PLAYING THE WAY TO A GROWTH MINDSET IN KINDERGARTEN

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Abstract

Over 30 years ago, Carol Dweck coined the terms ‘fixed mindset’ and ‘growth mindset’ to describe the underlying beliefs people have about learning and ability. Growth mindset refers to the perspective that ability can be developed through effort (Dweck, 2006). Research indicates that mindset is malleable and that adopting a growth mindset influences learning behaviours in positive ways (Dweck, 2006; Dweck & Yeager, 2012). This proposed quantitative study will examine the question: Can collaborative play-based learning support the development of student growth mindset in the Kindergarten classroom? Collaborative play-based learning experiences will be used in a series of intervention lessons to teach growth mindset to Kindergarten students. Four Kindergarten classes; consisting of approximately 80 students, will participate in the study. Each class will be divided into two comparison-control groups; one group in each class will receive mindset intervention through collaborative play-based learning, and the other group will engage in free-play time. This will be a pre-post design, where “before and after” data will be collected; first to measure initial student mindset, and then again four weeks later to measure if there are any changes to student mindset. Experimental methods will be used to measure the relationship between the two variables; collaborative play-based learning and growth mindset. Descriptive statistics method will be used to display time spent on student challenge activity. Content analyses will be used to measure and describe other data collected, including coded student comments and teacher or researcher observations. The significance of this proposed study is to provide existing research and teaching practice with answers and insight into the effectiveness of teaching growth mindset through a specific type of play.

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Assignment 3-Instalment 3-FINAL: Complete Proposal

Introduction

Over 30 years ago, Carol Dweck coined the terms 'fixed mindset' and 'growth mindset' to describe the underlying beliefs people have about learning and ability. Growth mindset refers to the perspective that ability can be developed through effort (Dweck, 2006). Research indicates that mindset is malleable and that adopting a growth mindset influences learning behaviours in positive ways (Dweck, 2006; Dweck & Yeager, 2012).

Looking into the topic of growth mindset, this proposed quantitative study will examine the question: Can collaborative play-based learning support the development of student growth mindset in the Kindergarten classroom?

Context and Background

Kindergarten has undergone significant curricular changes including increasing academic standards for young learners, in addition to mandating play-based approaches. As a result, several tensions currently exist in Kindergarten education - tensions between academic learning and play-based learning, and also between teacher-directed instruction and child-directed (student centered) learning. However, what if collaborative (guided) play could be a compromise, where the locus of control is shared to balance the extrinsic learning goal of the teacher and intrinsic motivation of the child? Collaborative play could then be used as a way to support student acquisition of both academic and developmental skills by providing students with opportunities to learn in a fun, motivating and meaningful context (Pyle & Danniels, 2017).

Since the early 2000s, there has been a shift towards the use of play-based pedagogy in Kindergarten. In education systems all over the world, the value of play-based learning

approaches have been acknowledged, explored and endorsed in both research and educational contexts. Two distinct perspectives concerning the role of play have emerged; play for developmental learning and play for academic learning (Pyle, DeLuca & Danniels, 2017). “The experiences of children’s play have a profound impact on all areas of their growth and development” (The Play Today B.C. Handbook: 2019, p.1); in areas of cognition, social and emotional and self-regulation (Lester & Russell, 2008; Pyle et al., 2017). Recent advances in neuroscience show that play has a “significant role in the development of the brain’s structure and chemistry, which gives rise to emotional and physical health, well-being and resilience, as well as laying the foundation for cognitive functioning and social competence” (Lester & Russell, 2008, p. 45).

Mindset is an individual’s perception, containing a set of beliefs, attitudes and habits about learning and ability (Dweck, 2006). In her research, Dweck found that most individuals typically develop one of the two mindsets: a fixed mindset or a growth mindset, or sometimes a combination of both. Students with a fixed mindset believe that they are born with a finite set of natural abilities that are unchangeable. In contrast, students with a growth mindset believe that abilities can be developed over time with practice or effort. Students with a fixed mindset believe that ability is predetermined; therefore, they are more likely to give up when faced with difficulty because they see challenge as hardship, disappointment and failure (Mraz, Porcelli & Tyler, 2016). Students with a growth mindset believe that ability can be improved by putting in more time or effort, therefore are more likely to demonstrate persistence, determination and flexibility when overcoming setbacks because they see challenges as opportunities for leaning, growth and reflection (Mraz et al., 2016).

