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## **MOTIVATION AND DIGITAL PORTFOLIO ASSESSMENT**

A Canadian case study focusing on middle school students with dyslexia



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## ABSTRACT

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Motivation and Digital Portfolio Assessment: a Canadian case study focusing on middle school students with dyslexia

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This text aims to explore how a digital portfolio serves as a motivating assessment for a class of middle school students with dyslexia in Canada. After using a digital portfolio assessment for a one-month study, the students completed a questionnaire to self-report their experience with four measures of motivation: interest/enjoyment, perceived competence, effort/importance, and value/usefulness. Grounded in Deci and Ryan's self-determination theory (1985), this paper hypothesizes that the digital portfolio assessment helps to support the students' motivation levels, specifically in terms of the aforementioned subscales. Results from the study have useful reference points to provide teachers with an alternative form of assessment to foster positive motivation for students with dyslexia. Further research is needed to compare and determine the specific structure and implementation of digital portfolios that are optimal for motivational effects.

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Keywords:

digital portfolio, motivation, dyslexic learners, self-determination theory, alternative assessment

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# 1 INTRODUCTION

Motivation may be epitomized in the success of the Beatles and Bill Gates. By the time the rock band took center stage and the computer wiz revolutionized the world with Microsoft, they each had poured in over 10,000 hours to hone their crafts (Gladwell, 2013). The passion and interest that they invested in a task, for the opportunity to learn, grow, and thrive, were evident. It goes without saying that educators and parents across the world want the same for their students and children. However, in the school context, instilling passion and interest in schoolwork proves to be a difficult and ongoing battle. A survey of more than 5 million students conducted by Gallup (Hodges, 2018) revealed that student engagement steadily decreases as students advance in their studies. Engagement is high at the elementary level, at 74% in grade 5. However, by the time students reach middle school, their level of engagement falls to about half. In high school, only one-third of students report high levels of engagement. Motivation is especially a challenge for students with learning disabilities. Conti (2000) cited many studies (Nichollas, McKenzie, & Sufro, 1994; Rogers & Saklofski, 1985; Wilson & David, 1994) as evidence to the claim that students with learning disabilities (LD) are more likely to experience motivational difficulties compared to non-LD peers.

What causes students to become disengaged? Grattan Institute's report (Gross, Sonnemann, & Griffiths, 2017) cited factors such as students' disinterest in the curriculum, disruptions in students' home situations, and poor teaching quality. Lepper and Iyengar (2005) also attributed this decline of motivation in learning to increased standardized testing, particularly from 3<sup>rd</sup> grade through 8<sup>th</sup> grade. Furthermore, a quantitative study found the top reasons being boredom, and work-related difficulties, such as students not willing to engage or to try, because they do not believe they could do it (Montuoro & Lewis, 2015). To address all motivational factors seems to be a nearly impossible feat, and may be beyond the abilities of the teachers alone; however, teachers can rethink the design of their instructional and assessment methods to tackle the issues of boredom and perceived low academic competence, ensuring that students' learning experience is enriched with interesting and engaging elements, and that they are assessed at an appropriate level of difficulty that neither undermines their achievements nor deems to be too challenging for their abilities.

When working with students with learning disabilities such as dyslexia, it is especially important to seek ways for students to feel interested and enjoy what they are learning, and feel competent enough to put in the effort to meet challenges. Conti's research pointed to students with learning disabilities as having low affective measures, such as self-concept, locus of control, and expectations for academic performance. Additionally, Chapman (1988) reported students with learning disabilities having a perception of low academic competence. This group of students may also be less likely to find school personally enriching and meaningful (Conti, 2000). In a class where dyslexia is the predominant disability, one major challenge is that students find reading and written tasks especially demotivating due to their difficulty with reading and written expressions. Traditional assessment methods such as essays can feel excruciating for students, often requiring weeks of in-class time and significant assistance from the teacher. On the other hand, teachers still need to find a way to build on and allow students to apply critical thinking, insight, or creativity at a deeper level.

The present study proposes portfolio assessments as an alternative. Portfolio assessments have become increasingly popular, as it is both a cumulative collection of students' work and a presentation of a final product, making it ideal for formative and summative purposes. Traditionally a way to showcase one's expertise, portfolios also serve as a more authentic assessment method for students with learning disabilities, in that students have an alternative to relying heavily on text and written work to showcase their knowledge and skills. In the context of the study, a digital portfolio was used, as it complemented the technology available at school, and the students were comfortable with using technology for learning. Saeed and Zyngier's (2012) study reported engaging experiences of digital portfolio use and showed that student motivation and first-hand involvement in the portfolio process is enhanced by the use of technology. Another likely benefit of portfolios is that they motivate students by reflecting the journey of their learning, prompting for what Deci and Ryan's self-determination theory (1985) stated as the innate need for self-competence to develop motivation. Furthermore, portfolios encourage students' creative expressions, making them highly engaging, personal, and meaningful.

As a special education teacher, in-class observations have shown that the students, all of whom

with designations in dyslexia, exhibit qualities that could be harnessed for motivation in learning. For example, what Schnep (2014) cited as the many “advantages” of dyslexics, their strengths in thinking creatively and being able to see the big picture, call for teachers to look for types of assessments where students can truly make use of those skills for greater enjoyment of their learning, to build on their confidence about their capabilities, and to give learning a greater sense of value and meaning. This is especially important in the language arts classroom, where many reading and writing assignments seem to serve the opposite purpose for students who already struggle with language expressions. In the EFL setting, students reportedly prefer portfolio assessments to traditional ones, citing their enhanced language skills and motivation with this method (Suwaed, 2018). To see whether similar conclusions about motivation could be found with dyslexic students, the students in this study experimented with using a digital portfolio for a unit assessment in their English class. They then reported their experience in a questionnaire about motivation. Using measures of intrinsic motivation such as one’s interest and enjoyment of the task, their perceived competence, effort and value of the task (Ryan & Deci, 2000b), this paper makes for the argument that digital portfolios serve these motivational factors as an assessment method for students with dyslexia.

Given the overview of studies and classroom experience, this paper hypothesizes that digital portfolio assessments can support learning motivation for dyslexic students, who benefit from a highly personalized form of assessment that gives them the autonomy and self-efficacy to showcase their interests and abilities. The first section of the paper gives a general overview of studies and theories related to motivation. This is followed by discussions about learning disabilities, and issues relating to motivation with this particular student group. The next section proposes digital portfolios as an assessment method for dyslexic students, and details the study, in which a group of middle school dyslexic students were assigned to use a digital portfolio over the course of a poetry unit. Ryan and Deci’s Intrinsic Motivation Index (IMI) was used to devise a self-report questionnaire for students to reflect on their experiences with the portfolio. The final section analyzes the data collected from the experiment, provides linkage of the results to previous studies, and concludes with a recommendation for educators and researchers working with this particular student body.

## 2 MOTIVATIONAL THEORIES

Many theories define the components of motivation. Here a general overview of relevant theories is provided to indicate the scope of the research and to give clarity and definition to related terminology. As mentioned in the introduction, the qualities of portfolio assessments can be linked to Deci and Ryan's self-determination theory (1985), which posited there are two main types of motivation: intrinsic and extrinsic. In essence, whereas an extrinsically motivated individual is driven by tangible rewards or consequences, intrinsically motivated individuals actively partake in something purely for the enjoyment or satisfaction of the act itself. In education, this distinction becomes critical in the design of learning activities, tools, and assessments that encourage students to learn out of their own volition or become motivated by external rewards.

### 2.1 Intrinsic Motivation

Ryan and Deci (2000a) defined intrinsic motivation as "the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn." One measure of intrinsic motivation is free-choice, that is, the amount of time that is spent on a task, despite a lack of reward, and despite having other activities offered. Winne and Perry (2007) attributed intrinsic motivation as the learner's belief in "incremental learning, a high value placed on personal progress and deep understanding." Kubischta (2014) also connected engagement to motivation and deep learning, stating that engagement is students "[developing] an interest and a motivation from within themselves (intrinsic) to learn and to understand." This can be achieved with the right environmental factors, such as setting clear learning intentions, having a transparent success criterion, and making learning visible by considering formats and ways in which knowledge and skills can be presented. Afflerbach and Harrison (2017), and Clark et al. (2001) proposed that motivation and engagement be viewed from both short-term and long-term perspectives. Daily opportunities should be provided for students to grow their motivation and engagement in the short term, and have consistent development in the long term. In Afflerbach and Harrison's article (2017), it was stated that "the level of engagement over time is the vehicle through which classroom instruction influences student outcomes". Motivation and engagement should be seen as dynamically reciprocal, and as drivers towards building the other.

