“See, That’s a Letter": Online Instruction to Promote Educators’ Print Referencing

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This is to certify that the thesis prepared

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complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ABSTRACT

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Emergent literacy refers to pre-literacy skills that develop in the preschool years through informal activities such as storybook reading. It includes phonological awareness, oral language, and print knowledge. Print referencing is an evidence-based strategy that promotes print knowledge during storybook reading. Educators have an important role to play in the development of print knowledge. However, they pay very little attention to print during storybook reading. This study examined the effect of a multi-faceted online instruction (with synchronous and asynchronous components) on the knowledge of emergent literacy and print knowledge and the application of print referencing by preservice educators during storybook reading. Specifically, 25 undergraduate student participants were assigned to two groups, the experimental print referencing (PR) group (n = 12) and the comparison Questions (Q) group (n = 13). Participants in the PR group received instruction on print referencing whereas the Q group received instruction on asking inferential questions, to foster another component of emergent literacy. A questionnaire evaluated participants knowledge of emergent literacy and print referencing and a role play measured their use of the learned strategies. Answers to open-ended questions about the instruction were also collected through learning logs which were filled as part of class work. Mixed ANOVA showed that both groups increased in emergent literacy and print referencing/print awareness knowledge. However, as expected, only the PR group transferred their print awareness/print referencing knowledge to practice as demonstrated by the role play. Qualitative data through the learning logs showed positive feedback towards the online instruction and print referencing as an important and useful tool for preservice educators to have.

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Introduction

In our society, literacy is well-researched, established, and valued. For children and adults, literacy skills are vital to live as well-rounded individuals and contribute to a civil society and culture (Love, et al., 2007). Although Canada ranks amongst the top five industrialized countries in its literacy rate, low literacy skills are still occurring in Canadian society and affect school achievement, employability, work productivity, and even mental and physical health (Desrochers & Major, 2008).

Given the importance of literacy, researchers and practitioners have long been interested in its development and achievement in children. There is now widespread agreement that literacy develops along a continuum, moving from emergent to early then conventional literacy (i.e., reading and writing) (Justice & Ezell, 2004; Lonigan, et al., 2000). Based on a thorough review of relevant research, Ehri and colleagues (2013) proposed a developmental continuum for reading. They identified four stages: pre-reading, decoding, consolidation and fluency, and finally, the use of reading to acquire new knowledge. In the pre-reading stage, knowledge of words as entities is established, letter names are learned, and children gain phonological and written language awareness. This stage has been referred to by other scholars as a period of *emergent literacy* **(**Justice & Ezell, 2004; Lysaker, 2006).

As described by Ehri et al. (2013) for pre-reading, emergent literacy is founded on phonological awareness and written language awareness, along with oral language development (Justice & Ezell, 2004). Phonological awareness refers to children's sensitivity to the sound segments in speech, and their ability to recognize and manipulate the sounds of a language (Justice & Ezell, 2001). Written language awareness is also referred to in the literature as *print knowledge* (Justice & Ezell, 2004). Print knowledge is defined as children's ability to recognize

the function and form of print and the relationship between oral and written language (Justice & Ezell, 2001). As part of emergent literacy, it is an important building block for conventional literacy (Dynia et al., 2013; Justice & Ezell, 2001). Print knowledge has also been described as a multidimensional construct involving print concepts, word concept, and alphabet knowledge (Justice & Ezell, 2004), terms elaborated below.

Emergent literacy with its two principal branches, phonological awareness and print knowledge, is thought to develop through focused social interactions. This perspective is based on Vygotsky's sociocultural theory where development relies on children's exchanges with skilled adults and scaffolding of children's knowledge, notions, skills, and interests (Justice & Ezell, 2004). The authors develop this concept further and apply it to emergent literacy. Specifically, they propose that adult mediation within the child's *zone of proximal development* allows the child to internalize literacy concepts, and develop related skills, knowledge, and interests. In other words, when adults engage and guide children in emergent literacy tasks that are slightly beyond their current independent capabilities, and tailor their guidance accordingly, development is fostered.