According to Dweck, adopting a growth mindset positively influences learning behaviour of students (Dweck, 2006; Dweck & Yeager, 2012). Furthermore, student mindset is malleable and can be developed and changed over time (Dweck & Yeager, 2012). Creating a classroom culture of growth mindset changes how students understand and approach learning. This collective class culture helps students develop strong work ethic and habits that can lead to students to a sense of personal satisfaction, achievement and success in a wide range of endeavors (Dweck & Yeager, 2012; Robinson, 2017).

Given the desire to promote student growth mindset and the rise of play in the Kindergarten classroom, the topic for this research proposal is, collaborative play-based learning and growth mindset in Kindergarten. The proposed research problem to be examined is, the role of collaborative play-based learning in the development of growth mindset in Kindergarten students. This topic is important because it explores how teachers can utilize play as a way to encourage growth mindset in students.

Rationale and Importance

In my years of teaching and coaching experiences, I often find myself wondering why certain children seem to have a fixed, and some seem to have a growth mindset. I also find it interesting to observe children who seem to demonstrate fixed mindset; showing that they struggle and give up in academic activities. However, these children seem to demonstrate growth mindset; showing motivation, determination and flexibility in play-based endeavours. The core of my own teaching ideology; stemming from the personal and professional experiences of my Ecosystem (Bronfenbrenner, 1994) cause me to believe that play-based learning can be used to support student development of skills by providing engaging opportunities in a joyful context.

These observations and experiences have led me to the theory that play-based learning experiences can support development of student growth mindset.

The rationale of this study is based on a recommendation for Kindergarten classrooms in British Columbia to increase time spent engaging in purposeful play (The Play today B.C. Handbook, 2019), the developmental benefits of play-based learning in the Kindergarten classroom (Pyle et al., 2017), and the importance of supporting growth mindset development in young children (Dweck, 2006).

Purpose and Anticipated Significance

The purpose of this study is to gain insight into two aspects that I am passionate about within my own teaching practice: How to use purposeful play-based learning in my classroom and how to support growth mindset development in my students. I relate the purpose of this study to Arhar's (2001) reflection on research completion. When discussing inspiration for research, Arhar explains that "[f]or those who teach, this means taking a look at something in our practice which intrigues us" (p.41). As a teacher-researcher, the purpose of this proposed study stems from a place of Action Research; a desire to explore and improve practices within my own Kindergarten classroom. "At its best, teacher researcher is a natural extension of good teaching. Observing students closely, analyzing their needs, and adjusting the curriculum to fit the needs of all students have always been important skills demonstrated by fine teachers" (Hubbard & Power, 2012, p.12). My purpose as a teacher researcher is to further develop my ability to facilitate productive, positive and purposeful play-based learning for all students so that they can equally access opportunities for growth mindset development, in my current classroom setting.

The importance of growth mindset has been established and examined by a substantial existing body of research (Dweck, 2006; Dweck & Yeager, 2012). The benefits of play-based learning have been documented and explored in areas of growth and development, including; self-regulation, social and emotional skills, cognitive and overall well-being (Dweck, 2006; Dweck & Yeager, 2012; Lester & Russell, 2008). However, the role of play-based learning in the development of growth mindset has not yet been explored. Furthermore, there is a need for more research exploring specific types of play (Pyle & Danniels, 2017). The proposed research question being posed is: Can collaborative play-based learning support the development of student growth mindset in the Kindergarten classroom? Some sub questions are: What is the relationship between collaborative play-based learning and growth mindset? What happens to student mindset when growth mindset is taught through collaborative play-based learning? Can collaborative play-based learning be used to create a class culture of growth mindset in the Kindergarten classroom?

Literature Review

In a review of literature, I will explore an overview of research concerning growth mindset and play-based learning.