Deci, Ryan, and Koestner's review of 128 studies on the effects of extrinsic rewards on intrinsic motivation (1999) echoed the earlier work of Deci and Ryan's (1985) Cognitive Evaluation Theory. This sub theory of the self-determination theory attributed competence and autonomy, sometimes referred to as self-efficacy and self-determination, and the combination of the two, as innate psychological needs that need to be satisfied, for an individual to experience intrinsic motivation for a particular task. Further research by Assor (2012) added that competence, autonomy, and a third need, relatedness, are instrumental in achieving autonomous motivation and high-quality engagement. Keller (1979) developed the ARCS model, with similar components of motivation: Attention, Relevance, Confidence, and Satisfaction. Harter's 1981 manual also supported that the higher one's perceived competence, the more intrinsic one's orientation. According to Deci and Ryan (1985), students need to be challenged at the appropriate level. If challenges are too easy, they will seek more difficult ones, and if challenges are too difficult, they may abandon their efforts. Additionally, Connell and Wellborn (1991) attributed the amount of structure, degree of autonomy, and level of involvement in the learners' activities to their sense of control in their achievement outcomes, and consequently the development of a sense of competence. When individuals have a positive sense of their ability and efficacy to do a task, they are more likely to choose to do the task, persist at it, and maintain their effort. Conti (2000) summarized that intrinsic motivation is dependent on whether students find the activities challenging, whether their curiosity is piqued, whether they can personally identify with the value of the activities.

However, not all tasks are intrinsically motivating, and as is often the case with school work, students do not find it inherently interesting or enjoyable, and are less motivated unless given external rewards or consequences. Saeed and Zyngier (2012) recommended teachers to use extrinsic motivation as a boost to students' intrinsic motivation, and argued that where intrinsic motivation is lacking, extrinsic rewards can yield positive learning results, and that it is important to consider the approach that is most appropriate for the context. Thus, external factors of motivation cannot be dismissed, and Ryan and Deci (2000c) argued that both intrinsic and extrinsic motivation are essential for successful learning.

## 2.2 Extrinsic Motivation

Extrinsic motivation deals with the element of reward. Whether in the classroom or the workplace, rewards based on performance, engagement, completion of a certain task, or even for simply carrying out a task, can motivate an individual despite a lack of overall sense of value in the task (Eccles, 1983; Wigfield, 1998). Eccles (1983, 2009) explained task values as motivators of activity choices. One such task value is called interest value, which is based on the individual's feeling of enjoyment and pleasure when engaged in the activity. Eccles argued that over time, an individual's interest can develop into competence, and further contributes to one's identity. The personal value in which a task or activity fulfills is called attainment value. Other less personal values are utility value, which fulfills a need that is not personal, and cost value, which can be the monetary value or time and energy that goes into an activity or task. The values that one associates with a task is very much subjective and varies from one individual to another. As such, the effect of extrinsic rewards depends on the meaning of the reward to the individual (Kaplan, 2010). Clark, Chow-Hoy, Herter, and Moss (2001) further explained that an individual's perceived options, sense of self, and personal incentives all contribute to the meaning.

Whereas rewards can reinforce positive behaviour and therefore be motivating, Hendijani, Bischak, Arvai, and Dugar's work (2016) illustrated how extrinsic rewards can also have an undermining and negative impact on one's intrinsic motivation. In several studies on reward effects, it is observed that when given free-choice, rewards can significantly undermine intrinsic motivation for interesting tasks (Deci, 1999). In other words, when a reward is offered and expected upon task engagement or completion, the individual is less inclined to engage in or complete said task without the reward. In fact, except for positive feedback, no other forms of reward have a positive or enhanced effect on intrinsic motivation. On the other hand, deadlines, imposed goals, lack of choice and negligence of feelings, etc., can also undermine a student's intrinsic motivation (Ryan & Deci, 2000a). Wolters, Yu, and Pintrich (1996) similarly concluded that extrinsic goals, such as the desire to obtain good grades, are linked to negative motivational and cognitive outcomes. Despite studies on the detrimental effects of extrinsic rewards on intrinsic motivation, schools frequently establish and rely on systems of rewards and punishments to condition students for desired behaviour and performance ("Finding the Formula", 2019).

Ryan and Deci's theory (1985) placed the various degrees of motivation on a continuum, from the least intrinsically motivating--external regulation, to introjected regulation, identified regulation, and finally integrated regulation. As such, extrinsic and intrinsic motivations are not necessarily opposites, but rather a progress of internalization as the individual experiences more satisfaction in psychological needs of autonomy and competence. With introjected regulation, the individual does not accept the task value as one's own, while identified regulation means that the individual sees personal importance in the value of the task. Integrated regulation refers to the internalization of the task value as one's own. The variance of the degrees of motivation places external regulation and introjected regulation as being more controlled forms of motivation. As might be expected, the more internalized and integrated the task value, the more autonomy an individual will exercise in carrying out a task (Ryan & Connell, 1989; Ryan & Deci, 2000c). Ryan and Deci (2000c) also argued for the need for relatedness as an important part of internalization. Students need to feel connected to their learning and feel cared for by parents and teachers to have the initial motivation to perform tasks that are otherwise non-motivating. This is an important area for consideration, as The High School Survey of Student Engagement (Yazzie-Mintz, 2010) reported that almost half of the high school population find at least one class boring every day. Chiefly among their concerns are the lack of interesting material (81%), and the irrelevance of the material to their lives (42%). Due to its controlling nature, educators should not rely on rewards as the sole motivating factor for learners. But extrinsic motivation cannot be completely dismissed and abandoned, since incentives are oftentimes necessary to introduce students to tasks that they might find otherwise boring and uninspiring, tasks they have not experienced before or deemed too challenging, and tasks with few choices. Instead, teachers should foster the students' internal motivation where possible.

### **2.3 Autonomy, Competence, and Relatedness**

To promote intrinsic motivation, environmental characteristics need to be carefully considered to address the learner's needs for a sense of competence, autonomy, and relatedness, according to Deci and Ryan's (1985). Attention needs to be paid so that students are provided with a sense of choice in activities and ways to complete a task. Students should also be encouraged to explore and pursue their interests, build on their backgrounds and prior experiences, and be able to do so in a collaborative setting, with constructive and frequent feedback.

Katz (2006) observed the positive effects of motivation when students exercise autonomy and recommended for teachers to offer options and choices that meet the needs of all of the students in the class. When students find that the options are meaningful and relevant to them in some way, either due to their interests or goals, then free-choice can have a positive effect on motivation. Katz added that while learners are motivated by different things, the choices offered should be enough so that every learner finds at least one option that is relevant, interesting, or important to them. Additionally, the choices should be limited in number, and not be too easy or too complex, so as to maintain students' sense of competence. In accommodating students' need for relatedness, the choices should also be aligned with the students' internalized values. This may vary depending on the local context. Morgan (2006) also supported that choice-making improves the academic performance of all students. By offering students a choice of tasks or rewards, students report a higher percentage of task completion and accuracy. Furthermore, offering choices of tasks and rewards together is more effective than offering just one or the other alone. Morgan also observed that having a choice of task sequence can lead to a decrease in problem behaviours.

On the other hand, directly controlling teacher behaviours should be minimized to not undermine students' sense of autonomy. When a teacher exercises too much control and not give students enough autonomy and choices, students might come to fear the teacher's control and feel restricted and obliged to show academic engagement, but only exert effort when required by the teacher (Ryan & Deci, 2000a; Assor, 2005). Assor (2005) reported that directly controlling teacher behaviours appear more frequently in middle schools and secondary education when compared to elementary education. This can have negative effects on motivation for middle and high schoolers.

Eccles's (2009) expectancy-value theory stated that a learner will choose to take on a challenging task if he or she can expect both success and value in the task. Knowing that they will benefit from the task is hugely motivating, and the motivation to succeed is linked to feelings of self-efficacy, or the sense of competence. It also gives the individual an appreciation for possibilities (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean 2006; Järvelä & Renninger, 2014).

