presented the background of my study including introducing the current assessment and reporting reform in the province where the study took place. The reporting pilot, an integral aspect of the implementation of e-Portfolios, was described. It also provided insight into the context and study purpose as well as a section where the problem statement was outlined. Subsequently, the research questions that the study examined were provided. Chapter 2 outlines the theoretical framework that informed the study and details the current research in the field of education with regards to the use of e-Portfolios.

Chapter 2: Theoretical Framework and Literature Review

2.1 Introduction

This chapter outlines the theoretical underpinnings of the study and provides a summary of the current literature regarding the use of e-Portfolios in education. This study drew on a selection of related research and theoretical perspectives, the majority of which stem from sociocultural theories of education. A sociocultural perspective sees the actions and thinking processes of individuals as the product of complex social and psychological interactions. According to Wertsch (1998), "the task of sociocultural analysis is to understand the relationship between human action, including mental functioning, on the one hand, and cultural, institutional, and historical context on the other" (p. 179). In his view, we cannot look at only people when analysing or describing human behaviour and need to consider the complex interactions that influence their behaviour as individuals. It was important to my research to be able to look at the ways teachers interacted with e-Portfolios (an educational tool) in a non-reductionist fashion, considering the constraints and affordances of the system as well as the sociocultural context of the teachers in my study. For this reason, I chose Wertsch's framework entitled "mediated action" (1998) to analyse the data in my study.

Underlying the research is the importance of formative assessment to teaching and learning and as such, this chapter also outlines the research of Black and Wiliam and others into the benefits of assessment *for* learning. Lastly, this section provides a review of the current literature surrounding the use of e-Portfolios in education at a variety of age levels and across a range of disciplines. It outlines the themes that emerged regarding e-Portfolios and self-reflection as well as discussion of technology as a tool.

2.2 Theoretical Framework

For the purposes of this study, "mediated action" (Wertsch, 1998) was employed as a unit of analysis to look at the way teachers used e-Portfolios as a tool to carry out the tasks associated with their profession (communicating learning to parents, documenting and assessing student work, giving feedback, reporting on progress). Mediated action is a framework developed by James Wertsch and discussed at length in his book, Mind as Action (1998). His work stems from a sociocultural perspective on technologies and learning, drawing on influences from Vygotsky (1981) and Burke (1966) who were interested in the ways humans interact with their environments and what could be observed/reported by looking at complex human interactions. According to Wertsch (1998), "the task of sociocultural analysis is to understand how mental functioning is related to cultural, institutional and historical context" (p. 3). This framework is important to the study because when teachers decide to use assessment and reporting measures, they are choosing these from within a social, cultural and historical context. In this study, the teachers themselves were the "agents" under examination. An agent is a person acting within a sociocultural setting. It was critically important to look at how and why teachers (agents) were choosing to use traditional report cards and/or e-portfolios (mediational means/cultural tools) in their practice as a part of power structures that were existent in their contexts. For Wertsch, "the essence of examining agent and cultural tools in mediated action is to examine them as they interact" (p. 25).

Also highlighted in Wertsch is the importance of looking at the affordances and constraints of the cultural tools we use as well as the power structures that they operate within. For example, he discusses the QWERTY keyboard as an illustration of a mediational means that was developed for different purposes than it is currently used for. According to Wertsch (1998),

the QWERTY keyboard was developed to slow down the typing process because the keys on old typewriters would stick if the user typed too fast. This keyboard is still the most widely used keyboard today in a time when we no longer have this problem. The key configuration is also still used although many people spend their whole day on computers and have a need/desire to type as fast as possible. Similarly, mediational means and structures that teachers use are often taken for granted regardless of where they originated from. For example, issuing year-end report cards has for a long time been standard practice despite very few teachers being aware of how and why that mediational means was adopted in the first place.

Understanding that the origins of mediational means are not always congruent with how they are being used today is important in the context of the study because often the software for e-Portfolio platforms is developed and implemented before knowing what teachers will use it for. In the case of the digital eP platforms that are built for elementary school use, there is almost no research in the area, making it even more critical to examine how they are developed. In the case of my study, the results of developing a product before knowing how it will be used resulted in limitations to the final product. What resulted were constraints imposed on the users (agents) that, in some cases, caused them to continue to use the platform as more of an extension of report cards rather than an innovative system. In this sense, the structure of a mediational means influences the user (agent) as they are using it. For example, even as report cards are discontinued in many districts in B.C., teachers are still using the same frame of reference for assessment. The e-Portfolio platform in my study, for example, is laid out in a manner that mimics the look of paper assignments in chronological order (Figure 7). The layout indicates that although this system was developed as a new practice, the old mediational means of paper

schoolwork predominated the design of the system. It is possible that a teacher could use this new system as an extension of old practice and not transform their pedagogy in any way.



Figure 7 Layout of e-Portfolio posts

Another example that Wertsch (1998) used to illustrate the power mediational means have in shaping our thinking was in his discussion of historical narratives in the United States. He noted that the cultural tool of the historical narrative was such an influential format for presenting US history, that even when students resisted the content they had learned about American history, they still organized their recounts of it in a "quest for freedom" narrative form. Wertsch notes, "the process of producing texts about the origins of the United States—texts that might otherwise be considered to be products of our own efforts—involves at least two voices: the voice of the cultural tool (the quest for freedom narrative in this case) and the voice of the agent producing utterances in a unique speech situation" (p. 99). In the same way, the "voice" of the report card and other forms of assessment influence the actions of teachers and need to be considered when looking at their use of e-Portfolios, especially when the system was created in a format that might perpetuate former ways of thinking about assessment and learning. Wertsch (1998) notes that "[1]ike any other cultural tool, these constructs constrain as well as enable the process, and for this very reason they must be viewed as being provisional and in need of continual revision and refinement" (p. 183-184). It was important to look at the e-Portfolio as a construct that shaped as well as enabled human action in the study and to consider what new affordances they could offer.

2.3 Formative assessment

Changes to curriculum and pedagogy can also lead to changes in assessment practices concurrently. One of the main benefits seen in the use of e-Portfolios in education is in their ability to allow teachers to shift away from a focus on the summative assessments typically required to write report cards. According to Hooker (2019), "this form of assessment can be viewed as a deficit model which provides summative information in order to identify gaps in children's development" (p. 377). Similarly, Black and Wiliam (1998) state that when "the grading function is over-emphasized and the learning function under-emphasized; there is a tendency to use normative rather than a criterion approach, which emphasizes competition between pupils rather than personal improvement" (p. 18). The mindset behind summative assessments has typically been to provide a "grade" and compare students against each other and does not encourage the view of learning as a continual process of growth with no endpoint. According to Hooker (2019) "an assessment activity can help learning if it provides information that teachers and their students can use as feedback in assessing themselves and one another and in modifying the teaching and learning activities in which they are engaged" (p. 377). It is when the teaching and learning is modified based on ongoing assessment that it becomes formative.

Many studies showed that e-Portfolios have the potential to shift teaching and assessment towards more meaningful practice and pointed to their ability to include the student in a way that

gave them more ownership over their learning (Duncan-Pitt & Sutherland, 2005; Hopper et al., 2018; Meyer et al., 2010; Pelliccione & Dixon, 2008). This type of teaching practice is often referred to as "constructivist" which is associated with the work of Piaget (1896-1980) and/or "constructionist" (Papert, 1981) in that it involves the learner in the construction of their own learning. When viewed through a "constructivist" lens, many of the more traditional assessments that have been used in education (tests, drills, expository writing, summative assessments) cause a shift away from learning that is co-constructed with the student. Relying on these summative assessments predominantly lends itself to a more teacher-centred form of teaching where knowledge is seen as being passed from teacher to student with assessment serving the purpose of elucidating how much information has been absorbed and learned. These summative assessments have typically favoured a certain type of learner and further privileged those who came to school with similar values to the teacher. They do not value the diversity of learners in schools because they filter knowledge through a singular perspective, limiting the success of many students. Roberts et al. (2016) state that "e-Portfolios have moved beyond the traditional purpose of assessment to one that more deeply facilitates and enhances student learning" (p. 22). Hopper et al. (2018) found that students when students used ePs they were engaged in a selfreflexive practice because they did not see themselves as being assessed against a certain set of pre-determined standards but rather saw that they were engaged in a process of trying to improve their work over time. They noted that this type of assessment for learning with "multiple feedback loops" between themselves, peers, and teachers, "made them take risks" because they weren't being compared and ranked but rather encouraged to change and grow through feedback rather than being stifled by feedback that was "finding fault" and "things to fix" (Hopper et al., 2018, p. 11).

Many studies on the use of e-Portfolios highlighted formative assessment (assessment for learning) as a benefit to their usage (Boulton, 2014; Barrett, 2007; Cleveland, 2018; Hopper et al., 2018; Hooker, 2019; Marinho et al., 2021; Roberts et al., 2016; Wall et al., 2006; Wicks & Lumpe, 2015). The influential research by Black and Wiliam (1998) on the benefits of formative assessment was cited by many. Their review looked at 250 academic articles and identified the benefits of formative assessment to students' growth. They describe formative assessment as "encompassing all those activities undertaken by teachers, and/or by their students, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged" (Black & Wiliam, 1998, p. 7-8). The use of e-Portfolios in the district in my study is part of a shift away from traditional summative assessments that are performed at set times of the year and towards assessment and feedback that is on an ongoing basis. e-Portfolios were chosen to aid this transition, in part, due to the fact that the use of the digital, easily editable platform, allows students to post and change their work while receiving feedback more easily. According to Black and Wiliam (1998), "studies show firm evidence that innovations designed to strengthen the frequent feedback that students receive about their learning yield substantial learning gains" (p. 7). Hopper et al. (2018) felt that the use of the digital e-Portfolio can be understood as "a complex emergent process, where the various themes are deeply interconnected to inform a teaching philosophy of ongoing learning rather than final assessment" (p. 11). Formative assessment, then, can be said to deepen learning (Wicks and Lumpe, 2015).

2.4 Electronic Portfolios

Due to their multitude of uses, electronic portfolios are difficult to define. As Barrett (2007) notes, "what makes research around portfolios in education complicated is "the fact that

there are many purposes for such portfolios: there are portfolios that center around learning, assessment, employment, marketing, and showcasing best work" (p. 436). The traditional concept of a portfolio has been that of a place where artists and other individuals house a collection of their best work for showcasing to others. In education, writing and other types of portfolios have gained popularity due to their ability to foster formative assessment because students engage in working and re-working their own writing over time in a process that encourages reflective thinking. An electronic portfolio, therefore, can be seen as an extension of this concept: a folio of work that exists in the digital realm, one that can be edited, changed, and reflected upon easily over time, holding evidence of learning from many different subjects in one place. Many scholars view the use of an electronic portfolio in education as more powerful and transformative than its paper counterpart in that it could use the affordances of technology to broaden the depth of learning that occurs while compiling it. To many, a portfolio is no longer just a container that students use to hold their best work, but an interactive medium with the potential to transform learning and the pedagogy that drives it (Abrami & Barrett, 2005; Cambridge et al., 2009; Hopper et al., 2018; Marinho et al., 2021; Roberts et al., 2016).

For Kotsopoulos (2015), an electronic portfolio is seen as "a collection of artefacts (e.g. documents, pictures, videos, voice recordings) in a digital setting whereby the student's digital activities formulate evidence over time of learning. The eP is both a tool for digitally collecting and showcasing artefacts while at the same time it is capable of supporting pedagogical processes and assessment (Abrami & Barrett, 2005; Cambridge et al., 2009)" (p. 628). In this sense, ePs are seen as shifting the focus of the portfolio away from a "folder" approach that simply contains artefacts, to an entity that shapes the learner and the process of learning while using it.