Review of Research about Growth Mindset

Fraser (2017) conducted a study that explored the topic of the implementation of growth mindset teaching and learning within a primary school. The aim of the research was to identify strengths and areas for development in the way that growth mindset was being applied in class and school pedagogies. Participants in this study included the head teacher, five classroom teachers, 28 students, and took place in a primary school in Scotland. Methods used in this study

included observations of three different classes, semi-structured interviews with members of teaching staff, and focus groups with students. The data collected was then analyzed using an inductive approach, which entailed the researcher making observations and then looking for patterns to develop a theory (Mukherji & Albon, 2018, p. 71). Observations in this study led to four themes: "embarking on the process; classroom culture and teaching; outside the classroom; and pupil approach to learning" (Fraser, 2017, p. 1). Findings revealed some strengths, which included: staff professional development; understanding and belief of growth mindset, staff collaboration, shifts in school culture and language, and the promotion of mistake making. Areas for development included: providing more learning opportunities outside the classroom, designing compatible assessment tools and methods, and discovering ways of teaching students to respond to challenges and mistakes. Fraser pointed out that previous research on the topic indicates that one-off interventions to develop growth mindset can encourage growth mindset perspectives and practices, however, typically results only have a short-term effect (Donohoe et al., 2012; Dweck, 2006). Furthermore, previous implementation research suggests that other factors including community support can play a significant role in helping implement school-based interventions so that they can be successful and sustainable (Meyers et al., 2012). Therefore, Fraser (2017) emphasized that a holistic approach to incorporating growth mindset ways of being and knowing (perspectives, habits, culture, language, etc.) within the classroom, the school, and the community are necessary in promoting long-term improvements. This study is relevant to my proposed topic as it explored the success of a mindset intervention program; proving that student mindset can be improved.

Fraser's study (2017), which explored the effectiveness of a mindset intervention plan, relates to exploring specific pedagogies (practices, methods, tools and techniques) that could be

utilized in a growth mindset program. Robinson (2017) conducted a literature review in order to compose a practical list of strategies teachers can use to help promote a community of growth mindset learners in the classroom. Robinson (2017) explored a number of resources to compose this list including; *Make It Stick: The Science of Successful Learning* (Roedinger, McDaniel & Brown, 2017), the concept of "You Can Do" statements, The Growth Mindset Playbook online program and lesson guide, and Mindset Works online program and resources. Robinson (2017) suggested a number of specific tools and techniques for teachers to use to help students develop growth mindset in the classroom. Some strategies included: explicitly teaching students about brain development and neuroplasticity, creating study tools that incorporate active learning methods, normalizing mistakes and failures, reframing language when communicating expectations and feedback, practicing positive self-talk, using data and reflection to set growth-oriented goals, involving students in tracking progress and setting goals so that there are invested in their own learning (Robinson, 2017). This article is relevant with the topic of the proposed research, as it could be used to develop a growth mindset intervention program for the purpose of this study.

Review of Research about Play-based Learning

Pyle, DeLuca, Danniels (2017) was a comprehensive review of research on play-based pedagogies in Kindergarten education. This review analyzed 168 articles that addressed play-based learning for children, aged 4-5. From this review, three themes or categories of research emerged, including; play for developmental learning, play for academic learning and factors influencing play in Kindergarten classrooms. Pyle et al. (2017) stated that the majority of previous research endorsed play as being an important part of early learning. However, the fact

that two distinct perspectives concerning the role of play for developmental or for academic learning, indicates that there are different perceptions about the value, role and benefits of play. Pyle et al. (2017) explained that this division within research suggests a need to move away from simple and binary views of play and towards more open and complex views. This recommendation called for an integration of a variety of perspectives and pedagogies of different types of play; which are seen as complementary rather than incompatible. This article was invaluable to my research topic, as it provided me with an overarching scope of all relevant research up to 2017. Gaining a broad idea of existing current research in my topic area, was an important first step towards selecting and examining the specific studies.