### **3 LEARNING DISABILITIES AND DYSLEXIA**

In the context of this study, students were situated in British Columbia, Canada, and attended an alternative school specifically for students with dyslexia and language-based learning disabilities. All students were enrolled based on their psych-ed examination results and their learning disability designations, in accordance with the regulations as outlined by the provincial ministry of education. The manual published by the British Columbia Ministry of Education (2016) defined learning disabilities as impairments in one or more processes related to perceiving, thinking, remembering or learning. Students with learning disabilities possess average to above-average intelligence, yet their learning is met with challenges in a range of areas, such as phonological processing, auditory processing, and visual-spatial processing. This can result in interference in acquiring and using oral language, reading, written language, and mathematics. Long term memory storage and retrieval may be an issue, as well as executive functioning skills and organizational skills. Furthermore, learning difficulties are frequently associated with and complicated by ADHD, or attention-deficit hyperactivity disorder. According to the manual, 3% of the student population is identified as receiving services for learning disabilities, with dyslexia being the most prevalent form of learning disabilities. A student with dyslexia needs direct and explicit remediation in areas of phonemic awareness, word decoding, and reading fluency. They oftentimes are reading at a level below their grade level, and experience difficulties with written expression and reading comprehension. Understandably, when a dyslexic student struggling with low reading fluency and comprehension is presented with a challenging reading task, their confidence falters, and they “[assert] the natural human response and [give] up on it” (Thomadsen, 2019).

#### **3.1 Learning Disabilities and Motivation**

For many students with learning disabilities, the negative effects of experiencing failure may be manifested in low self-esteem and reduced academic effort. The British Columbia ministry guide to *Supporting Students with Learning Disabilities* (2011) reported that relative to their peers, students with learning disabilities are less likely to engage in learning tasks, feel less confident about their learning abilities, and are discouraged by the lack of success in their learning. In some

cases, students find learning so overwhelming that they resort to avoiding, delaying, and giving up on learning tasks.

It is important to point out that not all studies have found a relationship between low self-efficacy and motivation. In a study of 39 fifth graders, students with learning disabilities, despite demonstrating a lower level of reading comprehension, had similar scores on self-efficacy, intrinsic orientation, and anxiety, compared to their non-LD peers. (Pintrich, Anderman & Klobucar, 1994). Additionally, students with learning disabilities are more likely to see external factors such as lack of support from teachers and parents, as causes for their failure, as opposed to their own abilities. This may be explained as the tendency to blame others when the students are externally regulated and show little interest, value or effort (Ryan & Deci, 2000a). On the other hand, the results from Deci, Hodges, Pierson, and Tomassone's study (1992) find that students' motivation and attitudes toward the postsecondary education experience, specifically the teaching and learning environment, contribute significantly to variations in grade point average (GPA) scores (Learning Disabilities Association of Canada, 2005).

Regardless, compared to their peers without learning disabilities, those with learning disabilities report a lower perception of self-efficacy and confidence (Learning Disabilities Association of Canada, 2005). Due to their processing, many students with learning disabilities struggle with simple tasks in reading, writing, and mathematics. For students with dyslexia, their reading fluency and speed may be lower than average, and many students report a dislike for reading tasks. Similar frustrations and stress arise when students are given extended writing tasks. Students have been observed to use their learning disabilities as an excuse to get out of work or to make self-deprecating jokes. With each subsequent grade, intrinsic motivation and engagement are reported to take a dip.

### **3.2 Recommended Practices**

Whether in general education or specialized programs, educators need to carefully consider the effects of motivation on learning and adjust their instructional methods to best support students to achieve higher self-perception, self-esteem and independence. In many countries, educators

work with specialists to determine the learner's disability, accommodations, and goals. In Canada, the Individualized Education Plan, or IEP, documents the student's psych-ed examination results, recommendations, as well as learning goals for the prescribed learning duration. This process of identification, accommodation and evaluation often involves a collaborative effort between the student, parents, teachers and school administrators. Students with learning disabilities as an at-risk population needs differentiated instructions to reflect their many learning challenges and needs. At the elementary school level (ages 8 to 14), it has been found that in self-reported studies, the most significant variable contributing to the motivation of children with learning disabilities is "competence in attaining outcome", or the perception of self-efficacy in tasks (Deci et al., 1992). For elementary-aged students, feeling supported by teachers can contribute to students' feelings of self-competence and autonomy. When children experience support from family, peer and school contexts, their positive relations with others contribute to the development of their competence. Their motivation will be positive and they will become fully engaged in different activities such as schoolwork (Connell & Wellborn, 1991; Wigfield, Eccles, & Rodriguez, 1998). At the secondary level, classroom context and perceived teacher support for autonomy contribute most to motivation. Deci et al. (1992) stated that students with learning disabilities in special education classrooms will evidence greater achievement and adjustment when they understand how to attain desired school outcomes and feel competent to do so, and are given an autonomous reason and support to do so. In essence, when given the skill sets to access strategies that enable them to be successful in their learning, they become actively involved in the education process and have better retention, motivation, and overall attitudes towards learning (*Special Education and Communication Disorders*, 2009).

Another great motivator, according to Weiser (2014), is giving students the choice to decide what they want to do from a list of options. Based on professional experience and observations, Weiser argued for the success of giving students options, and the freedom to choose, especially in inclusive settings. The British Columbia ministry guide (2011) further provided recommendations for teachers to use strategies to ultimately increase student motivation and optimism about learning. For instance, teachers may look to Universal Design of Learning (UDL) to motivate students by providing flexibility and choice. In UDL, students have multiple means of presentation and representation of learning. In place of traditional reading and writing assessments, students can create videos, audio texts, drawings etc. to model progress in their learning. This also provides teachers with multiples means of engagement and more success with cultivating

motivated learners. UDL is strongly linked to technology due to the flexibility of digital formats. Aside from being transformable, transportable and recordable, students can use digital graphic organizers, spell checkers, and text to speech technology to assist with their learning, and thus develop self-reliance and independence.

Another pertinent point in "*Supporting Students with Learning Disabilities*" (2011) is that student assessments need to be transparent, and the results made visible, with the learning progress represented in an easy-to-understand format, such as graphs or charts. Educators need to use assessment data to assist students in setting goals, planning and tracking achievement, and encourage students to take ownership of learning through self-evaluation and reflection. This approach to assessment means that students are a part of their learning process, are provided with individual choices, and learn to take ownership and responsibilities.

To accommodate challenges in students' learning, it is recommended to divide long assignments into chunks for step-by-step instruction and completion. This also ensures that feedback can be shared frequently, and creates an opportunity for the student to engage in a process of self-monitoring. Differentiated instruction provides flexibility in addressing different learning processes and styles, thus creating a more personal, proactive, and inclusive learning environment. Students are provided with the structures to maximize strengths, work around weaknesses, and experience timely remediation. Students begin to understand their personal learning styles, interests, needs, and engage with their learning, and as a result, increase their motivation in learning tasks.

In a case study of Foothills Academy (Mcquarrie, Parrila, Odishaw, Barber, Hirschfeld & Williams, 2010), a school for students with learning disabilities, it was observed that relationships with school staff, the support that was provided to students with learning disabilities, the availability of learning resources, and the use of teaching and assessment strategies, all contributed to the success of the school. The case study also highlighted the importance of evidence-based learning as motivating for students with learning disabilities. Using various methods to demonstrate student progress was instrumental for students to "find out what works for them, how they learn, and where their strengths and weaknesses are" (Mcquarrie et al., 2010). When students have a sense of competence, they are more likely to be motivated.

In essence, there is a need to reflect on how motivation is defined and exhibited in students ("Finding the Formula", 2019) to find strategies that contribute to students' learning experience, and enhance their motivation in learning. Educators should strive to offer differentiation in instructional approaches, provide personalized ways for students to represent knowledge, and place emphasis on formative, evidence-based learning.

## 4 DIGITAL PORTFOLIO ASSESSMENT

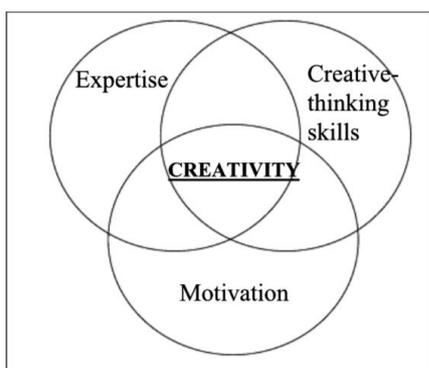
For the purpose of the study, traditional portfolios and digital portfolios are differentiated. While synonymous with e-portfolio, multimedia portfolio, electronic portfolio, etc., here the term “digital” is used as an encompassing description for the multifaceted nature in which a portfolio in digital formats provides features and functions, and serves purposes in the digital age (Woodward & Nanlohy, 2004). Since the students were already familiar with using technology for education, a digital portfolio assessment was used in the experiment to make use of its multimodality and flexibility. This assessment method is connected to the components of motivation and recommended practices for working with LD students, as discussed in previous sections.