Hopper et al. (2018) explain the potential that e-Portfolios hold. They outlined the potential for ePs to move out of a "positivist" ideology whereby e-Portfolios are used to measure students' achievement against a fixed set of prescribed outcomes and into a more "constructivist" ideology where meaning is co-constructed by the learner who is given more agency by being involved in the posting of work and self-reflection leading to more formative assessment. They take it a step further, noting that ePs have the potential to move into a "connectivist" perspective where "the interaction amongst learners that collaborate around a common intent, within a complex system, and are transformed through a network of interactions and feedback loops on actions" (p. 4) is the model of learning. According to Hopper et al. (2018) the digital eP must be understood as "a complex emergent process, where the various themes are deeply interconnected to inform a teaching philosophy of ongoing learning rather than final assessment" (p. 11). In this case, the potential of the eP is seen in its ability to connect different topics, assessment practices, individuals, teachers, students, and parents through technology in a self-reflexive and constantly evolving process of learning.

Duncan-Pitt and Sutherland (2005) have a similar viewpoint on the potential of e-Portfolios:

So, whilst it remains somewhat abstract, our conception of an ePortfolio is of a system that belongs to the learner, not the institution; populated by the learner not their examiner; primarily concerned with supporting learning not assessment; for life-long and life-wide learning not a single episode or a single course; that allows learners to present multiple stories of learning rather than just a simple aggregation of competencies; and, importantly, where access to them is controlled by the learner who is able to invite feedback to support personal growth and understanding. (p. 70)

This view of ePs supports a constructivist/connectivist model where the learner has the power to construct meaning and build understanding while connecting to others for feedback and support.

Besides having the affordance of involving the student in their own learning, the current literature underlines a myriad of other benefits that arise when e-Portfolios are used in the classroom. The majority of currently available research studies surrounding the use of e-Portfolios in education focus on how and why they are used in post-secondary programs (Boulton, 2014; Chaudhuri & Cabau, 2017; Cleveland, 2018; Herner-Patnode & Lee, 2009; Hopper et al., 2018; Marinho et al., 2021; Pelliccione & Dixon, 2008; Roberts et al., 2016; Wicks & Lumpe, 2015; Yanti et al., 2018).

There have also been several studies that focus on educational e-Portfolios in secondary school (Barrett, 2007; Blair & Godsall, 2006; Chang et al., 2016; Karlin et al., 2016; Yanti et al., 2018). Barrett (2007) notes, "as portfolios began to be incorporated into the K-12 classrooms, the emphasis was more on portfolios as a showcase for learning, as a counterpoint to traditional forms of assessment, or as illumination of capabilities not covered by standardized testing: the emphasis was on the *portfolio*" (p. 436-437). It is the intention of my study to shift the focus away from portfolios as a framework and to look at the ways that e-Portfolios can support learner growth, enhance teacher pedagogy, and provide digital opportunities to students and teachers that deepen learning.

While much of the research into the use of e-Portfolios has occurred in the postsecondary realm of education with older students, there is also a small body of research developing in Early Childhood Education (ECE) (Beaumont-Bates, 2017; Higgins & Cherrington, 2017; Hooker, 2019; McFadden & Thomas, 2016). These settings typically involve children who are 3-5 years-old and are also referred to as "preschools". A study by Hooker

(2019) focussed on the use of e-Portfolios in New Zealand preschools and found benefits to formative assessment practices. They also noted the positive impact that parent access to e-Portfolios provided for home-school connection.

Though the limited research in the field is part of the reason for my study, there have been some studies that explore the use of e-Portfolios in elementary school (Irvine and Barlow, 1998; Kotsopoulos et al, 2014; McLeod & Vasinda, 2009; Meyer et al., 2010; Nicolaidou, 2013; Zafiropoulou & Darra, 2019). The studies by McLeod and Vasinda, and Irvine and Barlow both involved the use of portfolio posts with minimal technology in one subject area. Unlike the platform in my study, they were not using e-Portfolios to perform a number of tasks. Meyer et al. (2010) looked at the use of an e-Portfolio system called ePearl in a primary school setting in Canada. The study encompassed 32 teachers and 388 students in grades 4-6 across three Canadian provinces. It looked at the use of e-Portfolio software with the specific aim of increasing self-regulated learning and measured student literacy gains based on the level of implementation in their classroom. The study is different to mine in that the eP platform was used with the specific aim of increasing self-regulated learning and its success was measured, in part, on the literacy gains made after its use. However, the authors note that, "the underlying mechanisms responsible for the change in students' literacy and self-regulation skills are not definitively known" (Meyer et al., 2010, p. 89). The limitation to this study was that it did not examine e-Portfolios as an integrated system for communicating student learning, assessment, documenting work, and self-reflection. Another study by Zafiropoulou and Darra (2019) looked at using e-Portfolios to store scanned copies of paper test materials for one subject area (Greek language education) at the elementary school level (7-8 year olds). The results of this research showed higher test scores for students who used the ePs than for those who used paper

portfolios. Again, the study was limited to a small area of use. My study was born out of a lack of research into the **use** of e-Portfolios as a system for documenting, assessing, self-reflecting, and communicating student learning to parents across all school subjects.

2.5 Self-Reflection

A facet of formative assessment that is frequently highlighted as important to student learning is self-reflection. Many scholars have found that e-Portfolios have the potential to increase the amount of self-reflection done by students (Barrett, 2007; Cote & Emmett, 2015; Garthwait & Verrill 2013; Hopper et al., 2018; Karlin et al., 2016; Marinho et al., 2021; McLeod & Vasinda, 2008; Meyer et al., 2010; Nicolaidou, 2013; Wicks & Lumpe, 2015). Hopper et al. (2018) found that students were engaged in a self-reflexive practice when using e-Portfolios because they did not see themselves as being assessed against a certain set of pre-determined standards but rather saw that they were engaged in a process of trying to improve their own work over time. This benefit is cited other places in the literature as well. Garthwait and Verrill (2003) found that greater reflective learning was achieved through ePs because "at the end of the unit, students could review the webs and correct misunderstandings, adding new understandings in green circles" (p. 27). In this case, the ePs led to formative assessment whereby students could learn and make changes to their work as they went rather than receiving a final grade as a symbol of the end of a unit and were able also able to reflect on that learning. Wicks and Lumpe (2015) also described the potential for ePs to impact self-reflection and deepen learning. They were looking at the benefits of blogging (an option that is present on the Scholantis e-Portfolios). They found that "blogging promotes double loop learning (Palloff & Pratt, 2007) where students are able to reflect on the value of organizing their learning through the use of a blog as they reflect about what they are learning" (p. 225).

Another benefit to e-Portfolios that was cited was that the digital platform allowed a greater number of people to be able to access student learning. Nicolaidou (2013) noted that self-reflection, feedback and peer-assessment increased using e-Portfolios because they allowed "easier, even instant, access to students' work by a wider audience including peers, teachers, parents and others" (p. 405). While the study could not prove a definitive correlation between the improvements students made in their writing and the use of e-Portfolios, they did find that students' ability to peer-assess and make changes to their own work improved because of the format. Their ability to give more detailed and meaningful feedback increased as a result of using ePs to view the work of their peers.

2.6 Technology as a tool

In the literature, the use of a digital platform and the technology associated with it were seen for the most part as an affordance of electronic portfolios. The strengths of an e-Portfolio are that students are able to edit, reflect, change, and share their schoolwork and evidence of learning more easily than with traditional pen and paper activities. Learners are also able to use different modes of expression including: audio and video recordings; blogs; stop-motion animation; digital stories; presentations that combine images, sound and text; as well as have the ability to easily upload written documents that can be edited instantly because they are in digital form. According to Herrington et al. (2010) the learners "themselves function as designers using media and technology as tools for analysing the world, accessing and interpreting information, organising their personal knowledge, and representing what they know to others" (p. 8) when involved in the process of creating e-Portfolios. Viewing students as designers supports a view of ePs as a constructivist educational tool. However, as Darvin (2015) notes there is still a necessity to ensure that students are learning digital skills and having direct instruction in digital literacy as

we encourage them to use these new systems. They state that, "as learners develop a digital mindset, they also need to develop specific literacies that can allow them to navigate this new social landscape" (Darvin, 2015, p. 526). The digital competence of students is a facet of e-Portfolio use that was explored in my research through the interview questions.

The notion that students need new literacies and to be taught them explicitly is supported other places in the research where it was found that students had fewer digital skills than their teachers expected them to have and fewer skills than were necessary to successfully use the system. In some studies, the technological aspects of the system were found to be a barrier to their use (Kotsopoulos et al., 2015; Licastro, 2017; Roberts et al., 2016). For example, in Licastro's (2017) research which looked at how prepared US college students are to compose in online spaces, there were many issues that arose unexpectedly in regard to using technology. One issue was that while many students spent a lot of time online, what they were doing there (Facebook, Twitter, Tumblr, Instagram, Reddit) was not building the digital skills they needed to compose in online spaces. It was also discovered that many professors "wrongly assume that so called 'millennials' have innate digital literacy skills", that many college students lacked "confidence using digital tools" and "in some cases [there was] a fear of technology across study participants" (Licastro, 2017, p. 57). One recommendation from the study was that students needed "explicit instruction and support" and that "many students did not feel comfortable using new tools or implementing digital literacy practices in their coursework...unless explicit instruction was provided" (Licastro, 2017, p. 59). So, while it seems that the use of technology can support more meaningful assessment practices, better self-reflection on the part of students, and constructivist pedagogy, it is important that time is built into learning for students to be given direct instructions on these new technologies. This is further compounded by the fact that

many teachers lack digital skills. If the research states a need to directly teach these skills to students, teachers must first be given these skills themselves.

Licastro (2017) also uncovered that students needed to be told the specific digital outcomes that they were expected to be learning and demonstrating in order for them to use ePs successfully. The study found that students needed to be assessed on their skills with technology, as well as on the content they produced, for them to develop proficiency with the digital aspects. They stated that the evaluation of ePs "should also address web-based skills" (Licastro, 2017, p. 56).

Another issue highlighted in the research is that the technology developed for use with ePs is, at times, not being used to its full capacity with the eP being used as a digital container for traditional work. In the study that Nicolaidou (2013) undertook, many of the digital capabilities of the e-Portfolios were not used at all. The study, which looked at the use of e-Portfolios to support peer feedback in student writing, had students using a pencil and paper to compose their work and then post it online to be viewed by others. The use of the eP, in this case, supported reflection and peer-assessment, which have been noted by many scholars as positive elements of ePs, but used very few of the affordances of the digital medium. While it was clear that the technological component made it easier to provide feedback, much of the work was still done on paper. It was further revealed that the digital affordances were not being used to their potential as part of each's student's "mark" was derived from how neat their handwriting was. Pedagogically, the teacher in the study was encouraging formative assessment that used peerediting and self-reflection, however, they were still using handwriting as a summative objective for their students, showing that the adoption of the technology was only done in part. As Williams (2007) points out, even the use of the name "portfolio" encourages us to see these
online spaces as an extension of the paper equivalent because portfolios were files that held paper (p. 502). This points to a need to develop digital competence while also shifting pedagogy as ePs are implemented in schools, rather than having them as a digital replacement for traditional assessment measures.