Youmans, Kirby & Freeman (2017) conducted a study that investigated the effects of the Ontario Full-Day Early Learning-Kindergarten (FDELK) program on children's early cognitive and academic development. The aim of the FDELK program is to integrate play-based learning and team teaching in order to equip disadvantaged 4 and 5-year-old students with equal opportunities for school readiness skills and reduce gaps in early achievement. Youmans et al. (2017) looked at the FDELK program in terms of how effective it was in promoting Kindergarteners' self-regulation, literacy, and numeracy outcomes. Outcomes in these three areas where measured by using pre-existing information from the EDI (Early Development Instrument), which is a survey that Kindergarten teachers complete to summarize students' school readiness. Participants comprised 32,027 Senior Kindergarten students, in Ontario, who were part of the EDI data collection in 2012. EDI data was used to construct three factors: SR, Literacy, and numeracy; items were separated into these constructs and were then entered into exploratory principal axis factor for analysis. Results revealed that there was essentially no benefit for students participating in the FDELK program when compared to students in Half-Day

Kindergarten or Alternate-Day programs. These findings suggest that changes are required to improve the FDELK program in areas including: "incorporating evidence-based guidelines and goals of play, reducing class sizes, and revising curriculum expectations to focus on SR [Self-Regulation], literacy, and numeracy skills" (Youmans et al., 2017). Interestingly, the results of this study are in contrast to other findings of literature review of Kindergarten programs, which show three main learning benefits associated with FDELK: "more instructional time, better academic outcomes, and the promotion of SR" (Youmans et al., 2017, p. 2). Results from this study differed from other studies, including those of Pelletier (2014) who found overall positive effects of FDELK in area of Self-Regulation, literacy, and numeracy. Youmans et al. (2017) stated that they believe that the FDELK program does have the potential to meet the needs of students through play-based learning, however changes to the program need to be made to achieve this. Data collected in this study illustrated that play-based programs do have the ability to support students learning; however, it does not happen automatically and it is not a guarantee. As explained by Youmans et al. (2017), further research on the pedagogy of play is important to inform beliefs, practices, and roles of teachers in supporting student development and learning through play. Therefore, it is significant to explore what other research has revealed concerning the effectiveness of play-based learning.

Pyle and Bigelow (2015) conducted a study that explored the role of play-based learning in three Canadian schools. The purpose of the study was to examine three teachers' approaches to integrating play-based learning in their Kindergarten classrooms. The study aimed to investigate the teachers' perceptions about the purpose of play, the pedagogy that was used, and role of the teacher in facilitating play-based learning environments and endeavours. The authors explored the role of play and how play-based learning was presented in three Kindergarten

classrooms, in public schools in a school district in Ontario. This research study used qualitative methodology including in-depth interviews and classroom observations. Data from each classroom was collected and analyzed to create three unique representations expressing the relationship between educational purposes of play and the implementation of practices of play within each setting. Teacher and student interview transcripts and daily routine narratives were collected and then thematically analyzed using an inductive method. The results were then displayed as individual class profiles. The profiles revealed three distinct approaches to integration of play and learning in kindergarten classrooms: (1) "play as peripheral to learning," (2) "play as a vehicle for social and emotional development," and (3) "play as a vehicle for academic learning" (Pyle & Bigelow, 2015, p.3). The authors explained that detailed data can provide important insights regarding perspectives, purposes, and practices of play in early learning environments. Furthermore, the data is significant because it shows specific ways teachers can integrate play and play-based learning (for social, emotional, and academic goals) into the curriculum. Pyle and Bigelow's study provided clear teaching profiles and specific approaches to integrating play and learning; "play as a vehicle for developmental learning," that could be used as the foundation for my proposed study