Portfolio assessments have long been linked to motivation. Upon examining the connection between the portfolio process and student motivation and engagement, Clark et al. (2001) found that when individuals are working toward goals that are personally meaningful, they perform at their highest, most effective levels. Clark et al. (2001) went further to state that having a portfolio has made a difference in students’ learning experience, in that it provides a material and social site where engagement in learning could occur. For educators, the portfolio also provides a window and lenses through which we see aspects of a student’s sense of self, task, and whether optimal learning has been achieved or not.

The benefits of using portfolio assessments, and in particular digital portfolios for higher motivation and engagement were supported in a number of studies. In the language learning context, where heavy reading and written outputs are required, students have been found to have little interest or motivation (Farrah, 2018; Suwaed, 2018). However, the studies found students’ perception of digital portfolio assessments to be positive, not only contributing to their language learning progress, but also ownership, competence, and motivation. In arguing for the benefits of digital portfolios, Keller (1987) attributed this to the effectiveness of technology in offering interactivity for the user. After conducting a series of interviews with students who used digital portfolios for a writing class, it was found that most users reported an overall positive experience in which they felt a sense of engagement, control, and ownership. Wuetherick and Dickinson (2015) also mentioned the benefits of digital portfolios in being able to track “longer episodes of

teaching and learning more effectively than single observations do”. This also makes digital portfolios ideal as an assessment method to observe students’ ongoing engagement and motivation over a length of time (Afflerbach & Harrison, 2017; Clark et al., 2001).

Another benefit of digital portfolios is its creative expression. The creativity that is involved in the process of building a digital portfolio, according to Ahonen (2014), has a direct link to intrinsic motivation. Ahonen provides an image to show how Amabile’s model of creativity (1989; 1998) may be applied in portfolios and motivation.



*IMAGE 1. Components of creativity (Amabile, 1998)*

The creative output of a digital portfolio assessment would be especially beneficial for dyslexic students. Cancer, Manzoli and Antonietti (2016) affirmed the link between dyslexia and creativity, stating that their results showed dyslexics’ tendency to use creative thinking to “establish relationships between different or opposite elements, and finding alternative solutions”, and that “making connections is in fact recognized as a process which persons with [dyslexia] like and excel.” Conti (2000) connected creative thinking to intrinsic motivation, stating that “when conditions are created that facilitates intrinsic motivation, students’ learning, particularly conceptual learning and creative thinking, increase dramatically.” Going back to self-competence and interest/enjoyment as the building blocks for motivation, it would follow that assessments that highlight and help develop skills that the dyslexic students are good at, and enjoy, are helpful to achieving success in learning and motivation.

Axton's study (2012) also supported that portfolios be used as tools to foster motivation for students with lower motivation and interest. Apple and Shimo (2004) similarly showed that portfolios have an overall positive response from learners, compared to more traditional forms of assessment. In their study, students used a digital portfolio, and reported many positive benefits to this method, preferring it to traditional learning and assessment methods. Furthermore, it can be said that portfolios support motivation by positively contributing to active learning and autonomous learning. In the same studies, students reported that they strongly thought the portfolio provided them with a joy of creation and ownership, goal awareness, individual accountability, and continuous and extended learning opportunities. Paulson, Paulson, and Meyer (1991) claimed that portfolios have self-regulating effects, in that they guide students to make judgments regarding their learning performance. In the case of students with learning disabilities, Deci and Ryan (1985) outlined the need for self-determination, competence, and autonomy, while Harter (1981) stated that successes should produce intrinsic pleasure and perceptions of competence and control. Black (2010) also argued that a self-led digital portfolio has the potential to assist in developing self-advocacy skills in students with learning disabilities at the secondary level. Building on Black's argument, the experiment carried out in this study explores whether similar findings can be reached for the development of students' perceived self-competence, effort/importance, and enjoyment/interest, all of which are measures of motivation in learning.

When examining the criteria that indicate a successful digital portfolio assessment implementation, many of the criteria are congruent to what has been previously discussed as essential elements in motivational theories. Firstly, Barrett's article (2011) outlined the development of digital portfolios as a three-level process, involving first the collection of evidence, ongoing reflection process, and finally the showcase of an end product. Barrett also suggested that all users need to be given ample amount of support and assistance, as well as a gradual implementation. Swicegood (1994) identified the four main types of portfolios as showcase, reflective, cumulative and goal-based. A successful portfolio can have a combination of all four purposes, and should be reflective of an individual's effort and learning, verified over time, and showcases the acquiring of a set of pre-established learning objectives. The process in which the learner is actively involved in reflecting and setting their own goals, and exercising control over their learning outcome, is what Kubischta (2014) and Pintrich (2000), Schunk (2005), and Winne and Perry's (2007) have described as self-regulation. Their findings showed that when a learner demonstrates higher self-regulation, they are more motivated.

Secondly, Steele (2009) provided a list of criteria, with the following being essential components to have in a portfolio assessment:

- Familiarity with the portfolio concept, including an understanding of both the process and the product of portfolio construction;
- Clear framework and guidelines;
- Structure tempered with freedom for creativity;
- Feedback during the evidence collection process;
- Understanding of the value of reflection;
- Understanding of the value of the portfolio for future use;
- Motivation to learn and achieve good marks;
- Student ownership of the portfolio;
- Making connections between the portfolio content and the outside life of the student;
- Consideration of the target audience;
- Sense of achievement at overcoming initial struggles to understand the portfolio concept

Each item on the list can be interpreted in connection to studies done on motivation. For instance, when “structured with freedom for creativity”, and students are “given ownership over their portfolio”, the portfolio assessment can contribute to a sense of choice-making and autonomy, which help increase motivation, as found by Katz (2006) and Morgan (2006). Setting “clear framework and guidelines”, and having an “understanding of both the process and the product of portfolio construction” directly impact students’ achievement outcomes (Connell & Wellborn, 1991; Deci et al., 1992). Furthermore, “understanding the value of the portfolio for future use” and “making connections between the portfolio content and the outside life of the student” allow students to see the importance in the task, relate to it, and consequently identify with the value (Assor, 2012; Conti, 2000). Perhaps the most important point, “sense of achievement at overcoming initial struggles to understand the portfolio concept” contributes to the development of self-efficacy and competence (Assor, 2012; Deci, Ryan, & Koestner, 1999; Deci & Ryan, 1985; Harter, 1981), and confidence-building (Keller, 1979), which is crucial for students with learning disabilities, such as dyslexia, to become resilient and even appreciate challenges (Wigfield et al., 2006; Järvelä & Renninger, 2014).

Lastly, Harper and Hirtz (2008) listed the essential features and benefits of digital portfolios, arguing for its usability, accessibility, and extensibility. The wide scope of skills and knowledge that can be captured and documented in portfolio formats is invaluable to the user for its learning potential (Weiser, 2014), and easily gives teachers a gateway to provide differentiation and

personalization (BC Ministry, 2011). It supports dyslexic students with their learning and is compatible with the recommended practices of a UDL approach. Furthermore, assistive technology such as spell checkers and text to speech software can be incorporated in digital portfolios to transform students' learning experience for the better. The strong connections between digital portfolio assessments and theories of motivation lead to the experiment that follows in the section below.

## **5 PRESENT STUDY**

Based on previous research and studies on motivation and digital portfolio assessments, the present study hypothesizes that students diagnosed with dyslexia will perceive the digital portfolio assessment as motivating, especially in the context of the language arts class, where traditional assessments emphasize heavy reading and writing elements. Adapted from the Intrinsic Motivational Index (Ryan & Deci, 2000b), the measures for motivation are students' perceived interest/enjoyment, perceived competence, and effort/importance in the portfolio assessment, as interpreted on a Likert scale. The following sections present a review of similar studies on students' perception of motivation, the methodology used in the present study, followed by an analysis and a discussion of the results. The results show that students in the study responded positively to the assessment and reported high measures of motivation towards the assessment, suggesting digital portfolios as a possible assessment method for motivation for the students.