The aim of implementing e-Portfolios, according to much of the research, should be what Jonassen and Reeves (1996) refer to as "learning with technology" instead of "learning from" technology. In their estimation, technology should be used as a "cognitive tool" that helps students think and express themselves. This aligns with Wertsch's (1998) theoretical framework where he notes that cultural tools are framing our thoughts in ways that allow them to take on parts of the cognitive load in tasks. When ePs are used as tools to facilitate student learning and create more opportunities for expression through their digital capabilities, they can be used to deepen pedagogy and enhance assessment practices, self-reflection, and student learning.

2.7 Summary

This literature scan shows that there are significant benefits to the use of e-Portfolios in secondary and post-secondary education. The use of ePs leads to more formative assessment, student self-reflection, and has the potential to lead to the development of digital skills. Many questions remain as to the efficacy of e-Portfolios in the K-12 system, especially from kindergarten to grade 7 (elementary school). My research was designed to attempt to answer some of these questions with regards to their use in the elementary school context. The literature points to a hope that e-Portfolios can create a shift that is making assessment more meaningful, is encouraging self-reflection and is facilitating the development of digital skills while fostering more ways for students to imagine their identities as learners. Chapter 3 explains the

methodology that was designed for my research study that aims to uncover if some of the benefits seen with older learners are replicated in the younger years.

Chapter 3: Research Design and Methodology

3.1 Introduction

A qualitative research study was designed to answer the following research questions: (a) what do teachers perceive as the advantages and disadvantages of using e-Portfolios; (b) if teachers at the elementary level are using e-Portfolios, how and why are they being used and if they are not, why not; (c) for those using e-Portfolios, what pedagogical shifts (if any) did they make as a result of adopting this system?

This chapter describes the research design and methodology for my study. I begin by outlining the research methods chosen followed by a discussion of the research context and my background as a researcher. Next, I shift focus to how participants were recruited and describe the participants. Finally, I explain the data collection and analysis processes followed by a description of the potential limitations of my study.

3.2 Research Methods

Digital portfolios are being implemented in an increasing number of elementary schools in a wide variety of school districts across B.C. Teaching in a district where every child is given an eP that follows them through their K-12 school career caused me be curious about the research behind their use in younger grades. As Merriam and Tisdell (2016) note, "having an interest in knowing more about one's practice, and indeed in *improving* one's practice, leads to researchable questions, some of which are best approached through a qualitative research design" (p. 1). Because ePs were being used increasingly at the elementary school level and because very little research had been conducted into this area, I decided to aim for a study that might help improve practice by informing teachers of their advantages and disadvantages. Lincoln (2013) describe research as "inquiring into, or investigating something in a systematic

manner" (p. 3). In the case of my study, the best way to investigate teachers' perceptions systematically was to ask them descriptive questions about their use of e-Portfolios. The descriptive nature of the information I was seeking was best-suited to a qualitative research study. According to Gay et al. (2012), "qualitative research is the collection, analysis, and interpretation of comprehensive narrative and visual (i.e., non-numerical) data to gain insights into a particular phenomenon of interest" (p. 7). The phenomenon of interest, in my case, was the use of electronic portfolios to assess, document, and communicate on student work at the elementary level. The perspective I was seeking was the perspective of the elementary teachers who both chose to use them and chose not to use them.

According to Gay et al. (2012) "the goal of qualitative research is to understand what is happening and why" (p. 395). The goal of my research was to determine how and why e-Portfolios were being implemented by teachers and if they were not, why not. As such, I was interested primarily with gathering data that would illuminate teachers' thoughts and opinions about their use. I chose to use a questionnaire as the preliminary source of data. A "questionnaire is a written collection of self-report questions to be answered by a selected group of participants" (Gay et al., 2012, p. 388). It was my hope that the questionnaire would be circulated widely and would encompass a large number of teachers in the district. As pointed out in the literature on qualitative research, "[o]ften researchers administer questionnaires and then conduct follow-up interviews with research participants who provided written feedback that warrants further investigation" (Gay et al., 2012, p. 389). After having collected responses via the questionnaire, I planned structured interviews to "explore and probe participants' responses to gather in-depth data about their experiences and feelings" which helped me examine their "attitudes, interests,

feelings, concerns, and values more easily than...through observation" (Gay et al., 2012, p. 386). It was also not possible to conduct observations due to the Covid-19 pandemic.

Though I was not undertaking action research, I found it helpful to employ Wolcott's strategy for action research (Figure 8) (Gay et al., 2012p. 394). As per their recommendation, I did very little talking during the interviews aside from asking the initial questions. I did not want to lead the interviewee towards any responses by inserting my own thoughts into the interview. The transcripts of the interview sessions reveal how little I talked aside from asking the initial questions as the interviewee's responses represented about 90% or more of the words on each page. Voice recording software ensured that what was said was recorded accurately and I began writing as soon as I had finished working through the data to ensure the information was fresh in my mind. I achieved the further five points by seeking feedback from my advisor, who I spoke to frequently and who revised several drafts of each chapter with me.

Talk a little, listen a lot.
Record accurately.
Begin writing early.
Let readers "see" for themselves.
Report fully.
Be candid.
Seek feedback.
Write accurately.

Figure 8 Wolcott's strategy for action research (Gay et al., 2012, p. 394).

Because I was looking at a specific tool (e-Portfolios) in a particular sociocultural setting and wanted to provide rich description to help inform the practice of teachers as they implemented ePs, I decided that I was the most important instrument in gathering data and interpreting it. Merriam and Tisdell (2016) note, qualitative research "focuses on meaning in context, requir[ing] a data collection instrument that is sensitive to underlying meaning when gathering and interpreting data," and that "humans are best suited for this task, especially because interviewing, observing, and analyzing are activities central to qualitative research" (p. 2). For these reasons, a general qualitative study was undertaken.

3.3 Research Context

As previously noted, the government of B.C., the province where the study took place, has recently redesigned the curriculum. The school district in the study has been participating in a pilot project to spur innovation in the way learning is communicated to students, parents, peers, and other teachers. One way they have done this is by making e-Portfolios available to all teachers and students. The study was designed to encompass the thoughts and opinions of any classroom teacher who taught at an elementary school in the district in 2019/2020. For the purposes of the study, teachers in specialist roles such as teacher-librarians, resource (special ed) teachers, English Language Learner (ELL teachers) and any other role that does not have the responsibility of teaching a specific grade group of learners for the duration of the year was excluded.

3.3.1 Researcher Background

I am a teacher in the district where my research was conducted. I began my teaching career in the United Kingdom (UK) directly after graduating from the teaching program. In the UK, I taught English Language Arts at a secondary school. At the time, in 2005, classroom teachers were using a far greater amount of technology in their teaching than what I had been exposed to in my practicum in B.C. that same year. The school I worked at in the UK was

equipped with an interactive whiteboard in every class. When I returned to B.C. to teach in secondary school, I noticed that the adoption, use, and integration of technology in the classroom was quite far behind where it was in the UK. There were very few projectors at the school where I taught that in 2010. This made me feel that I had a greater ease with integrating technology into my practice than many of my colleagues and sparked my curiosity over where technology and teaching were headed hand-in-hand. Currently, I work at an Elementary school that in 2021 is now installing a mounted projector into every classroom. This is a reality that was in place in the UK in 2005 already at the school where I taught. My interest in technology has been fostered since then and is one of the guiding factors behind my research.

My current role as an ELL/Resource teacher necessitates that I support an extremely diverse subsect of students in a variety of classes which allows me to see many different ways that technology is used in the classroom. As someone who is in a more supportive role, I am involved in supporting up to four or five different classes a day which gives me exposure to many different practices and pedagogical approaches. I am also a parent of two children who attend school in the district where I teach and I have had access to their e-Portfolios since 2016/17 when my youngest son's teacher began incorporating it into her practice informally.

In 2015, I completed a professional diploma in Teaching English as a Second Language (TESL) at the University of British Columbia. This has been integral to my beliefs around teaching and learning. It also has impacted and informed this research because during that degree I developed a perspective on human learning and interaction that is inextricable from the research I have conducted here. During that time at UBC, I developed a strong view towards seeing humans from a sociocultural perspective. When looking at any student, teacher, or person I interact with, I see a complex set of factors that have led them to their current viewpoint and/or

behaviour. My goal is not to change those perspectives or views but rather to understand that they are not innate. To me, it is vastly important to see our actions as resulting from a complex set of interactions, contexts and intersections, none of which should be taken for granted. This sociocultural perspective permeates everything I do and provides a basis from which to undertake my research.

3.3.2 Recruitment

After obtaining ethics approval from UBC, I was required to submit a research application to the district for approval to seek the opinions of classroom teachers on the use of e-Portfolios and traditional reporting in the district. Upon approval from the district, an invitation to participate in the research study was sent out to all elementary school Principals in August 2020 requesting that they forward the invitation to their staff members at their discretion. The district made it clear that Principals would ultimately decide whether or not to forward the email to their staff members and ask them to participate in the study. In this sense, the number of respondents could be greatly affected by the number of Principals who decided to forward the questionnaire details to their staff members. Another method for recruitment was a prompt at the end of the questionnaire asking teachers to forward the study details to anyone in the district who might be interested in participating ("snowball sampling"). I believe the number of respondents was greatly impacted by the Covid-19 pandemic for two reasons. Firstly, the questionnaire was largely circulated in September 2020 when school was newly reopening after the pandemic and teachers were required to return to in-person teaching. At the time, teachers were under an extreme amount of stress and potentially did not have the capacity or desire to add a questionnaire and/or interview to their workload. Secondly, a few principals contacted me to say that they regretfully would not be forwarding my questionnaire to their staff members because

they felt it would put undue pressure on them at a time when so much about their workday was uncertain and changing due to the pandemic. This caused me to leave the questionnaire open for an extra month (September and October 2020) and to delay the interviews until after the questionnaire had closed (November 2020).

3.4 Participants

A total of thirty-six elementary school teachers participated in the e-Portfolio questionnaire. Of these respondents, there was one teacher whose responses were excluded based on the fact that they were an "itinerant" teacher who travelled to different schools to teach a specialized subject area and were not a part of the group of teachers identified as eligible for the study: elementary classroom teachers. The responses of another three teachers were not included because they did not complete enough of the questionnaire to generate reliable data. That left thirty-one classroom teachers whose responses were analysed for the study. Of those who agreed to a more in-depth follow-up discussion, six responded to an email sent out stating that that they were available for an interview over zoom.

Of the thirty-one teachers in the study, twenty-five identified as female (80.65%), four male (12.90%), and 2 preferred not to answer (6.45%) (Figure 9). The high proportion of female teachers is not surprising given that the British Columbia Teacher's Federation (BCTF) reported that in 2016 72% of teachers in the workforce were female (BCTF: Teachers in British Columbia: a feminized workforce, 2018). Overall, the sample is relatively proportional to the number of female/male elementary school teachers in the profession provincially (questionnaire: 80.60%, Province: 72%).



Figure 9 Gender reported by respondents

Of the thirty-one questionnaire respondents, there were seventeen teachers who opted into the reporting pilot and the use e-Portfolios in September 2019 and fourteen who had chosen to use traditional reporting. Of the fourteen participants who chose traditional reporting at the beginning of the year, six (42.86%) decided to use the e-Portfolio system when the pandemic began and schools were shut down (March 2020) and eight (57.14%) chose to continue with traditional reporting.

The follow-up interviews consisted of two male and four female participants and of those, two had chosen traditional reports at the beginning of the year (2019) and four had chosen the reporting pilot. However, one participant who had chosen to use traditional reports had used e-Portfolios informally and spoke at length about them in their interview.