Another study about play, by Pyle & Danniels (2017), continued to build on the findings of Pyle & Bigelow (2015). Pyle & Danniels (2017) conducted a study that examined play-based learning and the role of the teacher in play-based pedagogy in the Kindergarten classroom. Fifteen Kindergarten classes in Ontario were examined using qualitative methodology. Data collection tools, included teacher interviews and general observations (field notes, photographs, and videos). The authors found that two different teacher profiles emerged: (1) a belief that play and learning are separate constructs and the role of the teacher is not central in play; and (2), a

belief that play could support academic learning and that teachers can play an important role in play (Pyle & Danniels, 2017). The results of this study also identified five different types of play, which are situated along what the authors call a "continuum" (2017) ranging from child directed play, to collaborative (guided) play, to teacher directed play. The five different types of play included in this play-based learning continuum are: free play, inquiry play, collaboratively designed play, playful learning, and learning through games (Pyle & Danniels, 2017). Extant research has demonstrated developmental and educational benefits of play (Pyle & Danniels, 2017). However, teacher-directed pedagogy (instruction and structure) still dominates many Kindergarten classrooms in Canada. Furthermore, "current research emphasizes a narrow definition of play-based learning as child-directed practice, resulting in teacher uncertainty about the implementation of this pedagogical approach" (Pyle & Danniels, 2017, p. 274). The authors stated that the play-based learning continuum constructed from this research makes contributions to the current body of research as well as both educational policy and practice. Creating a more broad, holistic, and concrete definition of play-based learning can guide educational policies, help teachers integrate play pedagogy into classrooms, and can enhance the existing body of research studies in early childhood development and learning.

Pyle & Danniels (2017) is relevant and valuable to my topic of play-based learning and growth mindset; providing a strong backbone to my proposed study. The authors provide clarity and insight concerning the definition, purpose, and pedagogy of play-based learning in early education contexts. First and foremost, this study helped me identify that my own personal teaching ideology fits into teacher profile number two (Pyle & Danniels, 2017), which believes that play-based learning can be used to support student acquisition of skills by providing opportunities to practice and internalize concepts in a fun and motivating context (Pyle &,

Danniels, 2017). Establishing the construct of this profile helped me recognize my own personal relationship with play-based learning; in terms of philosophy and in practice, including my experiences, perspectives, and biases. Acknowledging this personal frame of reference helps me understand the place I will be coming from as a teacher-researcher.

Secondly, this study provided me with a practical definition of play-based learning; encompassing an open, holistic, and concrete meaning. The authors identified five types of play and illustrated them in a play-based learning continuum. I will be using this paradigm of play-based learning as a framework for my study. This proposed continuum of play ranges in a spectrum from child-directed play, to collaborative (guided) play, to directed play. The five forms of play include: free play, inquiry, collaborative play, playful learning, and learning games (Pyle and Danniels, 2017). The idea of this continuum shed new light on my perception of play-based learning; it caused me to shift my thinking and refine my study to focus on the form of collaborative play, which is located in the middle of the play-based learning continuum (2017). Collaborative play is child-directed play with educator support, identified as guided play. In collaborative play, the locus of control is shared; students make decisions about their play but are provided with guidance from the teacher in order to reach learning goals or objectives (Pyle & Danniels, 2017). Learning experiences are powerful because they incorporate targeted skills into the joyful, engaging, and motivating realm of children's play. Educators can use this method as an alternative to direct instruction by intentionally facilitating play-based learning experiences that integrate desired learning outcomes.

The study by Pyle and Danniels (2017) is not only relevant to my research topic, but it is also significant to many other areas of future research. Pyle and Danniels (2017) contributed to

the existing body of research on the topic because they constructed a clear, concise, and concrete definition of play-based learning, providing researchers with a place to start from and a foundation to build upon. Pyle and Danniels (2017) have made significant contributions, not only to the existing body of play-based leaning research, but also to current areas of educational practice and policy. The benefits of play to children's developmental and academic learning have been discussed and debated in a wide range of research. However, differing perspectives and practices of play can make it challenging for teachers to productively integrate play-based pedagogies into their classrooms. This point was also discussed by Youmans, Kirby & Freeman (2017), who explained that many teachers and educators report a lack of understanding of the purpose of play-based learning, how to implement it effectively, and what their role should be. Youmans et al. (2017) further explained that this is concerning because educators are often instructed to provide time for play without a clear understanding about how play-based learning can be used to support student developmental and academic learning. As a result, early childhood educators are not optimizing the benefits of play that a strong play-based learning program can offer. To add to this point, Pyle and Bigelow (2016) stated that more research examining the benefits of particular types of play could be powerful to educators' ability to develop meaningful pedagogies and policies of play. The study done by Pyle & Danniels (2017) creates a definition of play-based learning, which includes concepts that are more open, holistic, and tangible; all of which can hopefully provide educators with understanding and guidance on how to integrate and implement play into their classrooms more effectively.