### **5.1 Literature Review**

The most relevant study on students' perception of learning motivation was Martin's study (2001), which argued for the need to measure motivation and its multidimensionality with the Student Motivation Scale. The scale measures student motivation with nine measures, five of which are boosters, or thoughts and behaviour that contribute to motivation, and four guzzlers, or thoughts and behaviours that undermine motivation. Martin outlined strategies for educators to use boosters to encourage student motivation. Martin also mentioned academic resilience as a dimension of motivation that needs attention. Much like previous research, Martin (2001) stated that students' expectations for academic outcomes are strongly connected to their motivation and achievement. What further contributes to students' motivation is their valuing of a task. An issue with the Student Motivation Scale is that it is not subject-specific. Martin called for future research to take into consideration the context of specific school subjects. Furthermore, teacher observations and ratings of the students during the study need to be taken into consideration to support the validity of the data.

Another source of reference was Harter's scale (1981) that seeks to explore the extent of intrinsic motivation versus extrinsic motivation in a child's learning in the classroom. However, Kaplan (2010) brought to attention that the questionnaire is structured so that the participant responds to questions with items that indicate extrinsic motivation separate from items that show intrinsic motivation. Each item in the instrument asks the participant to identify themselves as either intrinsically or extrinsically motivated, therefore asking the participant to self-identify, and separates extrinsic and intrinsic motivations into opposites. Kaplan (2010) argued for flaws in this design, and Harter (1992) herself recognized that it is possible to be both intrinsically and extrinsically motivated simultaneously.

Both studies used a self-report approach, suggesting the substantial quality of the data that can be taken for analysis from this approach. However, both studies asked students to report on their general experience with motivation in learning, which is not task or subject-specific. To verify the hypothesis, multidimensional questions should also be used, and it will be more valuable to use measures that gauge students' experience with a digital portfolio assessment that focuses on the learning contents in their language arts class. Furthermore, to prevent students from self-identifying as intrinsically or extrinsically motivated, and students potentially responding according to what is deemed as the more appropriate or desirable answers, extra care needs to be taken to ensure the questions are not phrased to give suggestions.

## **5.2 Methodology**

The following section delineates the methods and process of the research. Ryan and Deci's Intrinsic Motivational Index (2000b) was adapted and used as a 25-item task-perception questionnaire that asked for students' experience in regards to their perception of interest/enjoyment, perceived competence, effort/importance, and value/usefulness of a digital portfolio assessment in relation to a poetry unit in their English class.

### **5.2.1 Questionnaire**

The full inventory of the Intrinsic Motivation Index has 45 items in total, categorized into seven subscales to assess one's perception of a given task, ranging from "interest/enjoyment",

“perceived competence”, “effort/importance”, “pressure/tension”, “perceived choice”, “value/usefulness”, to “relatedness”. Ryan and Deci (2000b) noted the little effect of order in item presentation, and that not all subscales need to be used in a particular study. This means flexibility in choosing subscales that are most relevant to the study. Therefore, items from the subscales were mixed and in no particular pattern or order, and only four of the most relevant subscales were used in this study. The questionnaire used in the study is provided on the following page.

*FIGURE 1. Portfolio Questionnaire*

## PORTFOLIO QUESTIONNAIRE

The following items concern your experience with the portfolio assignment. Please answer all items. For each item, please indicate how true the statement is for you, using the following scale as a guide:

1	2	3	4	5	6	7
Not at all true			Somewhat true			Very true

1. I put a lot of effort into this.
2. I think I am pretty good at this assignment.
3. I believe that this portfolio is useful for showcasing my creativity and understanding of poetry.
4. The portfolio was fun to make.
5. I didn't try very hard to do well at this assignment.
6. I think the portfolio is important for developing my critical thinking.
7. I enjoyed making this portfolio very much.
8. I think I did pretty well at this assignment, compared to other students.
9. I tried very hard on this assignment.
10. I think this is an important assignment.
11. I felt like I was enjoying the portfolio while I was making it.
12. I thought this was a very boring assignment.
13. It was important to me to do well at this assignment.
14. It is possible that this portfolio could improve my studying habits.
15. After working at this activity for a while, I felt pretty competent.
16. I thought this was a very interesting assignment.
17. I am willing to make this portfolio again because I think it is somewhat useful.
18. I would describe this assignment as very enjoyable.
19. I didn't put much energy into this.
20. I am satisfied with my performance at this task.
21. I believe making this portfolio could be somewhat beneficial for me.
22. I was pretty skilled at this activity.
23. I believe making this portfolio could help me do better in school.
24. This was an activity that I couldn't do very well.
25. I would describe this assignment as very fun.

The students self-reported their experience using a Likert scale out of 7, with 1 being “not at all true”, 4 being “somewhat true”, and 7 being “very true”. As each subscale measures different aspects of motivation, the “interest/enjoyment” subscale is chosen as it is the most pertinent to the measurement of self-reported intrinsic motivation. Other subscales that predict self-reported intrinsic motivation are “perceived choice” and “perceived competence”. Items from “interest/enjoyment”, “perceived competence”, and “effort/importance” are included in the present study’s questionnaire to provide a multidimensional perspective into students’ perceptions of the digital portfolio assignment. Additionally, as the “value/usefulness” subscale relates to the process of internalization and self-regulation, items from this subscale are included as well. The “perceived choice” subscale would appear to be a measure of the respondents’ sense of autonomy. However, the item descriptions do not apply to the intended use of the digital portfolio, and the subscale is therefore not included in the questionnaire. To avoid redundancy and to maintain the students’ focus on completing the questionnaire, only 25 items from the abovementioned four subscales are used. Items 4, 7, 11, 12\*, 16, 18, 25 are in the interest/enjoyment subscale. Perceived competence is reflected in items 2, 8, 15, 20, 22, 24\*. Items 1, 5\*, 9, 13, 19\* measure effort/importance. Finally, items 3, 6, 10, 14, 17, 21 and 23 measure value/usefulness. The asterisk following an item number represents a score that must be reversed when calculating the subscale score.

### **5.2.2 Research Participants**

Participants of this study consisted of 10 students from an independent, alternative school in British Columbia, Canada. The school serves students from the Metro Vancouver region, from grades 2 to 12. The predominant ethnicity of the student population is white Canadian. Many students come from a higher socioeconomic background, while some students receive funding from the provincial ministry of education for their special needs designations. All of the students in the school and the study have high incidence designations, ranging from gifted to mental illness and those that require behavioural support. All students have learning disabilities, the most prominent being language-based learning disabilities such as dyslexia. To provide accommodations for the students, assistive technology such as text-to-speech and dictation tools are used regularly in the school in students’ work. Instructional use of technology is also encouraged. Social-emotional learning is a vital part of the curriculum, with executive functioning, goal-setting, metacognitive awareness, self-regulation and self-advocacy heavily emphasized. To

more readily provide differentiation to the learners, the class size in the school does not exceed 10 students per class. Within humanities subjects, students are placed in classes according to teacher observations of abilities, learning styles, and habits. The 10 participants of this study, 8 boys and 2 girls, all 14 years old, were in the same grade 9 English class. Given the school's adoption of GSuite apps for learning and the BYOD policy, a digital portfolio assessment was implemented with Google Sites.

### **5.2.3 Limitations and Assumptions**

Limitations were present in this study with regards to its assessment method and chosen subjects, consequently yielding preliminary insights on the students' reports of motivation in a digital portfolio assessment in their English class.

The limitation with a self-report assessment is that contextual factors are not taken into account. Deci and Ryan (2000b) recommended a combination of self-report and demonstration of free-choice behaviour for a comprehensive measurement of intrinsic motivation. Within the scope of the study, the self-report served to provide invaluable information about students' perception of their experience, after having had sufficient time with the digital portfolio assessment. However, due to time restraint and the teacher/researcher's dual roles in this study, observations were limited to feedback given to students by the teacher on their behaviour and effort.

Generally speaking, in the Vancouver region, students with learning disabilities in both public schools and most independent schools are placed in inclusive classrooms and receive pull-out support for parts of the day, or a few lessons in a week, with the goal of the support being remediation. This makes it difficult to carry out a study with subject-specific instructions and assignments, where continuity in lessons and a prolonged period of time may be required. Furthermore, within the chosen school, certain restrictions, such as the pacing of the units, the appropriateness of the units concerning the digital portfolio assessment, and classroom setup and the availability of technology proved challenging to conduct the study in multiple classes. That said, while it does not represent the entire population of dyslexic learners, the small sample size offers a close study with useful recommendations for further research.