The average number of years of teaching for participants in the study was 11.7 years. For those who chose traditional reporting the average number of years of teaching was 16.4 years and for those who chose the pilot, their teaching professions averaged to 8.9 years.

3.5 Data Collection

My study was a general qualitative study and the data was collected between late August and November 2020. Although the study was conducted at the tail end of the summer and into a new school year, all the questions were about the previous 2019/2020 academic school year. The study consisted of a 36-question online questionnaire, developed with UBC's Qualtrics platform, about the use of e-Portfolios and the Scholantis platform in the district. A memo was sent from the district to all elementary principals asking them to use their discretion in deciding whether to circulate the questionnaire to their staff members.

The Covid-19 pandemic limited the number of respondents to the questionnaire which was indicated by the principals who emailed to tell me that they did not feel it was a good time to ask their staff to contribute to a research study when they were already under significant stress due to the pandemic. In talking to different teachers at the time, I quickly realized that they were overwhelmed with new health protocols, adaptations to their classroom environment and work day, as well as fear of potentially contracting Covid-19.

After the responses from the questionnaire were collected, I emailed those who indicated they were open to providing further information in an interview and four people agreed to be interviewed via Zoom. Two teachers preferred to conduct the interview in-person with social distancing and masks in place. Both types of interviews were recorded with permission from the participants. I then used transcription software, Otter.ai, to do convert the voice recording into a transcript of each of the interviews. Once the initial transcription was converted to a word document, I went through it while listening to the interview in order to correct any word errors caused by the software's inability to interpret what was said with human precision. When this process was complete, I had a "final" transcript of each interview to be analyzed and coded.

3.6 Data Analysis

The primary instrument for data analysis was myself (the researcher). I took an inductive and comparative approach as is outlined in Merriam and Tisdell (2016). I began by reading through the final interview transcripts and taking notes on each of the questions in a separate document. As I was reading and taking notes I was gaining a sense of the data and looking for any potential themes that were emerging as I read. Merriam and Tisdell (2016) refer to this process as "open coding" because the researcher is "being open to anything possible at this point" (p. 204). In this process, I was attempting to generate "categories or themes that capture some recurring pattern that cuts across [the] data" (p. 207). In the early phases of analysis, I was looking at the data inductively and as I developed themes and categories I moved more towards deductive analysis (Figure 10).



Figure 10 The logic of data analysis (Merriam & Tisdell, 2016, p. 211).

Through the open coding I developed some possible categories based on themes that I noted were surfacing as I read. I coded the interview notes using different colours for each category to indicate when each participant had touched on that theme. These themes were kept in mind while I read through the data from the questionnaire. As I read through each response from the questionnaire, I was evaluating and revisiting my earlier categories and themes to verify their relevance as I went.

The next step was to code all the responses from the questionnaire in a similar way (using colours for certain themes) and then to return and double check that the categories based on the themes were relevant to both the interviews and questionnaire responses. This process was recursive and non-linear and required revisiting the data several times to check and double check that the categories encompassed the data. As per Figure 10 above, as my categories became more solidified, I began to look at the data in a more deductive way, searching for evidence of categories to support the findings. This process was exhaustive and required revisiting the data over and over again. This was consistent with the suggestion to researchers made by Merriam and Tisdell (2016) stating that "by the time you reach a sense of saturation—that is, when nothing new is coming forth—you will be in a deductive mode" (p. 210). When I continued to revisit the data while gaining no new insights, I felt confident in beginning to draft my findings. However, the process of "refining and revisiting" did not end when I finished with my coding, it continued as I began to write the draft of my findings (Merriam & Tisdell, 2016, p. 209). Even as I began to write my initial description of the data, I continued to check and re-check the categories that I used to organize it in order to ensure that the description I was creating was accurate and supported by the information from the study. According to Gay et al. (2012) "qualitative researchers analyze the data inductively by categorizing and organizing it into patterns that produce a descriptive, narrative synthesis" (p. 8). Synthesizing the data was a lengthy process in that, as the main instrument of data collection and analysis, I was responsible for its thorough review.

3.7 Limitations

The main limitation for my study was the situation regarding Covid-19. Many people had switched to using e-Portfolios under circumstances beyond their control and had thereby not

done so with an aim to adopt a system that they believe is better on a pedagogical level. Also, many teachers were extremely stressed by the situation and were not as willing to use their time to participate in a study. To ensure that I was taking into account those who used e-Portfolios as a necessity instead of a choice, I added questions that took into consideration if teachers had used the system as a result of the pandemic, what their impressions of the system were, and also what the likelihood of them continuing with the system was.

Another possible limitation to consider was that I am a teacher in the district where the study took place which gave rise to the potential of interviewing someone that I knew personally. This was exacerbated by the fact that the pandemic limited my respondents. It was important to make sure that the participants knew that I was gathering information on the advantages and disadvantages and was not taking a specific stance on the system's efficacy. What helped this limitation is that I am not a classroom teacher and was therefore not able to opt in or out of the reporting pilot. As Gay et al. (2012) state, "[t]he closeness between participants and researcher helps to provide deep and rich data, but it may also create unintended influences on objectivity and data interpretation" (p. 22). As I had personal relationships with some of the respondents, it was important for me to state the aim of my study very clearly to make sure it was understood that I wanted to examine the use of e-Portfolios to inform practice and gain insights into how and why they are used. It was imperative that I ask questions about both the positive and negative aspects of the e-Portfolios including which students did not benefit from their use as well as asking about the disadvantages of the system to avoid teachers thinking I was researching them because of a previously held belief in their efficacy.

3.8 Summary

This chapter outlined the methodology of the qualitative research study designed to examine the use of e-Portfolios at the elementary school level. It provided a description of the research methods, research context, and researcher background while also explaining the recruitment process and summarizing information on the participants. It then went on to explicate the data collection methods and data analysis ending with a discussion of the limitations of the study. Chapter 4 describes the findings of the study with relation to the theoretical framework and current body of research.

Chapter 4: Findings

4.1 Introduction

Given the benefits of e-Portfolios documented in higher education, this research aimed to uncover the advantages and disadvantages of using e-Portfolios in an elementary school setting (kindergarten to grade 7). I especially set out to uncover how (and if) the use of e-Portfolios was shifting teaching practices, how pedagogy was being affected, and also how the e-Portfolio system was being used by teachers. Specifically, the intent was to focus on the following research questions: (a) what do teachers perceive as the advantages and disadvantages of using e-Portfolios; (b) if teachers at the elementary level are using e-Portfolios, how and why are they being used and if they are not, why not; (c) for those using e-Portfolios, what pedagogical shifts (if any) did they make as a result of adopting this system? This chapter combines the data from the interviews with the questionnaire responses to address the research questions and concludes with a summary of additional information that came out of the interviews alone. The first section discusses the advantages and disadvantages of using e-Portfolios, the second describes how and why ePs are being used and why some teachers chose not to use them, the third section outlines if and how using e-Portfolios has changed pedagogy, and the final section describes the more indepth information that was gained from the interviews.

4.2 What do teachers perceive as the advantages and disadvantages of using e-Portfolios?4.2.1 Advantages

According to Wertsch (1998), the tools we use to carry out everyday tasks (mediational means/cultural tools) have affordances and constraints that need to be examined when analyzing human action. In my study, teachers were asked to identify what they thought the advantages of using e-Portfolios were. Many of the advantages identified are outlined in this section while

others will be visited in a later section of the data which discusses shifts to pedagogy because of adopting e-Portfolios.

4.2.1.1 Student expression

The increased digitalization of our lives has facilitated the use of many different modes of expression. Emojis, Gifs, Memes and other multi-modal forms of communication have been added to our social lives at an accelerated pace. Concurrently, in schools, a shift away from rote activities that typically only use one mode of expression, such as writing, towards activities using multiple modes has also been happening. As Early et al. (2015) note, "while we use languages to communicate, language is not the only or even (at times) primary mode of communication" (p. 447). One of the reasons for adopting digital platforms in education is to make it easier for students to express themselves in a variety of ways. Technology allows students to combine images, words, colours, fonts, animations, and sound in easily editable formats in order to express their learning and ideas in ways that traditional pen and paper learning activities cannot. My study found that teachers valued the capacity that e-Portfolios had to allow students to express themselves in a greater variety of ways. In total, nine respondents mentioned the multimodal aspects of e-Portfolios and an increase in ways that students could express their learning as advantages to using ePs. For example, one teacher stated that they were "using more multimodal ways of having students explain their learning because the e-Portfolio provides space for students to showcase their learning differently" (R17S²). The multi-modal affordance of the e-Portfolios were similarly mentioned by another teacher who noted that through the use of ePs

² Respondents (R) were assigned a number and coded by satisfaction with using ePs as: ESextremely satisfied; S- satisfied; D-dissatisfied; ED- extremely dissatisfied; or NoeP-did not use e-Portfolios in 2019/2020. Interview respondents have an additional I added and a number 1-6 delineating which interviewee they were.

they could "offer a variety of options for students to share their learning, and these options are easily documented for feedback or assessment on the Portfolios" (R8SI3).

The following "non-traditional" modes of expression were mentioned as affordances of using electronic portfolios: "showing things like story workshop"; using "manipulatives to show something in math"; using "different apps like Clips", "Shadow Puppet" and "Paper" (R8SI3); videos of dance or drama as art; video of students "skip counting while they walk" (R3SI1); making a podcast; creating "montage[s]"; using "photo editing" and "video editing"; creating "stop motion" animation (R9SI4); showing photos of what they have built; taking pictures of "loose parts"; and "making cool little videos" (R10SI5). One of the interview respondents who taught intermediate students said, "we teach them how to use clips and they can put in background music and cuts and fades, and everything they want, and it can be pretty fun" (R3SI1). It was also identified by two teachers that those who benefitted most from using ePs were students who were not as good at writing and could use different ways to show what they know.

4.2.1.2 Communicating student learning

Another theme that was present throughout the research was that teachers felt e-Portfolios had a positive impact on communication with parents. Teachers liked that by using e-Portfolios parents could "see what is happening" in the class which made learning "visible" and "transparent" and provided what many described as "ongoing" communication with parents about their child's learning. This opportunity to "see" what was going on in class was something that teachers were excited about. Overall, they enjoyed sharing pictures and artifacts from school with home and making those connections with parents. Sixteen respondents mentioned homeschool sharing and communication was a benefit to using e-Portfolios.

Some downsides associated with engaging parents with the use of ePs were also identified in the study but only three people who used portfolios mentioned this as a factor. In the case of those who mentioned parent engagement as difficult or lacking, it was attributed to a lack of acceptance of the e-Portfolio system on behalf of the parents. One teacher said that "not all parents are checking the e-Portfolios even when I sent an email asking them to do so especially for assessment posts" (R7S) and another identified "lack of parental participation" (R11S) as a disadvantage. The third respondent (R8SI3) stated: it "can be challenging to get parents engaged" as a disadvantage but also stated "parents and students are more engaged" as an advantage to the system, which suggests that though it can be difficult to get some parents on board, they still felt the system contributed to more engagement overall. One respondent who chose traditional reporting noted that some parents were not happy and that ePs cause some "push back" by parents who wanted "a more traditional method of assessment" (R28NoeP) which shows that while teachers felt it improved home-school communication and transparency, the feedback from parents was that they did not feel it was a better system.