This brings me back to my proposed research question: Can collaborative play-based learning support the development of student growth mindset in the Kindergarten classroom? What is the relationship between collaborative play-based learning and growth mindset? What

happens to student mindset when growth mindset is taught through collaborative play-based learning? Can collaborative play-based learning be used to create a class culture of growth mindset in the Kindergarten classroom?

Proposed Design

Quantitative Study

- Scientific methodology: A structured and systematic approach to research, which "aims to measure, quantify or discover the extent of a phenomenon" (Mukherji & Albon, p. 73, 2018); Positivist epistemology.
- This methodology usually focuses on the formation of a hypothesis and the collection of data in the form of numbers to test this hypothesis (Mukherji & Albon, 2018).

Confirmatory Approach

- This proposed study is starting with a theory about the phenomenon of growth mindset development in students (Mukherji & Albon, 2018).
- A prediction (hypothesis) has been formed, based on my theory that growth mindset can be taught to students through collaborative play-based learning experiences.

Hypothesis

- Null hypothesis = There is no relationship (correlation or association) between collaborative play-based learning and growth mindset. There is no change (improvement) in student mindset when growth mindset is taught through collaborative play-based learning. After intervention, there is no significant difference between the mindset intervention group and the control (comparison) group.

- Absolute hypothesis = there is a significant relationship (correlation or association) between collaborative play-based learning and growth mindset. There is a change (improvement) in student mindset when growth mindset is taught through collaborative play-based learning. After intervention, there is a significant difference between the mindset intervention group and the control group.

Quasi-Experimental Design

- This proposed study will be a two-group, control comparison, pre-post design.
- The researcher will manipulate the independent variable: Collaborative play-based learning, to see the effect this has on the dependent variable: Growth mindset (Mukherji & Albon, 2018).
- Strict control of external factors and other variables that could influence research findings, including age, gender, time, language, environment, teacher, etc.

Matched pair design

- Two groups of participants will be used in each Kindergarten class: Group 1: Growth mindset intervention group (10 students in each class, the total for four classes will be 40 students), and Group 2: Free-play (control-comparison) group (also 10 students in each class, the total for four classes will be 40 students).
- Within each class, each participant in Group 1: Mindset intervention group is matched (as much as possible) with another participant in Group 2: Free-play group (Mukherji & Albon, 2018).
- Some relevant variables that can be matched include age, gender, language skills, school readiness, similar initial mindset score, etc.

Field Experiment

- Proposed study will be conducted in a natural setting and situation, in four Kindergarten classrooms in one or more elementary school (Mukherji & Albon, 2018).

Sample

The proposed sample will include four Kindergarten classes, four teachers, and approximately 80 Kindergarten students (who are aged four and five), in British Columbia. Effect size will be taken into consideration because the proposed study will be comparing two groups (Group 1 n=40; Group 2 n=40).

Procedures for Recruitment

- Researchers will review public Elementary Schools in rural areas in B.C. in order to narrow down options.
- Several schools will be selected based on criteria that matches or is similar to research criteria and desired characteristics.
- Elementary school / Kindergarten classes would be considered based on the following criteria: rural area in B.C., public (not private) elementary school, (English speaking) Kindergarten classes.
- School Districts will be contacted directly by researchers; asking permission to conduct study. Researchers will ask permission to send an email to all principals and Kindergarten teachers in the selected districts to ask if anyone is interested in participating in the study.
- From this pool of volunteers, four Kindergarten classes will be randomly selected. For convenience, the classes may be in the same school, but this is not necessary.

Location

- This study will take place in four Kindergarten classrooms, in one or more public elementary school in a rural setting in British Columbia (For example, Pemberton, B.C).