Development of Print Knowledge and Relationship to Later Literacy

Justice and Ezell (2001) propose that *print interest* is the cornerstone of all following literacy attainments because it involves children viewing written language as something distinct and worthy of attention. Between the ages of 3 and 5 years, children also begin to understand that print carries meaning (Justice & Ezell, 2001). During this period, children begin to notice visual cues when interacting with print, even before any formal reading instruction takes place or alphabet knowledge is acquired (Ehri et al., 2013).

Knowledge of the various forms, features, and functions of print is referred to as *print*

concepts (Justice & Ezell, 2001). When children acquire print concepts, they recognize that print moves in a certain direction (e.g., from left to right and top to bottom of a page in English) and carries meaning. They also become familiar with the ways in which books are structured, and the names and meaning of many written language units, such as the exclamation mark, question mark, or period to end a sentence (Justice & Ezell, 2004). Print concepts are the first component of print knowledge and an important aspect of emergent literacy development.

The second component of print knowledge is *word concept*, which usually emerges by the age of 5 years amongst typically developing children. It refers to children realizing that words are distinct units in oral and written language (Justice & Ezell, 2001). Print concepts develop before word concept, but both allow children to understand the way print is organized and how speech and print are linked at the level of the word (Justice & Ezell, 2001).

Alphabet knowledge is the last element of print knowledge. As the term implies, it means children's knowledge of letter names, reflected in their ability to recognize and identify letter names. Alphabet knowledge is one of the most reliable predictors of future successful reading (Justice & Ezell, 2001). It seems that children use their knowledge of letters' names to learn letter sounds, which then helps children decode and subsequently read (Treiman et al., 1998).

In summary, the development of print knowledge in children begins with print interest and is followed by an awareness of how print functions and is conventionally organized. Then children start to notice print forms and realize that print units (such as letters and words) can be differentiated and named. The final step is when children realize that print units can be combined with other print units; for example, letters can be combined to make words, and words can be combined to make sentences (Justice & Ezell, 2001).

Studies have shown that print concepts are associated with later reading skills (Justice &

Ezell, 2001; Stuart, 1995), and that children's print knowledge in preschool predicts future decoding and reading comprehension (Zucker et al., 2013). Furthermore, Justice et al. (2009) showed that the level of print knowledge achieved in preschool is associated with children's later achievements in word recognition and spelling. Evans et al. (2009) found that kindergarteners with more letter knowledge spent more time attending to print within texts, compared to children who knew fewer letters. In fact, the strongest predictor of first grade reading achievement is print knowledge (Justice & Ezell, 2001; Morris et al., 2003). Yet, as the following section will reveal, educators of young children do not necessarily provide support in this area.

Adult Support of Print Knowledge

As noted earlier, literacy development is a crucial part of a child's general development. For this reason, national and international organisations have urged decision makers to create programs and plans to support literacy development (Desrochers & Major, 2008). To take part in literacy promotion, it is important for educators to understand emergent literacy development and the evidence-based methods available to support this development (Dynia et al., 2013; Justice and Ezell, 2004). Moreover, educators should be aware that the environment children are raised in greatly affects print knowledge (Justice et al., 2009). For example, parental beliefs and values concerning the importance of home literacy activities and parental involvement in children's schoolwork play a role, as does children's enjoyment of reading activities (Justice et al., 2009). Moreover, research shows that the frequency of children's interactions with print, and more importantly, the quality of the interactions, matter to children's development of print knowledge (Dynia et al., 2013; Skibbe et al., 2008).

As print knowledge is multidimensional and acquired gradually, and social interaction and guidance from adults is required to achieve it, several researchers have focused their

attention on a reading style to promote it during storybook reading. Justice and Ezell (2001, 2004) and Dynia et al. (2013) introduced and studied *print referencing*. This is a reading style where adults explicitly attend to the words, letters, and functions of print in a storybook by making verbal and nonverbal references to the print, such as by asking questions about print and pointing to it (Dynia et al., 2013). This reading technique resulted in significant increases in children's short and long-term literacy skills (Justice et al., 2009).

Despite evidence connecting adults' reading style to children's acquisition of print knowledge, studies have shown that neither educators nor parents of preschoolers do much with print during storybook reading, other than read the printed text (Justice et al., 2009; Zucker et al., 2009). It appears that acknowledging print does not come naturally to adults when reading with children. They engage in little print referencing, defined as the nonverbal and verbal cues that educators or parents use to direct children's attention to the forms, features, and functions of written language (Justice & Ezell, 2004).