From the standpoint of mediated action (Wertsch, 1998), the "report card" that parents are expecting is a mediational means that they have grown accustomed to. Like with the historical narrative that Wertsch discusses as a frame for students to learn about history, report cards as a mediational means have a distinct set of norms that are followed when crafting them. The study that Wertsch highlights found that the historical narrative which followed a specific pattern with protagonists who move through events chronologically was duplicated by all students in college, which shows the power that mediational means have in shaping our thoughts and actions. Parents, teachers, and students often view report cards and assessment in general as following a certain pattern with certain expected conventions. For example, the report card has

traditionally been a summative event that happens three times a year. Typically, it summarizes progress using a letter grade (or 4-point scale in kindergarten-grade 3) to indicate the student's overall standing in each subject for the term or year. Many parents have grown up with this reporting system or a similar graded summary and it could be argued that the mediational means has framed them to see that as the only valid way to report on learning. The grading system and summative report card is so embedded within our view of education that it can be difficult for teachers to move away from this especially with parent pressures to keep the traditional method.

4.2.2 Disadvantages

As previously stated, Wertsch's framework (1998) discusses how cultural tools/mediational means have affordances and constraints inherently entwined in their use. For the purposes of my study, I examined the constraints of the system by questioning what the disadvantages of using e-Portfolios were.

4.2.2.1 Technology and the Scholantis platform

While most respondents in the study who tried e-Portfolios in the 2019/2020 school year (78%) identified that they were either satisfied or neutral (Figure 11) with regards to their satisfaction with the system, there was an overwhelming consensus that the platform itself and difficulties associated with technology as a whole, were the main drawbacks of using it. Of the twenty-three teachers who had used ePs during the school year, seventeen identified the "platform" and/or the "technology" as the main difficulty with the system. One respondent noted, "this platform in particular (not eP in general) has many functionality issues, [w]hich could be considered a disadvantage (tech problems)" (R14D).



Figure 11 Graph of rating scale for overall satisfaction with using e-Portfolios

The Scholantis platform was first available for use in 2016 in the same year that the new curriculum was released. Roberts et al. (2016) state that "when deciding to use an ePortfolio, it is important to first examine the task(s) to be completed within the environment and ensure that they are matched to the strengths and capabilities of the platform" (p. 24). One possible explanation for why teachers felt so much frustration over the e-Portfolio platform was that it was developed before the new curriculum was implemented and before anyone was aware of how it would transform teaching and learning. Williams (2007) cautions against assuming that simply transposing collections of work from paper to digital information 'portfolios' inevitably leads us to think about them in comparison to traditional print portfolios of student papers" (p. 502). One of the interview respondents touched on the word "portfolio" being problematic in one of their responses. They stated, "this is not a portfolio in the sense that, you know, if I was an art student applying for Emily Carr, I would take a portfolio of my best work in. So, I think that word in itself is confusing" (R3SI1).

Figure 12 shows the user interface of a student's eP in the current school year (2020/2021). The layout resembles pieces of paper lined up in chronological order. It appears more as an area to collect and document student work rather than as a place to self-reflect, create multi-modal expressions of learning, and to regularly communicate with students and their parents, which are all features that teachers mentioned as advantages of the system. Figure 13 shows the specific "tags" for the posts. Again, the little manila file tag in the top right corner resembles a paper equivalent used for filing. The look of the platform has not changed from this layout since 2016 though more features have been added (blogs, assignments tab, etc.). If the system was designed with paper assignments in mind and teachers are now using it for more than that, it is not surprising that they reported experiencing high levels of frustration with the system. This disconnect between the cultural tool's design and what teachers hope to achieve with it is described in Wertsch (1998). As noted in Mind as Action, "the reason for using a cultural tool is not so simply tied to superior levels of performance...instead, the use of a particular mediational means is often based on other factors having to do with historical precedent and with cultural or institutional power and authority" (Wertsch, 1998, p. 42). The paper-based appearance of the ePs could indicate that the Scholantis developers had the old mediational means (paper portfolios of work) in mind when crafting the new digital portfolio and were not developing it to create a new mediational means entirely.

Science 29 Arts E	nt 97 French Land	guage Arts 51 English La ied Design, Skills, And Techno	anguage Arts 34 Core	e Competencies 30 Math	ematics 29
Ľ		Proficiency Scale Scale	Resources Executions		
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ly%20 23%20Jun%202 Minecraft Space	World- 021.pdf	FORMATIVE ASSESSMENT_Soc am not a Number	cial Studies_I	FORMATIVE ASSESSMENT_Mai and Division	(Construction)
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Figure 12 Overview of e-Portfolio posts with subject tags

* 0	As	sessment 97	Frenc	h Language Arts 5	1	English Language Arts	3	4 Core Comp	oetencies	30	Mathematics	29
Science 2	9	Arts Education	28	Applied Design, Sl	kills,	And Technologies 27		4 More				

Figure 13 Tags for portfolio posts with manila tag icon in the top right corner

The platform was described using similar words by many respondents such as, not "userfriendly" (six), "not intuitive" (four), "glitchy" (two), "poorly designed", and also difficult to use (especially for younger students). It was also described as "time-consuming" (four) especially by teachers of students in early primary grades. One teacher, who stated that they believed in the pedagogy behind using e-Portfolios and listed many benefits to them, described, in-detail, the lengthy process of posting. They wrote: Teachers had to allocate class times to teach the students on how to work a device and how to navigate the platform - not to mention all the technological troubleshooting. Then, the teachers had to use their own time before and after school to set up the e-portfolio, manage all the posts for all the students (especially in Primary grades), reply to student comments, type up (word-for-word) for each post (explanations of activity/assessment, curricular competencies, big ideas, core competencies, assessment comments etc.), upload the proficiency scales when needed, make sure the evidence (photos/videos) were uploaded correctly. This is all after the teacher spends time learning about the platform themselves. I have to say, the platform is not very user-friendly despite all the updates and improvements made over the years. (R5D)

When using the eP website, there are a number of steps involved in making a post and those must be outlined and explained to new users. One teacher who chose not to use ePs in the year of the study but who had some experiences with the system noted, "you'll have to do some digging in this, in the program, to really get a good grasp of what it can give you, and what you need to put in there" (R25NoePI6). The same respondent spoke to the ease with which you can set up a blog or social media account and how you are taken through each step in a fluid manner. She contrasted this with the Scholantis platform where you need to put in significant work to figure out how to post. This lack of ease makes it especially difficult for young users to post on their own. A similar problem was also found in the study by Kotsopoulos et al. (2015) which cautioned against assuming younger learners could use e-Portfolios that are claimed suitable without considering their age in the design process. In this study, it was noted that though the platform was advertised as suitable for primary learners, it was found that the system was not

user-friendly for them as it required too many clicks to undertake tasks making it so timeconsuming that it was not worth using with younger students. The authors state that"

Many EP developers are claiming K–12 suitability and our own experiences shed serious doubt on the extent to which available EPs have undergone appropriate and rigorous testing to make such claims – particularly in primary education. Our concern is that school boards, in their eagerness to advance assessment practices, transparency to parents and social learning, may be motivated to jump on the EP bandwagons without evidence-based research to suggest meaningful learning outcomes for students and teachers.

(Kotsopoulos et al, 2015, p. 628)

The researchers in the study found that the format, interface, and technology aspects of the platform needed to be specifically designed for the age-group and context of the learners and not used as a blanket system. The respondents in my study reported similar frustrations with the system that may be due to it having been designed as more of a digital filing system and not an interactive medium for student use. One respondent said that is was "time-consuming for a teacher at the primary level because most of the posts are from the teacher. I tried to teach my students to take pictures and post them. It was with 2 other teachers helping me. It can be challenging" (R15S).

Because the e-Portfolio platform was found to be difficult even for the adults to learn and use, many of the early primary teachers (kindergarten to grade 2) stated that they did all the posting themselves. Eight out of twelve of the early primary teachers in the study cited the amount of time it takes them to do posts as a disadvantage of the system, including how much class and personal time it takes for them to post. One respondent, who was otherwise satisfied with the use of e-Portfolios wrote, "the Portal/Scholantis platform is poorly designed. It is not

designed to be intuitive for users. It takes multiple clicks to do one simple task. Certain aspects of its layout are questionable. It is often slow and glitchy" (R13S). It was also mentioned that in order to see work and pictures it should scroll "side to side" instead of having to scroll all the way up and down on a post (R25NoePI6). The same respondent participated in the interview process and highlighted the fact that there should be different layouts for primary and intermediate students and that the layout was "dull" and was too much like writing had too many words for younger students (R25NoePI6). When referring to the platform, another interviewee who was satisfied with the use of ePs overall, said that "somebody did a really good job of selling this but it doesn't actually do all the things well we want it to do" (R10S15).

As Wertsch (1998) notes, "one of the biggest problems that arises from examining mediated action solely from the perspective of consumption is that cultural tools tend to be viewed as emerging in response to the needs of the agents consuming them" (p. 58). Unfortunately, many times people (agents) are using (consuming) cultural tools because it is their only option to undertake the actions they want to perform. Many times, cultural tools are created for reasons outside of the needs of agents or they may be created with different aims in mind to what they are actually needed for. As with the e-Portfolios in the study, they initially emerged as a way for teachers to help students track their own progress over time, but they are now being used for reporting, as a space for students to show what they know, and for a plethora of other uses. As the students have taken more ownership, the faults in the system have come to light. While impossible to foresee all the issues from their inception, it is still important to think about possible uses when designing a system. Many studies' (Cote & Emmett, 2015; Kotsopoulos et al, 2015; Roberts, et al., 2016; Wicks & Lumpe, 2015) recommendation for the successful implementation of ePs is that they be developed/adopted with specific uses in mind

and not be rolled with a "blanket" approach that does not take into consideration the needs of the specific groups and individuals who will be using it.

According to Wertsch's (1998) framework of mediated action, "mediational means" have certain affordances but also constraints. For his example, he speaks of the pole in pole vaulting as a cultural tool that helps the agent carry out the action of flying through the air (p. 29). He then goes on the point out that in pole vaulting "no one seemed to recognize the constraints of aluminum poles until their fiberglass replacements came along" (p. 41). Because teachers are exposed to all sorts of intuitive, user-friendly and easy to master digital tools in their lives, it is easier for them to recognize the constraints of the Scholantis system. Another platform, FreshGrade, was mentioned by respondents as a better alternative. FreshGrade is a fully developed e-Portfolio system that had an app and was used in the district prior to the creation of Scholantis. One respondent noted: "I liked FreshGrade because I could communicate back and forth with parents, the app was kid/teacher and parent friendly and I could tell when a parent looked at the work or didn't which allowed me to make sure they saw their child's work in a different way" (R22NoePI2). In total, three respondents mentioned FreshGrade as a better alternative to Scholantis and said they wished the current system had affordances such as an app, notifications when parents checked it, and a more integrated system generally.

4.3 If teachers at the elementary level are using e-Portfolios, what are they being used for and if they are not using them, why not?

4.3.1 What are e-Portfolios being used for?

Part of the purpose of the reporting pilot was to pilot the use of e-Portfolios as a form of assessment and reporting. As such, the questionnaire asked what teachers used ePs for besides formative and summative assessment. Figure 14 shows teacher responses from a pre-selected

bank of options. Of the seventeen participants who answered this question, it was most used for documenting work (sixteen), posting assignments (fourteen) and documenting student growth (fourteen). Teachers in the interview also consistently shared that what they posted most was photos of work and students working.



Figure 14 Teacher uses for e-Portfolios aside from formative and summative assessment

When asked to identify and explain their favourite feature of the e-Portfolios, five participants responded following a theme of the study stating that their favourite function of the ePs was student involvement in their own learning. This was echoed in their statements about pedagogy where teachers highlighted that student involvement in their own learning was important to them. Seven teachers said that the visual/multi-modal aspects were their favourite part of the ePs. Five participants said that they liked assessment options on the ePs including the "assignments" function.