Tools and Procedures for Data Collection

In this proposed study, collaborative play-based learning experiences will be used to implement a series of intervention lessons in order to teach growth mindset to Kindergarten students, over a period of four weeks. Four Kindergarten classes will participate in the study, with approximately 80 students in total. Each class (Class A, Class B, Class C and Class D) will be divided into two comparison-control groups: Group 1 (Class A, B, C, D) and Group 2 (Class A, B, C, D). Group 1 will receive the mindset intervention through collaborative play-based learning, and Group 2 will engage in free-play time. The mindset intervention program will be taught by the regular class teacher, and will consist of daily (20-minute) collaborative play-based experiences for the period of four weeks. This proposed study will be a pre-post design, where "before and after" data will be collected on two occasions, first to measure initial student mindset, and later to measure changes to student mindset. Once the four-week intervention program is complete, the two groups will switch and then Group 2 students will receive the same four week mindset intervention program, while Group 1 participates in free-play time. Three tools will be used to measure student mindset: an adapted version of the Mindset Assessment Profile tool (Dweck, 2012), a timed independent student challenge activity, as well as recorded and codded student comments and teacher or researcher observations.

Ethics Considerations

Approval of Proposed Study

- Must meet ethical standards of Tri-Council Policy and must be approved by Tri-Council.
- University of British Columbia, School District and School Principal must also approve.

Best Interest and Beneficence

- Students' best interests will be at the center of this study.
- Participation will make a positive contribution to research and educational practices.

Informed Consent and Assent

- Parents of children and children themselves will fully understand and give their consent to research and will have signed a letter of consent (Mukherji & Albon, 2018).
- Participants can contact researchers at any time to discuss questions or concerns.
- In the moment consent and ongoing negotiation with students.
- Ability to withdraw participation from study at any time.

Privacy, Confidentiality, Anonymity

- Pseudonyms will be used for children; their identities will not be disclosed.
- According to the Data Protection Act, data will be stored in a safe and secure location (Mukherji & Albon, 2018).
- Data will only be used for the purpose of this study, unless permission has been granted from participants (Mukherji & Albon, 2018).
- Participants know how data is intended to be used and will be contacted if this changes.

Respect for the Competent Child

- Age and vulnerability of child are important ethical considerations, however, children are competent and able human beings and should be respected accordingly (Mukherji & Albon, 2018).
- Participatory rights of children: children are not subjects or "other" but are participants in research and should be involved in contributing to and collaborating in research.
- Listening to young children: Children have a great deal of insight into the world around them. Children's perspectives are valuable and should be represented.

Sample Bias

- Validity: Sample of subjects will be selected in a fair and unbiased process.
- This proposed sample of subjects intends to be a random sample selection of the desired Kindergarten student population, in rural areas of British Columbia.
- As a result, research findings can be used to make generalizations about entire Kindergarten student population, specific to rural areas of B.C.

Known or Unknown Harm

- Naturalistic setting and observations: A quasi-experiment will take place in Kindergarten classrooms to allow teacher and students to feel safe, authentic and comfortable.
- Researchers and teachers will take into account vulnerability and power dynamics of researcher-participant and adult-child.
- Transparency: Share research purpose and results with participants (teachers, students, families, school, district, etc.).

Proposed Data Analyses

Data will be collected and then analyzed to prove the null hypothesis incorrect and determine if the hypothesis is correct: There is a relationship (correlation or association) between collaborative play-based learning and growth mindset. There is a change (improvement) in student mindset when growth mindset is taught through collaborative play-based learning. There is a significant difference between the mindset intervention group and the control group.

Proposed data analyses will use descriptive and non-parametric statistics to investigate the relationship between the two variables, the independent variable; collaborative play-based learning, and the dependent variable; development of growth mindset in students. Descriptive statistics will be used to describe data collected in terms of frequencies, averages and ranges (Mukherji & Albon, 2018); including time spent on independent student challenge activity, pre-post test. In addition, content analysis will describe other data recorded, including student comments and teacher or researcher observations. For example, counting the number of times students made “fixed mindset” or “growth mindset” comments. Data will be presented visually in tables and charts to help reveal any emerging patterns. Further, non-parametric analysies including paired t-tests, and correlational analysis.