#### **5.2.4 Procedure**

Prior to the study, a survey sent out to teachers in the school and several support groups for teachers working in special education settings established that the majority of teachers would like to use digital tools for student self-regulation and motivation (see appendix 1). Thereafter, a timeline for the study was devised (see appendix 2). Following Barrett's (2012) recommendation for a gradual implementation of the digital portfolio assessment, students were first given some training regarding the appropriate use of digital media by the teacher. Google Sites was chosen as the platform for the digital portfolio for its easy learning curve and to easily link with the schoolwide use of G Suite apps. A 70-minute lesson was dedicated to walk students through Google Sites to ensure that they were familiar with the platform and were able to make use of its features to construct their portfolio. To naturally integrate the portfolio assessment with the lessons, considerations of constraints, such as the duration of the unit, and topics to be covered by the curriculum, were made. After reviewing all possible units of study, the poetry unit was decided as having the most ideal time frame and relatedness to creative and rubrics-based assessments. As the class began the month-long unit in poetry, students were given a rubric in which the criteria for the assignment were clearly outlined. As students learned about poetic devices and types of poetry, they were given class time and instructions to work on the portfolio sites in steps. In total, students were required to create a haiku, a sonnet, as well as provide an analysis of song lyrics to complete the assignment. Supervision, assistance, and feedback from the teacher were ongoing throughout the process. As the unit came to an end and students publish their final product, they were asked to share their portfolios with their peers for a friendly competition. As the researcher also assumed the role of the teacher teaching the class and facilitating the assessment, students were asked to complete an anonymous questionnaire on Google Forms to encourage the most accurate and honest feedback, and avoid students answering according to what they thought was the correct or appropriate response. Finally, the assignment was graded to reflect the student's content knowledge, their ability to apply critical thinking and creativity, and their own evaluation of their effort and work.

#### **5.3 Analysis**

After students completed the questionnaire, the results were interpreted in the following steps. First, the scores for items # 5, 12, 19 and 24 were reversed by subtracting the original numbers

(out of 7) from 8, to reflect the actual scores. When analyzing the item scores, the negative statements for these items were also rephrased, to be read in the opposite meaning to appropriately describe the extent to which the scores apply to the subscales. For instance, a score of 7 (“very true”) for the statement for item #5, *I didn’t try very hard to do well at this assignment* would be reversed to reflect a score of 1, which then translates to the respondent answering “not at all true” to the statement *I tried very hard to do well at this assignment*. As the item is a measure of the “effort/importance” subscale, the value of 1 would then reflect the lack of effort/importance of the task to the respondent. The scores to items belonging to each subscale were calculated to arrive at a mean, median and standard deviation for analysis.

## 5.4 Results

The results, with the abovementioned items reversed, are shown in Table 1 below. The frequency and distribution of responses according to the Likert scale are shown, along with the mean and standard deviation for each item.

Question	N	1	2	3	4	5	6	7	Mean	SD
1. I put a lot of effort into this.	10	0	1	2	4	3	0	0	3.9	0.94
2. I think I am pretty good at this assignment.	10	0	0	0	5	3	2	0	4.7	0.78
3. I believe that this portfolio is useful for showcasing my creativity and understanding of poetry.	10	0	0	0	1	3	4	2	5.7	0.86
4. The portfolio was fun to make.	10	0	1	2	3	3	1	0	4.1	1.14
5. I tried very hard to do well at this assignment.	10	0	0	2	2	2	3	1	4.9	1.21
6. I think the portfolio is important for developing my critical thinking.	10	0	2	2	2	2	1	1	4.1	1.39

7. I enjoyed making this portfolio very much.	10	0	0	1	3	4	1	1	4.8	0.95
8. I think I did pretty well at this assignment, compared to other students.	10	1	2	1	0	3	1	2	4.3	1.81
9. I tried very hard on this assignment.	10	1	0	1	1	4	2	1	4.7	1.52
10. I think this is an important assignment.	10	0	0	0	3	0	4	3	5.7	1.14
11. I felt like I was enjoying the portfolio while I was making it.	10	0	0	3	3	1	2	1	4.5	1.21
12. I thought this was a very fun assignment.	10	0	0	2	3	2	3	0	4.6	1.11
13. It was important to me to do well at this assignment.	10	0	0	0	2	2	4	2	5.6	0.96
14. It is possible that this portfolio could improve my studying habits.	10	1	3	1	5	0	0	0	3	1.10
15. After working at this activity for a while, I felt pretty competent.	10	0	0	0	0	3	6	1	5.8	0.58
16. I thought this was a very interesting assignment.	10	0	0	2	3	2	2	1	4.7	1.14
17. I am willing to make this portfolio again because I think it is somewhat useful.	10	1	2	0	2	3	0	2	4.2	1.66
18. I would describe this assignment as very enjoyable.	10	0	0	0	2	4	3	1	5.3	0.83
19. I put a lot of energy into this.	10	0	0	1	1	2	2	4	5.7	1.29
20. I am satisfied with my performance at this task.	10	1	1	1	2	3	1	1	4.2	1.57
21. I believe making this portfolio could be somewhat beneficial for me.	10	0	1	1	3	2	2	1	4.6	1.31
22. I was pretty skilled at this activity.	10	0	0	1	2	3	3	1	5.1	1.06

23. I believe making this portfolio could help me do better in school.	10	1	0	0	1	2	4	2	5.3	1.60
24. This was an activity that I could do very well.	10	0	0	1	2	1	3	3	5.5	1.27
25. I would describe this assignment as very fun.	10	0	0	2	2	3	2	1	4.8	1.14

Looking at the results generally, students responded positively towards the digital portfolio assessment, with only one item falling below the mean of the Likert scale. The item scoring the highest mean is #15 *After working at this activity for a while, I felt pretty competent*, with an overwhelming majority selecting 6 as their response. The standard deviation is also the least of all items. This statistical significance suggests that the digital portfolio assessment had the most beneficial impact on students' self-competence, and that they felt positive about their skills and abilities after engaging in the assignment for some time. Similarly, half of the students were in agreement when responding to whether they felt they were good at this assignment, and whether the portfolio could improve their study habits. For the first statement as stated in item #2, half of the students felt it was somewhat true, and no one scored below that. This suggests that every student felt to some degree, somewhat or fairly confident about their abilities in doing the assignment, and that no student felt like they lacked the abilities in doing the assignment. On the other hand, the statement pertaining to studying habits in item #14 was the only item out of the entire questionnaire with all responses on the lower end of the scale, signalling students' negative perception of the assignment as valuable and important to the development of study skills. Nonetheless, since half of the students felt the statement was somewhat true, it would appear that most students were indifferent or felt that the assignment was at least somewhat important and of value to their studying skills.

Table 2 below is the grouping of all items belonging to the "Interest/Enjoyment" subscale, showing the response distribution for the subscale. The median is also shown in the table.

TABLE 2. Response Distribution for the "Interest/Enjoyment" subscale

Question	N	1	2	3	4	5	6	7	Mean	SD
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4. The portfolio was fun to make.	10	0	1	2	3	3	1	0	4.1	1.14
7. I enjoyed making this portfolio very much.	10	0	0	1	3	4	1	1	4.8	0.95
11. I felt like I was enjoying the portfolio while I was making it.	10	0	0	3	3	1	2	1	4.5	1.21
12. I thought this was a very fun assignment.	10	0	0	2	3	2	3	0	4.6	1.11
16. I thought this was a very interesting assignment.	10	0	0	2	3	2	2	1	4.7	1.14
18. I would describe this assignment as very enjoyable.	10	0	0	0	2	4	3	1	5.3	0.83
25. I would describe this assignment as very fun.	10	0	0	2	2	3	2	1	4.8	1.14
<b>Median</b>	<b>5</b>								<b>Overall 4.68</b>	<b>1.22</b>

The overall mean and mode indicate that students showed an above-average interest and enjoyment towards the assignment. All items scored an average above 4, and the standard deviation is the lowest of all subscales, showing an overall consistent and homogenous experience of intrinsic motivation for the students.

The scoring for “perceived competence” is shown in Table 3 below.