4.3.2 Why did you choose not to participate in the reporting pilot?

Of the fourteen participants who chose traditional reporting at the beginning of the year, six (42.86%) decided to use the e-Portfolio system when the pandemic began, and schools were shut down (March 2020) and eight (57.14%) chose to continue with traditional reporting. Of those who tried e-Portfolios (six), half the respondents (three) said they would now use e-Portfolios in a regular school year. Figure 15 shows teacher-selected reasons (from a pre-selected list) for choosing traditional report cards over the reporting pilot at the beginning of the school year. Of the fourteen respondents who chose the option of completing a traditional report card, two teachers said they chose to do so because e-Portfolios were not as meaningful as traditional report cards. One respondent stated that they used the ePs for a variety of purposes such as posting assignments and self-reflection but felt that it was important for "students to receive a summary of their performance each term for each subject" (R30NoeP) and had therefore also completed a traditional report card. Four said they had no time to learn a new system. While only two teachers responded that technology was a barrier, all those who tried it expressed in later responses that the platform was an impediment.



Figure 15 Graph of why teachers decided to use traditional reports instead of ePs

The largest option selected for why traditional reports were chosen (six) was the "other" option which required further explanation. Four of the respondents who chose "other" stated that they had either tried ePs before and chose not to continue (three) or did not like the platform (one).

4.4 For those using e-Portfolios, what pedagogical shifts (if any) did they make as a result of adopting this system?

4.4.1 Shifts to Pedagogy

Though it was not mandatory that those who participated in the reporting pilot use e-Portfolios as a part of their classroom practice outside of reporting, all the participants in the study who chose the pilot were engaged in using e-Portfolios in their teaching for a variety of purposes. Of the twenty-three teachers who tried using ePs, seventeen (74%) said that it caused them to shift their pedagogy and six (26%) said it did not (Figure 16).



📕 Yes 🛛 🗧 No

Figure 16 Chart showing if teachers changed their pedagogy by using e-Portfolios Teachers mentioned many ways that integrating e-Portfolios into their practice had shifted their pedagogy and many described how ePs helped to support teaching in a way that they found to be more valuable than traditional reports cards. When it came to pedagogy, no negative impacts were identified by teachers.

4.4.1.1 Ownership

One of the main benefits of using e-Portfolios that was mentioned was that it was more student-centered. Nine teachers in the study mentioned that the use of ePs increased student ownership of their learning and assessment. One respondent who reported an overall dissatisfaction with the use of e-Portfolios due to how time-consuming it was and due to troubles with the platform, outlined the benefits to their teaching noting that students "gain more ownership of their own learning as they become active participants in documenting their thoughts and ideas" (R5D). This follows a theme of the research that the majority of teachers believed e-Portfolios to be a better method of documenting, assessing and reporting on student work but felt that the platform itself was the main issue and barrier to its successful use.

4.4.1.2 Self-Reflection

Like what was found in the current literature (Barrett, 2007; Garthwait and Verrill 2013; Hopper et al., 2018; McLeod & Vasinda, 2008; Meyer et al, 2010; Nicolaidou, 2013; Wicks & Lumpe, 2015), teachers identified increased self-reflection as a positive impact of using ePs. Teachers outlined the ways in which the use of e-Portfolios has facilitated more student selfreflection and some also mentioned how their own practice became more reflective because of using ePs. Encouragement of student self-reflection was mentioned as a shift to pedagogy by ten respondents. For example, one teacher said, "self-assessment and self-reflection are a big part of e-Portfolios which I also believe in strongly" (R35ES). With regards to teachers becoming more reflective themselves, it was noted that the use of ePs also had the individual teacher "reflecting upon ways to demonstrate learning and teaching students about what constitutes an example of growth or learning" (R10S). One teacher mentioned shifts to teaching practices allowing students to be more aware of their own learning style. They stated: "I become more mindful of the importance of self-reflections and I am actively teaching strategies to students as they gain more awareness of their learning style" (R5D). In one of the interviews another teacher commented on how using the e-Portfolio made them very mindful of their planning and practice noting: "I'm kind of always thinking about...who's seeing the work" (R8SI3). For this individual, they were being careful while curating this online representation of student work.

4.4.1.3 Formative Assessment

One of the main functions of the e-Portfolio in conjunction with the reporting pilot is to give teachers a platform that allows them to adapt their assessment practices to be less finite, more meaningful, and to encourage more formative assessment practices. Figure 17 shows the "Facets of formative assessment" identified by Wiliam (2004) many of which were mentioned in the study. Black et al. (2004) defined formative assessment (assessment for learning) as follows:

Assessment for learning is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning. It thus differs from assessment designed primarily to serve the purposes of accountability, or of ranking, or

of certifying competence. An assessment activity can help learning if it provides information that teachers and their students can use as feedback in assessing themselves and one another and in modifying the teaching and learning activities in which they are engaged. Such assessment becomes 'formative assessment' when the evidence is actually used to adapt the teaching work to meet the learning needs. (p. 10)

In the past, assessment has been seen as something that a teacher undertakes to assess what learning has taken place (assessment of learning) and has typically taken a summative form. In this case, assessment is something outside of pedagogy, just as the curriculum was also seen as a separate entity. When teachers in the study discussed how their assessment has changed, they were most often describing how they were using more assessment *for* learning as a result of using e-Portfolios and how this has changed their practice. For this reason, assessment is something that is based on a teacher's values and beliefs about learning. One interviewee summarized how using ePs has made them shift their practice to formative assessment without using the term specifically. They described how they adapted learning opportunities as they went saying they would frequently reflect on how things went by, for example, saying, "this week that happened, we've seen these concepts I've noticed during the class, so I'll have to adapt there" (R9SI4).

	Teacher	Peer	Learner
Where the learner is	Evoking information	Peer-assessment	Self-assessment
Where she or he is going	Curriculum philosophy	Sharing success criteria	Sharing success criteria
How to get there	Feedback	Peer-tutoring	Self-directed learning

Figure 17 "Aspects of formative assessment" (Wiliam, 2004, p. 3).

In the district where the study took place, the shift away from traditional report cards and towards seeing learning as something that is continual and evolving brought with it the advent of the 4-point proficiency scale to communicate student learning as a replacement for letter grades. Four teachers in the study specifically mentioned the positive benefits of using the proficiency scale. In one of the interviews, the respondent noted "it's absolutely changed my pedagogy cause it's combined with the proficiency scale which has been absolutely revolutionary to how I teach and how I look for success" (R3SI1). In total, fifteen teachers mentioned positive shifts to assessment practices as a result of using e-Portfolios. One of the changes mentioned by some of the study participants (four) was the benefit of making assessment and learning visible to students and parents. For example, participants used words such as "clear", "transparent" and "visible" to describe shifts to assessment practices. Six participants also highlighted positive changes with regards to feedback making it more "timely", "strength and evidence based" and "authentic". A respondent noted that it made their feedback more "positive and expresses growth versus just like a letter" (R8SI3). This shift towards feedback that was focused on growth was found in the literature as well. For example, Hopper et al (2018) noted that in their study an instructor emphasized how the e-Portfolios caused them to provide "helping-you-grow feedback', rather than 'feedback finding fault'" (p. 11).

Another theme I found was that teachers valued the ability to report on student growth in a more timely manner and in an "ongoing" basis versus doing it at three set times throughout the year. For example, one teacher said it "aligns better with my teaching philosophy of measuring growth over time and not putting a finite value (letter grade) on student achievement" (R14D). Others echoed this sentiment saying it provided more opportunity to document and showcase "student learning throughout the year, versus a report card three times a year" (R13S).

Teachers did not seem to agree on whether using e-Portfolios was more work than traditional methods of reporting as about half said it was more work and half said it was less work overall. Of the former, four participants also stated that though it was more work, they believed it to be more valuable and therefore felt it was worthwhile.

4.4.1.4 No impact to pedagogy

Six respondents out of twenty-three said that using electronic portfolios did not cause them to shift their pedagogy. Of these respondents, one mentioned that they already valued many of the things mentioned in the previous section where benefits to pedagogy were outlined such as improvements to self-reflection, student ownership, assessment, and feedback. They wrote:

"I have always felt that students learn and retain more when they are take more responsibility for their own learning. I have also always felt that the more immediate feedback is and the more formative feedback students get before they get any summative feedback, the more they are able to improve. Also, students, teachers and parents working in partnership always produces the best results. Self-assessment and self-reflection are a big part of e-Portfolios which I also believe in strongly." (R35D)

One teacher said that the platform was the main reason why they had not shifted their pedagogy because problems with it prevented them "from using it to the full, promised potential" (R4D). Three reported inexperience with the platform or newness to teaching as a reason their pedagogy had not shifted while one provided no further details to explain their reason. This data shows that, for the teachers in the study, there was not a strong pedagogical reason for staying with traditional report cards after having tried ePs.

4.5 Interviews

Conducting interviews provided a chance to do a more thorough investigation of the use of e-Portfolios to find out how they were affecting practice and the students directly. Specifically, I wanted to know if using ePs was helping to develop students' digital competence, how involved the students themselves were in their use, and more information about if using them was more work than traditional reporting. The follow-up interviews consisted of six participants (two male and four female) who agreed to answer further questions after the completion of the questionnaire. Of those who were interviewed, two had chosen traditional reports and four had chosen the reporting pilot at the beginning of the 2019/2020 school year. One of the respondents who had chosen to complete a traditional report card had also used the e-Portfolio informally throughout the school year and was able to respond to questions about the system. They are, therefore, included in the questions about using ePs throughout this section making the respondent count for some of the questions about e-Portfolio use total five participants. The grades taught by the respondents were: kindergarten, grade 1/2, grade 3/4, grade 3/4, grade 6/7 and grade 6/7, ensuring that there was a mix of primary (kindergarten-grade 3) and intermediate (grade 4-7) perspectives. The average number of years teaching for the interview participants who chose not to use ePs was 14 years, for those who chose the reporting pilot it was 7.25 and for all those who were interviewed it was 9.5 years. This follows the trend from the questionnaire which was that those who chose not to use e-Portfolios had more years of teaching experience overall.

4.5.1 Digital Competence and Student Involvement

Some of the literature on e-Portfolios highlights the potential for students' digital skills to be a barrier to their use. (Kotsopoulos et al., 2015; Licastro, 2017). In the interviews, I asked
teachers if they felt using e-Portfolios was helping students to develop their digital competence. The majority of teachers who spoke on this topic (three out of five) felt that it was helping students by teaching them skills like: how to save across different platforms, log on and off, take pictures, type, upload, create a profile, and to know that they have an audience for their work (parents and teachers). One respondent felt that it was good for students to have a space on the internet that was safe (school-based) to practice skills but also relevant and meaningful. They also thought it was a good place to teach students how to present themselves on the internet and what to consider when posting. One teacher noted that they thought students were getting experience with this platform specifically but that generally it was not developing their digital skills. The fifth respondent felt that it was not developing their digital competence because the platform could not be used by students properly and they ended up doing a lot of the posting themselves in order to avoid things being inadvertently deleted etc. In this case, the teacher taught Grade 6/7 and shared the concerns of teachers of younger, primary students, by stating that the platform was not user-friendly and reliable.

Because student involvement and self-reflection were highlighted as advantages of the system in the questionnaire, in the interviews I asked teachers how they framed the use of e-Portfolios to their students. Of the 5 respondents who answered this question: all highlighted an element of growth, continual learning and/or self-reflection when describing what they told students about using ePs. They felt that it made work visible to all parties and used words highlighting that parents and students could "see" their learning, that it created a "holistic picture" and provided "evidence" of learning.