Zucker et al. (2009) demonstrated that 17 prekindergarten teachers had a relatively low rate of print referencing when reading books to children, despite using an interactive "shared book reading" style. Zucker et al. (2009) reported that during shared book reading, the focus was on the story or illustrations, with only a small proportion of the conversation devoted to print and phonological awareness (11%). The researchers also found that adults rarely discussed print during extratextual conversations (i.e., conversations occurring during the reading sessions but not about the book). Justice et al. (2009) also observed that teachers in a control group (n = 9) referenced print verbally significantly less frequently than teachers in an intervention group who had been taught the strategy (n = 14).

These rare references to print generally lead to children ignoring it (Zucker et al., 2009).

In fact, studies demonstrate that educators and teachers need to incorporate four to six references to print during a reading session to significantly improve children's literacy skills (Justice et al., 2009). Furthermore, observational and eye-tracking studies of young children indicate that during shared-book reading experiences, they mostly focus on the pictures or the story itself unless the adult directs their attention to the print (Evans et al., 2009; Justice et al., 2008).

Empirical evidence indicates that print referencing can facilitate children's development in all three key areas of print knowledge: print concepts, word concept, and alphabet knowledge (Ezell et al., 2000; Justice & Ezell, 2002). Justice et al. (2009) demonstrated that children showed large improvements on standardized measures of print knowledge when their teachers used a print referencing style. They broke this style down into two types (and five subtypes) of print-referencing cues: nonverbal references, namely pointing to print or tracking print when reading, and verbal references, including making comments, asking questions, or making requests about print (Justice & Ezell, 2001). These are adult behaviors that directly or indirectly steer the child's focus to some feature of written language and can be very helpful for educators desiring to introduce children to print forms and functions, or to the distinctive features of letters and their names (Justice & Ezell, 2001).

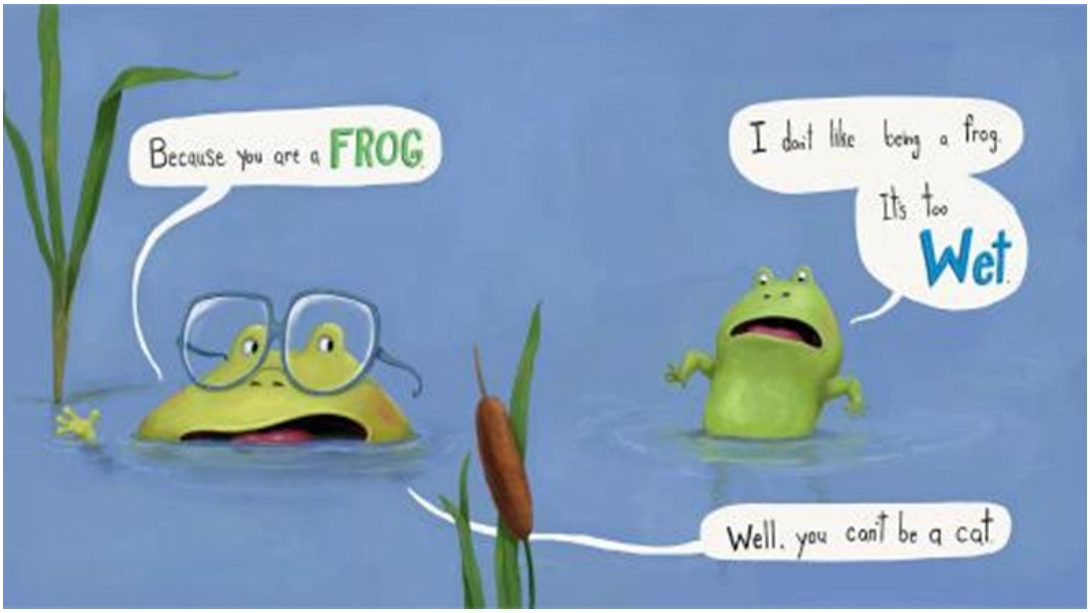
Thus far we have seen that educators rarely made explicit references to print (Justice et al., 2009; Zucker et al., 2009). However, they smoothly and easily included a print-referencing style after professional development (Justice et al., 2009). Moreover, when they did reference print, they used more verbal print reference cues with books displaying distinctive and eye-catching print features (Zucker et al., 2009).