**TABLE 3.** Response Distribution for the “Perceived Competence” subscale

Question	N	1	2	3	4	5	6	7	Mean	SD
2. I think I am pretty good at this assignment.	10	0	0	0	5	3	2	0	4.7	0.78
8. I think I did pretty well at this assignment, compared to other students.	10	1	2	1	0	3	1	2	4.3	1.81
15. After working at this activity for a while, I felt pretty competent.	10	0	0	0	0	3	6	1	5.8	0.58

20. I am satisfied with my performance at this task.	10	1	1	1	2	3	1	1	4.2	1.57
22. I was pretty skilled at this activity.	10	0	0	1	2	3	3	1	5.1	1.06
24. This was an activity that I could do very well.	10	0	0	1	2	1	3	3	5.5	1.27
<b>Median</b>	<b>5</b>								<b>Overall 4.93</b>	<b>1.50</b>

Results in this subscale similarly show that students perceived above-average competence towards the task, suggesting that students were confident and comfortable with the portfolio assessment. 3 of the items scored an average above 5, making it one of the subscales with the highest scores.

Table 4 below shows the results for students' effort, and their perceived importance to do well at the assignment.

TABLE 4. Response Distribution for the "Effort/Importance" subscale

Question	N	1	2	3	4	5	6	7	Mean	SD
1. I put a lot of effort into this.	10	0	1	2	4	3	0	0	3.9	0.94
5. I tried very hard to do well at this assignment.	10	0	0	2	2	2	3	1	4.9	1.21
9. I tried very hard on this assignment.	10	1	0	1	1	4	2	1	4.7	1.52
13. It was important to me to do well at this assignment.	10	0	0	0	2	2	4	2	5.6	0.96
19. I put a lot of energy into this.	10	0	0	1	1	2	2	4	5.7	1.29
<b>Median</b>	<b>5</b>								<b>Overall 4.96</b>	<b>1.44</b>

Results from table 4 show that this subscale scored the highest mean of all subscales, indicating that this was an area where students felt the most strongly about. However, item #1 yielded the lowest average, indicating that students put in what was perceived an only somewhat satisfactory

to a good amount of effort in the digital portfolio. This is contrasted with the high scores for items #13 and 19, with students expressing the importance to do well on the assignment, and that they had put in moderate to very high energy into the work. The terms “effort” and “energy” as adopted from the original index were subject to students’ perception and understanding of the word choices. The disparity between students’ perceived importance of the assignment and their corresponding effort may be explained as the motivation and desire to do well, but the lack of willingness to put in the work. However, this assumption is not supported by the scores for the statements in which students indicated they tried very hard to do well.

Lastly, the response distribution for students’ perceived value and usefulness of the portfolio assessment is detailed in table 5 below.

**TABLE 5.** Response Distribution for the Value/Usefulness subscale

<b>Question</b>	<b>N</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>Mean</b>	<b>SD</b>
3. I believe that this portfolio is useful for showcasing my creativity and understanding of poetry.	10	0	0	0	1	3	4	2	5.7	0.86
6. I think the portfolio is important for developing my critical thinking.	10	0	2	2	2	2	1	1	4.1	1.39
10. I think this is an important assignment.	10	0	0	0	3	0	4	3	5.7	1.14
14. It is possible that this portfolio could improve my studying habits.	10	1	3	1	5	0	0	0	3	1.10
17. I am willing to make this portfolio again because I think it is somewhat useful.	10	1	2	0	2	3	0	2	4.2	1.66
21. I believe making this portfolio could be somewhat beneficial for me.	10	0	1	1	3	2	2	1	4.6	1.31

23. I believe making this portfolio could help me do better in school.	10	1	0	0	1	2	4	2	5.3	1.60	
<b>Median</b>	<b>5</b>								<b>Overall</b>	<b>4.65</b>	<b>1.71</b>

In this subscale, students reportedly found the portfolio assessment to have somewhat high to high usefulness and value. However, individual items in the subscale show varying opinions regarding what students found useful and of value. Results show that students thought that the portfolio was an important assignment, and that it was most beneficial for the showcase of their creativity and content knowledge. On the contrary, the low scoring in item #14 signifies that the portfolio had limited effects in improving students' studying habits, while the vast majority believed the assessment could help them do better in school. It can be concluded students' perception of the value and usefulness of digital portfolios is subjective to the intended and desired learning outcomes. While student opinions varied on the benefits and usefulness of digital portfolio, the majority recognized its importance.

Other points for consideration were the teacher/researcher's observations of students' behaviour and effort, as noted in written feedback for students. It was observed that students were engaged in the task and able to work to their ability and at their pace. Towards the end of the study, all students except for one were able to complete the assignment on time, demonstrating the ability to self-regulate and manage their own progress. The amount of effort, originality and personal expression were evident in many students' works. Appendix 4 provides screenshots of some samples from student works.

## 5.5 Discussion

Based on the self-reports and observations of the study, student perception of the digital portfolio assessment was positive. The findings of the study, albeit from a small sample size, provides a snapshot that supports the digital portfolio as an assessment method that is perceived as motivating for students with dyslexia. The four subscales used to measure student motivation

show that students viewed the digital portfolio assessment as important, and one of which they can enjoy, build self-efficacy, and demonstrate their content knowledge and creative thinking. The sections below provide the linkage of the results to previously mentioned theories and studies in motivation.

### **5.5.1 Interest/Enjoyment**

Results from the “interest/enjoyment” subscale indicate that the digital portfolio assessment successfully captured the interest of the learners and provided them with an enjoyable experience. The subscale had the most consistent scoring. Item #18 scored the highest, suggesting that students found the assignment to be “very enjoyable”. Close behind was item #16, meaning the digital portfolio was “very interesting”. Eccles’s research (1983; 2009) stated the correlation between interest value and level of engagement and motivation. The high interest value of the digital portfolio is a positive indication that it was motivating for students. As this subscale measures specifically intrinsic motivation, it suggests that students were truly invested in the task, despite not being offered external rewards (Ryan & Deci, 2000a). Furthermore, Winne and Perry (2007) and Kubischta (2014) connected intrinsic motivation to the learner’s personal belief in making progress in their learning. As was observed in the results, students not only produced quality work that offered insight and creativity, they also applied their interest and enjoyment in the task to make it personally meaningful for them.

### **5.5.2 Perceived Competence**

The average in students’ perceived competence corresponds with what the self-determination theory (1985) stated as an innate need of every individual—to feel capable and able to practice self-efficacy. The low learning curve of Google Sites and the gradual implementation of the digital portfolio may have aided in students’ sense of confidence in their abilities in the task. Students responded positively, particularly to items #22, “I was pretty skilled at this assignment”, and #24, “This was an activity that I could do very well”. Results from items #22 and 24 suggest that students felt very comfortable and were highly competent in the assignment, and highlighted the ability of the digital portfolio in building students’ competence over time, supporting what Afflerbach and Harrison (2017), and Clark et al. (2001) stated as daily opportunities in the short term leading to long term development in motivation and engagement. This points to the digital

portfolio assessment as supporting motivation for dyslexic learners, as they acquire the skills and knowledge and become more confident in their abilities in the process. The high levels of competence exhibited in the digital portfolio contrast with reports of low perceived academic competence among dyslexic students (Chapman, 1988; Learning Disabilities Association of Canada, 2005), suggesting the positive impact of the digital portfolio in supporting self-efficacy and the motivation to succeed (Wigfield et al., 2006; Järvelä & Renninger, 2014). Students' high perceived competence also supported Eccles's expectancy-value theory (2009). The digital portfolio provided an ongoing process of assessment and feedback using a structured rubric, thus removing the pressure of a traditional test. With the digital portfolio, students were able to expect a much higher possibility of success, and in turn, were willing to put in the work.

### **5.5.3 Effort/Importance**

Findings from the "effort/importance" subscale show an interesting contrast from Conti's (2000) findings, in which dyslexic and LD students found school work not personally enriching and meaningful, and therefore showed low academic engagement. In this subscale, students agreed with item #13, "It was important to me to do well at this assignment". According to Clark et al. (2001) and Kaplan (2010), the learners' perceived importance of the task may be extrinsically motivating and rewarding for them, thus promoting internalization and effort. This was further affirmed in the high scores in items #5, 9, and 19. #5 stated "I tried very hard to do well at this assignment", and #9 was "I tried very hard on this assignment". Student response to both statements showed them trying very hard and putting in hard work to do well. Students also responded positively to #19, "I put a lot of energy into this". All aforementioned items showed students internalizing the importance of the task and exerting corresponding effort to do well. The results suggested that the digital portfolio supported students in internalizing the importance of the task and thus motivating them to make the effort (Ryan & Deci, 1985).