Anticipated Limitations

There can be challenges associated with conducting research on abstract, ideologically constructed, complex concepts, including growth mindset and play-based learning. Pyle and Bigelow (2016) identified this interesting point in their study, when they explained that studying topics about the role of play can be problematic because collecting, measuring and analyzing data from such complicated constructs can be challenging (Pyle & Bigelow, 2016; Lillard et al.,

2013). For the purpose of this proposed study, I have utilized ideas and definitions established in Pyle & Danniels (2017). However, the process of over simplifying or using convenient ideas about play could be limited in nature; implying that the reality of play-based learning is simple and predictable. Growth mindset is also a complex, constantly changing concept, as it relates to the perceptions and habits of complicated human beings. For the purposes of the proposed study, I am using definitions and ideas based on Dweck 2006; Dweck & Yeager, 2012. Growth mindset is a constructed reality, established by extant research and selected by the researcher for the purposes of this proposed study. This brings me to the question: Can complex phenomena, including play and growth mindset be accurately defined and measured? This question, raises concerns of construct validity: How accurate are the selected methods for data collection and data analysis in this proposed study: Are they measuring what they are supposed to measure?

Another limitation to consider is that the time-frame for this proposed study is relatively short; four week intervention program for each Group 1 and Group 2 (total of 8 weeks). Previous research indicates that mindset intervention must be conducted long term to be sustainable. Perhaps, a longitudinal study could be conducted in the future, with a long-term intervention program and several check-ins through the school year. In addition, the proposed sample of subjects is fairly small in size and limited in terms of location, including only four Kindergarten classrooms (80 students), in a specific type of area in B.C. In the future, perhaps more data (including more students, classes, schools, geographic diversity, etc.) could be collected to ensure comprehensive information about the entire Kindergarten population.

Anticipated Significance

Educational policies and curricula have recently changed to acknowledge the importance of play as a way to support learning using developmentally appropriate pedagogy (Pyle & Danniels, 2017). This proposed study is relevant to several new mandates for Kindergarten classrooms in parts of Canada. Examples of documents that are related to this topic are: The Play Today B.C. Handbook (2019) and The B.C. Early Learning Framework (2019). It is important for educators to continue to use evidence-based research about play-based pedagogy in order to develop common culture, language, guidelines, expectations and goals for play; in developmentally and academically appropriate learning contexts. More research about play-based learning further enhances and informs practice and policy in early childhood education.

Future Directions and Recommendations

This proposal for a research study is intended to be a beginning or a starting point for further research about the topic of using play as a tool to help students develop growth mindset. This proposed study would be Phase One: With the purpose of first establishing whether collaborative play-based learning can be used to support the development of student growth mindset in Kindergarten. Once the first part of this study is completed, I will have a better understanding the topic at hand and an idea of where to go next. If research findings from Phase One reveal that there is a relationship between collaborative play-based learning and the development of growth mindset then I would move on to the next phase. In Phase Two, I would then like to go deeper into the topic to explore the following (qualitative) questions: How can collaborative play-based learning (methods, techniques, tools, practices, etc.) be used to support student development of growth mindset in the Kindergarten classroom? What components of

collaborative play-based learning are most effective in facilitating growth mindset development in Kindergarten students? How can collaborative play-based learning be used to create a class culture of growth mindset in the Kindergarten classroom? Phase Three could go on to explore other possible questions, including: In what ways can notions of collaborative play-based learning be conceptually defined in a profile or framework for teachers' practical use? In what ways can an intervention program or plan based on collaborative play-based learning be constructed by teachers to help support student development of growth mindset? In what ways can students participate in and collaborate with teachers in the creation of a collaborative play-based growth mindset intervention program? It would be interesting to extend research by continuing to study more Kindergarten classrooms in B.C. and across Canada, in order to add to data and build on to a collection of collaborative play-based mindset intervention profiles, programs, and plans.

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