The type of work they asked for most to be submitted or that they included themselves in the e-Portfolio were pictures. All four of the respondents who had opted into the reporting pilot

named pictures as the thing that was posted the most. Types of pictures mentioned were of student work, students engaged in work, students actively engaged with materials, building a story with loose parts, creating a mandala, posters, pieces of writing, drawings, art, things they have done or built, and ADST (Applied Design Skills and Technologies) which typically involves building and/or creating things.

I asked the four teachers who had opted into the pilot if they felt it was more work than traditional reporting and their answers reflected tension between a feeling that it was potentially more work but also more valuable. One respondent said, "maybe it's more work but it's spread out more evenly throughout the year" (R3SI1) and went on to mention the work of Dylan Wiliam who recommends that assessment should be responsive and soon after the work has been completed noting that ePs lean more towards providing that type of assessment versus reporting at set times. Another teacher said "I do think it's more work than traditional reporting, however, I think the work is more valuable" (R8SI3). The other two teachers both talked about planning and how if you are organized then it is not more work. What was certain in all responses throughout the interviews was that no one mentioned it was easier than traditional reporting.

4.6 Summary

Mediated action can help us see that the implementation of the e-Portfolio platform is not a value-neutral action. The use of this cultural tool affords certain types of interactions and those who value those same types of interactions are more apt to be successful in its use. It also shows us that those who choose to use the platform do not necessarily do so without resistance. Many of the respondents held the belief that e-Portfolios were a good tool to communicate student learning, document growth, undertake assessments, and communicate with parents, however, they reported frustrations with the way the tool was developed but used it in spite of these

complaints. Those who did not believe in the value of e-Portfolios enough to overcome the hurdles of the system or who preferred traditional reporting may one day soon be forced into using this method for communicating student learning as the district shifts its policies to align with provincial curricula. There is little doubt that when this time comes these teachers will be using the system with resistance and will potentially be carrying out the same types of assessment that they were doing for report cards but in a different, digital, venue. Simply shifting to a digital platform does not in and of itself cause innovations to practice if the agents who are using it are resistant to its value. What is clear is that the teachers who opted in to the reporting pilot are enjoying the changes to their practice and pedagogy that this new system has initiated. Many benefits were identified in spite of the limitations of the system.

There is great potential for electronic portfolios to help teachers with their practice and yet it is a system that has not been widely implemented across educational institutions despite this potential. It could be that the concerns around teacher resistance to ePs and lack of research are seen as greater than the benefits. Barrett (2007) cautions that the purpose of the eP needs to be very clear to the teacher and learner in order for it to be successful. The data in the section shows a similar trend in that the system that is used needs to be well-matched to the tasks that teachers are hoping to accomplish with it. The perspective of mediated action is important to this analysis because "by analyzing the affordances and constraints of the cultural tools valued and marginalized in various learning environments we can gain a glimpse into an organization's interests and how they shape interaction" (Rowe and Bachman, 2012, p. 157). This study shows the ways in which a new cultural tool (the e-Portfolio) has shaped teacher practice despite the major flaws in the platform chosen. In the following section I will provide a detailed discussion of the findings as well as provide recommendations for future research.

Chapter 5: Discussion and Recommendations

5.1 Introduction

This study was undertaken to investigate the use of e-Portfolios in elementary school. An analysis of the data revealed that teachers felt e-Portfolios facilitated more formative assessment, more student involvement in their learning and more frequent and meaningful communication with parents. It also revealed the importance of having the affordances of the platform match the needs of the learners and teachers. Limitations to the study were also identified and are discussed in this section as well as recommendations for future research. Lastly, a concluding summary of the research study is provided.

5.2 Discussion

Many school districts are implementing digital platforms and e-Portfolios in elementary school (kindergarten to grade 7) and the results of my study indicate that there are several positive benefits to this implementation. The study also found negative aspects to using e-Portfolios, particularly with the platform involved in the study.

5.2.1 Assessment

One of the major affordances of e-Portfolios discussed in the research is that they have the ability to facilitate more formative assessment (Boulton, 2014; Barrett, 2007; Cleveland, 2018; Hopper et al., 2018; Hooker, 2019; Marinho et al., 2021; Roberts et al., 2016; Wall et al., 2006; Wicks & Lumpe, 2015). This study supports this conclusion because an increase in formative assessment was frequently identified as a benefit to using electronic portfolios. Participants discussed the ways that using the 4-point proficiency scale increased the depth of their formative assessment which they valued highly for student learning. They valued that the ability to give frequent feedback, and involve students in their own learning through the platform, produced practice that encouraged more authentic and formative assessment. Participants also mentioned "looking at student work as a continuum" (R2S), their "ability to have an ongoing conversation about [student] work" and providing frequent "feedback" (R26NoeP) as things that had changed their assessment practices. The combination of the e-Portfolio with the proficiency scale for assessment was cited as one of the major benefits of using ePs. One teacher wrote:

"I think the proficiency scale is excellent and the language used provides a very versatile scale compared to A-C- or Exceeding-Not Yet Meeting scale we would otherwise use. I think that it forces us as educators to shift our assessments and listen to students by having them reflect and justify why they know and how they can share their knowledge." (R20ED)

Another teacher stated that they would likely be less committed to using the platform if the proficiency scale was not a part of it (R3SI1). Irvine and Barlow (1998) wrote that "the power of technology will come from its combination with serious educational reform" (p. 322). What the study found was consistent with their statement. In my study, e-Portfolios were used in conjunction with a reporting reform and pilot to change the way student learning was communicated. The positive shifts to assessment practices were potentially the result of both using e-Portfolios and changing reporting practices with the use of the proficiency scale.

Another facet of formative assessment is the need for teachers to be reflecting on their practice and adjusting as they see what support students require in order to take the next steps in their learning. Wiliam (2004) states that, "assessment is formative for teachers when the outcomes from the assessment, appropriately interpreted, help them improve their teaching, either on specific topics, or generally" (p. 10). The study found that with the increase in

formative assessment, there was also an increase in teacher self-reflection and many felt it was improving their practice. One respondent said, "I am growing professionally thinking about how I can better use the e-Portfolio to show student's learning, not just for assessment, but to put all the highlights and various continuous activities to show their progress over time per subject area" (R9SI4).

According to the teacher participants, student self-reflection was also increased by using ePs. Self-reflection was found to be one of the main affordances of using e-Portfolios in previous research studies (Barrett, 2007; Cote & Emmett, 2015; Garthwait & Verrill 2013; Hopper et al., 2018; Karlin et al., 2016; Marinho et al., 2021; McLeod & Vasinda, 2008; Meyer et al., 2010; Nicolaidou, 2013; Wicks & Lumpe, 2015). Barrett (2007) states that, "portfolios support reflection that can help students understand their own learning and provide a richer picture of student work to document growth over time" (p 436). In the study, the fact that student work could be viewed repeatedly through the digital platform and could be reflected on and observed alongside previous work was said to increase student self-reflection and ownership of their learning. Irvine and Barlow (1998) highlighted this aspect of educational portfolios as beneficial in their work. They wrote, some time ago:

The portfolio is organized so that improvement or growth can be observed. Such as with an album of photographs where a child's physical development can be observed, an academic portfolio displays a student's growth and development in areas such as manuscript, mathematics, or writing. (p. 322)

Increased student self-reflection was mentioned by teachers of all grade levels in the study. The fact that an increase was mentioned even with younger learners is positive because learning skills of self-reflection takes time. As Jenson (2011) found in their research with post-secondary

teacher candidates, self-reflection is a skill that takes practice. McLeod and Vasinda (2008) also found that the depth of student reflection increased while using e-Portfolios. With consistent practice being reflective, students in both studies made gains in how much they wrote in their reflections and also in the depth of their thinking. If the e-Portfolios in my study are used multiple years in a row to teach these skills starting in earlier grades, students' capacity to selfreflect should deepen as a result. Meyer et al. (2010) support beginning to teach these skills early arguing:

The use of portfolios should begin early in students' educational experience and not be short-lived. The processes of self-regulation and approaches to pedagogy that portfolios support require time for younger students to learn and effort for older students to make the transition from traditional, teacher-directed methods. (p. 90)

5.2.2 Student involvement

Hopper et al. (2018) found "digital ePs to be a powerful constructivist tool for students to build their identity, not just from the beginning of the program but also from their prior and ongoing lives" (p. 9-10). Other research has also identified that e-Portfolios increased student involvement in their learning leading to a more "constructivist" pedagogy (Abrami & Barrett, 2005; Cambridge et al., 2009; Hopper et al., 2018; Marinho et al., 2021; Roberts et al., 2016). Teachers in this study felt using e-Portfolios caused students to be more involved in their own learning. One respondent in the study stated, "my pedagogy is more inclusive….I provide a variety of learning opportunities to students and more student choice and voice" (R13S). While student involvement was highlighted as a benefit to ePs throughout the study, there were also several comments made about teachers limiting post activities because of troubles with the platform. This demonstrated that it is possible for there to be tension between the way that the e-

Portfolio platform is designed and the needs of the teachers and students who are using it. It seemed that although many teachers described doing the majority of posts on their own (even in older grades), and that the platform had a steep learning curve and was not user-friendly, teachers still felt it created a more student-centered approach to teaching and learning. It's possible that while teachers felt that student involvement had increased from when they used traditional reporting, they had not critically analyzed how much further students could move towards this goal with a better platform and chose to persevere with what they had rather than complain. Though teachers voiced opinions that showed they valued the capacity for building a constructivist pedagogy that the ePs provided, it was not clear to what extent students were in control of the decisions for what to post and how to complete activities/work. It seemed that the curation of the eP was left mostly to the teachers themselves. For this reason, it is also not clear to what extent the ePs were still being used as a teacher-directed vehicle which would make them more positivist than constructivist. What was clear, however, is that teachers felt student involvement was positively impacted by using the digital platform.

5.2.3 Sharing student work

A cited benefit to using e-Portfolios is that the digital aspect of it allows students to share their work with a variety of people more easily (Hooker, 2019; McLeod & Vasinda, 2008). In Hooker (2019), there were learning gains made by having parents access their child's work at home. One participant of my study cited a similar benefit when they mentioned that, "parents have shared how their children are able to discuss and explain their learning throughout the year" (R6ES). The ability for the e-Portfolio to facilitate discussions between students and parents about school is a very exciting prospect. In my study, home-school communication and the ability for parents to "see" what their child was learning were also said to be benefits of using ePs. Teachers also felt that communicating with parents through the e-Portfolio in an ongoing manner was more "meaningful" than sending them a report card three times a year.

Though peer-editing and peer-assessment are highlighted as an affordance of ePs in the research (Karlin et al., 2016; Nicolaidou, 2013), it was not mentioned by any teachers in the study. Karlin et al. (2016) found that "by interacting with each other, and not just with the teacher, the students were able to receive, and later reflect upon, well-rounded feedback that was sometimes more beneficial, given that it was coming from their peers" (p. 378). It is possible that the platform itself is the main factor preventing students from sharing with peers as it the platform was described at not user-friendly especially for younger students. There are no digital features at the website level that encourage sharing between peers. Given that peer editing and assessment have potential benefits, it is a good consideration for eP developers to include this option when making new systems.