### **5.5.4 Value/Usefulness**

The "value/usefulness" subscale similarly measures motivation by looking at whether can internalize the values and usefulness of the digital portfolio assessment. The results show a positive indication of students' internalization. The subscale has the most varying response and the largest standard deviation. This corresponds to Clark et al. (2001) and Kaplan's (2010) claims

that individuals will have different perceptions of the values of extrinsic rewards. However, similar to findings in the “effort/importance” subscale, item #10, which read “I think this is an important assignment”, showed that students placed a high value on the digital portfolio. One item students found the most valuable and useful was item #3, “I believe that this portfolio is useful for showcasing my creativity and understanding of poetry”. The high perceived value of the portfolio assessment in allowing students to reflect their creativity and their understanding of their content knowledge suggest an internalized motivation in learning (Katz, 2006; Morgan, 2006). As creative thinking has been linked to intrinsic motivation (Conti, 2000), this also affirms that the portfolio assessment was able to showcase students’ creativity and strengths to build their confidence and willingness to engage with their learning (Schnepp, 2014). Item #23, “I believe making this portfolio could help me do better in school” similarly showed students highly identifying with this statement and value. Students showed thoughtful judgments about their learning performance, which points to the digital portfolio assessment as being helpful and contributing to students’ self-regulation (Paulson et al., 1991). As noted in the observation, students’ work ethics during this unit were indications of self-regulation. The digital portfolio enabled learners to focus on self-mastery and self-improvement, and students were more likely to feel competence than by social comparison, which connected to students having a motivated, better learning experience (Kubischta, 2014; Pintrich, 2000; Schunk, 2005; Winne & Perry, 2007).

## 6 CONCLUSION

Motivation can sometimes be misunderstood and misconstrued, in the ways we describe someone as a motivated individual, as though motivation was a fixed trait (“Finding the Formula”, 2019). However, motivation can be found in the pursuit of one’s interests and passions, as well as in the sense of accomplishment as one navigates through their learning journey. The present study points to the possibility of the digital portfolio assessment in supporting motivation for dyslexic learners. Despite the small sample size, students in the study indicated high interest and enjoyment in the digital portfolio, and exhibited self-efficacy as well as traits of self-regulation over the course of the study. Certain values of the digital portfolio, such as its ability to foster creativity and helping students to do better in school, have been found useful by students, and students have in turn put in the work and effort to do well.

As a final note, findings from the study recommend teachers and researchers to conduct further research on components of digital portfolios that help support motivation for dyslexic learners. A comparative study on how digital portfolios are structured and implemented, and how they affect motivation in learning, will be particularly useful. The research also suggests the continued use of an assessment method that is helpful for dyslexic learners to learn with positive motivation. Their battle with dyslexia is lifelong, but the digital portfolio assessment, with its ability in helping students communicate their educational experiences, may help make the learning process more enjoyable and build on their self-competence, so that they can tackle far greater challenges than their disabilities limit them to.

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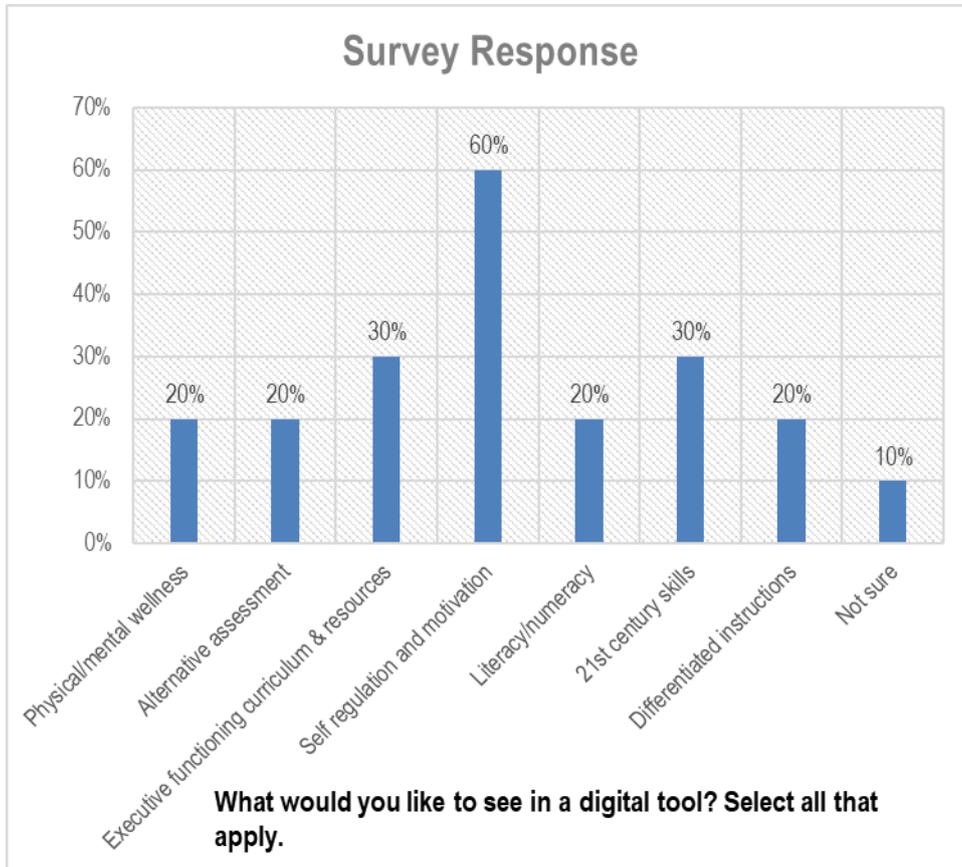
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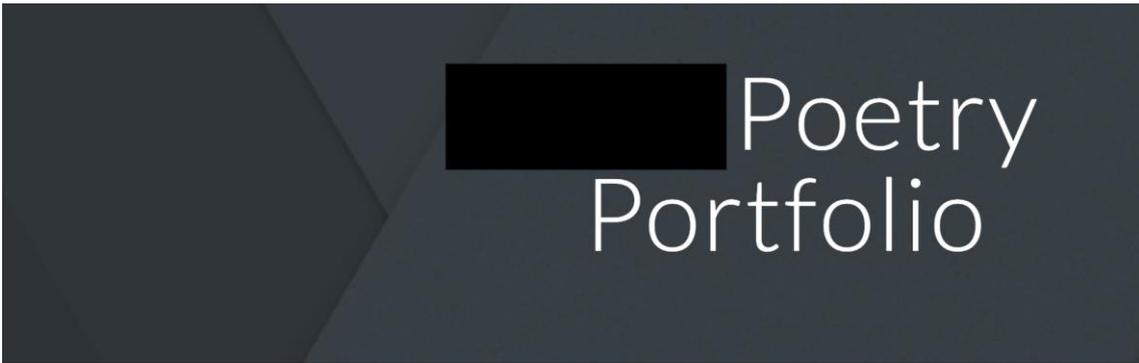
Timeline	Data Collection
<b>December- January</b>	Educators, administrators and other stakeholders in special education, both within the school community and outside are surveyed for their opinions on technology use in special education classrooms.  An area of study is developed from the survey responses.
<b>January Level 1: Collection</b>	-Relevant topics such as digital communications and literacy are introduced. -A tutorial is given on how to use Google Sites. -Students begin the poetry unit in class, and begin curating evidence of learning and uploading to the digital portfolio.
<b>February Continuation of Level 1 &amp; Level 2: Process</b>	Students continue adding content to the portfolio, at the same using the rubric to evaluate learning process. In this level, students begin to refine their work and apply creativity and thoughtfulness to polishing their final work. Teacher provides timely feedback during this process.
<b>March Level 3: Showcase</b>	Students finish the assignment and hand it in for evaluation. Student portfolio sites are shared with the class. Students complete the questionnaire to reflect on their experience.

Poetry Portfolio



# Haiku

The old buck grazing  
Stands alone at Bowen dusk  
Not a care in sight



Poetry  
Portfolio



poem 2019

Watch later Share



My dog barks loudly, late into the night.  
He fills each citizen with spite and hate.  
Some folks consider him to be a blight,  
But I still love my dog, because he's great.

The name of Echo well describes the sound  
He makes when he is barking at a cat.  
At every beach he leaves a sandy mound