5.2.4 Technology

The main barrier to using e-Portfolios in this study was the digital portfolio platform. In the research, authors point to the need to have the capabilities of the system match with the needs of the learners and teachers (Karlin et al., 2016; Kotsopoulos et al., 2015; Licastro, 2017; Roberts et al., 2016) and caution against assuming that platforms will be easy for certain individuals presumed to be "digital natives" (Prensky, 2001). Karlin et al. (2016) completed research that looked at using free web software such as Wix, Google, and Schoology to have students create their own e-Portfolios of learning in a single subject area. They noted that Wix was the most user-friendly platform because there were "numerous tutorials to help users get started, and the user interface is designed to facilitate a short learning curve, making it ideal for classroom use, even with younger students" (p. 375). The younger students in their study were in 7th grade

(likely 12 to 13-year-olds). The students in my study were 4-13 years-old and the platform was described as difficult even for adult teachers to use. The "short learning curve" that Karlin et al. speak of is a facet of technology that is readily available for free on the internet. It raises an interesting question about why the developers of the program in my study would make a platform with a steeper learning curve to be used with such young students.

Kotsopoulos et al. (2015) also wrote of struggles using a system with younger students. They described that their e-Portfolio software was advertised as suitable for younger students but required too many clicks and was too time-consuming to make student posting viable. They noted, "heavy reliance on the tree mode user interface increases the cognitive demand for children and especially for emergent readers" (Kotsopoulos et al., 2015, p. 636). Investigating the software of the system in my research was outside the scope of my study, but it seems highly possible that the platform was also designed using a tree mode where each click takes you to a new step and steps require more reading than many students have the literacy level for. Kotsopoulos et al. (2015), abandoned the project due to the struggles with the platform which had been implemented solely for the study. The teachers who responded to my questionnaire do not have that same option to abandon the platform and use an alternative as it is the only one approved by the district. Meyer et al. (2010), had better success with the technology in their study which had a platform specifically designed for student use and had varied interfaces for elementary, middle school, and high school students. Following their lead, platforms should be "developed using research evidence and feedback from teachers and students in order to build an electronic portfolio that supports the development of self-regulated learning and literacy skills in constructivist classrooms" (Meyer et al., 2010, p. 84).

5.3 Study Limitations

This study represents the opinions of a sample of teachers in a particular sociocultural setting at a certain point in time and is not meant to be exhaustive. These opinions are interpreted though my own experiential lens and situated as a result of my own sociocultural context and beliefs. Underlying Wertsch's framework is Burke's (1966) notion that people have their own unique sets of "terministic screens" depending on what discipline they are researching for and/or what beliefs they hold about the world (Wertsch, 1998, p. 5). These screens can be imagined as window screens that are in front of our faces and filter how we interpret life. We cannot separate ourselves from these as they are a part of how we view the world and because of them we direct our attention to certain things over others (Wertsch, 1998, p. 17-19). As such, my own "terministic screens" informed how I view the information in the research study and are a part of the interpretation of data at every level. It is important to acknowledge that I write this thesis with the privilege of a white female university educated mother and teacher in Canada and my research represents the data from that perspective. Therefore, the findings of the study are informed by and are a reflection of my own values, ideals about teaching, and worldview.

Part of situating the study and providing possible limitations also involves acknowledging that it took place at a specific historical location and point in time. It is therefore necessary to further mention the impacts of the Covid-19 pandemic. A potential limitation of the study was the amount of stress that teachers were under while the questionnaire responses were gathered and the interviews were conducted. Many of the people who volunteered to be interviewed did not respond to the email requesting to book a time to do so. It is possible that the strain they were under due to the pandemic prevented them from following through which limited the interviewe sample. Without the pandemic, more people may have both responded to

the questionnaire and also been willing to be interviewed. Originally, the research plan included choosing six interviewees from a sample of fifty respondents. The intent was to choose two who felt more positively about ePs, two who felt more negatively, and two who were neutral or undecided. In reality, I interviewed the only six people who responded to the email within the timeframe. Luckily, they did represent varied levels of satisfaction with e-Portfolios despite this lack of choice. The pandemic also limited the contact I could have with teachers making school visits and informal in-person discussions impossible. In essence, what was a limitation was also the just the reality of the time. It basically limited the whole scope and sequence of the study.

Lastly, one of the original intents for a theoretical frame for my study was to examine the technology through a feminist lens. I intended to investigate how female and male participants spoke about technology. Teaching in British Columbia is a feminized profession and this is true to an even larger degree in elementary schools (BCTF: Teachers in British Columbia: a feminized workforce, 2018). According to the British Columbian Teacher's Federation, "while approximately 27% of the total teacher population (public and independent) is male, 45% of secondary school teachers are male" (BCTF: Teachers in British Columbia: a feminized workforce, 2018) which leaves a much higher percentage of female teachers at the elementary level. Because of these statistics, I had intended to critically examine the technology used from a feminist perspective as it would have been largely designed for female professionals. I wanted to compare how women and men spoke about the technology and investigate any themes that arose while viewing the data through a feminist lens. As only four men participated in the study, I did not have enough responses to move forward with the comparison.

5.4 Future Research

One facet of mediated action that was not discussed in the body of this thesis but that is important to the discussion of the findings is the extent to which thinking processes can be viewed as mediational means. Wertsch (1998) explains that "virtually all human action, be it on the individual or social plane, is socioculturally situated; even when an individual sits in solitude and contemplates something, she is socioculturally situated by virtue of the mediational means she employs" (p. 109). What this theory posits is that because we use language to formulate our thoughts and language is a structure that comes from outside ourselves, the way our thoughts are formulated can be seen as a mediational means. In Tappan (2006), the author describes how this concept relates to situations where individuals make moral decisions. They state that the moral voices of "justice" and "care" (Gillian, 1982) within an individual are "mediational means/cultural tools used by agents to resolve moral problems, conflicts and dilemmas in their lives, and that there is always an irreducible tension between the agent and mediational means" (Tappan, 2006, p. 5). The data in my research can be seen with a similar lens to decipher what tension is present when choosing to use e-Portfolios or traditional report cards. In the study, a tension that manifested itself was between teachers' professional values (care for students, belief about learning, pedagogy) on the one hand, and their workload (time to learn and/or use a flawed system) on the other. The study revealed that those who highly valued the affordances of e-Portfolios reported being satisfied with the system although they also stated it was difficult to use and increased their workload. Those who believed less in the affordances and were not as invested in making changes to their pedagogy found that the increase to their workload was prohibitive of using ePs given that the system took an inordinate amount of time to master. Teachers who valued the affordances of the platform very highly were willing to sacrifice the

extra time to make the platform work for them and those who did not value it as much saw the time it took to learn the platform as too much additional work. What is important to note is that those who felt positively, chose to use ePs despite the major constraints of the system and no one described that platform as easy to learn or well-designed. Further investigation into whether gender played a role in the district-wide acceptance of this system is warranted. One possible hypothesis for why elementary teachers, who were predominantly women, felt the need to accept a very difficult system at the expense of their own personal time and mental energy is that society encourages women to be caretakers and do the "right thing" for others at their own expense. More studies into technology that is created for feminized professions is needed to uncover the power sources dominating females' time. Wertsch (1998) asserts that "only by recognizing and examining the tensions between agents and mediational means and how those tensions inform behaviour are we likely to ask essential questions about why certain cultural tools and not others are employed and about who it is that has to decide which cultural tools are to be used" (p. 42). Further research is required to elucidate the relationship between these factors and gender.

Looking at who has the power and authority to choose the cultural tools teachers use was outside the scope of the study but warrants further mention (Wertsch, 1998, p. 64-72). The electronic portfolios in the study have been developed by one group of individuals (the school district) for use by another group of individuals (teachers and students). According to Tappan (2006), "an analysis of power, privilege and authority, and how they are implicated in any specific case of mediated action, must focus on both the agent and the cultural tools s/he employs in the case at hand" (p. 5). Looking at agency and power when choosing whether to use e-Portfolios could reveal interesting information about who controls the teaching profession and

where the power to shift practice lies. Only two respondents mentioned outside factors for choosing to use ePs. One stated they felt pressure from administration, and another mentioned wanting the class iPad that was given to those who participated as reasons for deciding to opt into the pilot. An investigation of the power structures at play when implementing technologies could help to reveal how systems with as many flaws as the one in the study come to be in use and how to shift power so that teachers would have more voice about the platforms they use for their practice.

Another avenue for future research would be to critically analyze artifacts from e-Portfolios to see the ways in which the cited benefits in my study (self-reflection, formative assessment, parent communication, transparency of work, multimodality) appeared in student ePs. Since teachers felt these improvements were being made, it would be helpful to have examples of places where practice was innovative and to critically analyze where the e-Portfolios may have become a digital version of the paper-based equivalent, showing where using ePs has not changed practice. This would provide teachers with information as to how to implement electronic portfolios in ways that shift their pedagogy in the direction that many reported hoping to go. Looking at artifacts to demonstrate how e-Portfolios were being curated could also reveal the places where teachers may be using them with resistance. Just because the district hopes to innovate practice by changing from "reporting on student work" to "communicating student learning", does not mean that all teachers believe this to be better and want to change their practice in that same way. As the district continues to pilot the use of ePs, rumours have circulated that they will one day become mandatory. Studies looking at the ways they are used by those who do not value them and if they still changed practice despite resistance could provide valuable information to teachers and school districts. It is possible that by virtue of being

a new mediational means, ePs have the power to change assessment and learning even when teachers do not believe they are effective and valuable. As Wertsch (1998) points out, in the Soviet Union "controlling the structure and content of a textbook by no means amounts to controlling how it is employed by teachers" (p. 165). Studies of the effects of using ePs by those who believe in and resist it could uncover powerful information about how the eP itself is changing education as a cultural tool.

While many insights were gained through my study, it represented the opinions of only one group involved in the creation of e-Portfolios: teachers. A study looking at students' perceptions of e-Portfolios would uncover pertinent information about if the increases to ownership and self-reflection that teachers cited as benefits were recognized by students as well. In conjunction with the student perspective, it would be potentially quite interesting to also looks at the artifacts housed on the ePs. This research could be done from a mediated action perspective to see how the digital platform (mediational means) is affecting student work. Further studies are needed to understand if the layout of the system, which resembles papers laid on a table, is causing teachers to use it in a non-innovative way. A study looking at student artifacts could discover what percentage of documents on the eP were multimodal, formative, non-traditional, and open-ended. There are many research threads to still be followed in the elementary years given that using e-Portfolios is a relatively new practice.

5.5 Conclusion

In conclusion, my study found that the use of electronic portfolios to assess, document and communicate student learning is changing practice and pedagogy despite the struggles that teachers had with the platform. Using e-Portfolios, in conjunction with the 4-point proficiency

scale, is helping teachers shift their assessment practices to be more formative, descriptive, and strength-based.

Studies like this one provide insights into the advantages and disadvantages of using e-Portfolios with younger students. This information is important as it has to potential to inform the development and implementation of other platforms and may enable them to be designed in more user-friendly, effective ways that include the capabilities that teachers need from them prior to them being offered to teachers for use. Having studies that look at how e-Portfolios are currently being used with these age groups can potentially increase the chances of their successful implementation.

5.6 Summary

This chapter looked at the findings from the study in relation to the current research around e-Portfolios in education and the theoretical framework which are presented in Chapter 2. It discussed how e-Portfolios could be used to enable more formative assessment, encourage self-reflection, involve students in their own learning, encourage multimodality in ways to express learning, and increase transparency between home and school. It provided critical questions for future research such as the need to examine how technology that increases workload and diminishes a teacher's personal time is developed for use by a feminized workforce. This chapter also provides suggestions for future research.

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