In the Zucker et al. (2009) study, the authors studied the influence of *print salience* on

teachers' references to print. Illustrated in Figure 1, print salience represents the extent to which print is evident and pronounced through interesting fonts or font changes, or word bubbles (Zucker et al., 2009). The authors found that teachers referenced print more frequently when they read storybooks with a high (vs. low) level of print salience (Zucker et al., 2009).

Figure 1

Example of Print Salience



Note. Image from the book, *I don't want to be a frog*, by Dev Petty. (http://mikeboldt.ca/i-dont-want-to-be-a-frog)

Piasta and colleagues (2010) also examined the impact of different books and professional development on educators' use of print referencing. The educators were assigned books to read over the course of thirty weeks, in the same order. The books varied in the degree of print salience. The results in the study by Piasta et al. (2010) showed that although professional development resulted in greater print referencing by educators than by controls, its frequency varied greatly over time and amongst the educators in the study. When the level of print salience of the books was considered, the authors found a significant effect for the control

group only, with print salience predicting the frequency of references to print amongst the untrained teachers. Therefore, the choice of books to use for print referencing seems to be important and suggests that attention to print saliency should be included in professional development. This important study has been followed by other research on the type of reading materials and their influence on teachers' and educators' instructional approaches.

In Dynia et al. (2013), teachers were assigned to read either narrative storybooks or picture-phrase books (i.e., a picture of a flower with the phrase "The flower is red") to children. In the storybook condition, teachers focused on prediction and interpretation of the text, whereas more attention was given to print when reading the picture phrase book. The authors suggested that teachers might have been concentrated on explaining aspects of the story or clarifying unfamiliar vocabulary when reading the linguistically rich stories. Print referencing use was also influenced by other factors namely the location of the print. The authors recommended a "balanced diet" (Dynia et al., 2013, p. 275) of books given other advantages of storybooks.

To elaborate, Dynia examined more closely *environmental print* and *font changes*. Environmental print referred to the presence of labels, word bubbles, and print embedded in the illustrations. Font changes comprised variations in the size, colour, or shape of the font throughout the text of the book. The latter had much more influence on teacher's reading behaviors and resulted in more print referencing (Dynia et al., 2013). It makes sense that the presence of font changes or large print can make it easier for the teacher to discuss individual letters and fonts that represent the word (i.e., writing the word 'big' with a bigger font), and might make the text more stimulating and intriguing for the children (Dynia et al., 2013).

In summary, the data suggests that print salient books offer a natural context for discussions about print (Zucker et al., 2009), and that books that do not have overly complex

language but have salient print, particularly interesting font changes, will stimulate higher levels of print referencing by teachers when reading (Dynia et al. 2013; Piasta, 2010).

In conclusion, professional development should stress that early childhood educators are an important part of preschoolers' environment and encourage their role in teaching emergent literacy skills. Educators should also be provided with a wide variety of storybooks, especially ones with strong visual textual aspects, to help them implement evidence-based reading techniques such as print referencing that have been positively associated with children's learning about print (Justice & Ezell, 2001, 2004).

Teacher Education and Professional Development

Diversified Instruction

The instruction offered in the proposed study includes several elements which have been shown to be effective in past studies of professional development with educators or teachers. For example, Girolametto et al., (2007) offered a six-hour workshop to early childhood educators on emergent literacy. Their teaching methods comprised lectures about the intended strategies with videotaped examples, group discussions to analyze the videotaped examples or implementation of the key strategies, and role play. In their study, Piasta et al. (2010) also offered professional development to in-service teachers. Their eight-hour training included: an overview of children's emergent literacy and print knowledge development, research evidence and printed materials on the use and efficacy of print referencing to facilitate children's print knowledge, observation and analysis of videos showing adults reading to children, and finally opportunities to practice print referencing with a partner from the training. These studies showed that educators (Girolametto et al., 2007) and teachers (Piasta et al., 2010) who received professional development used more print referencing than a comparison group which received alternative training aimed at fostering

children's skills in other domains (e.g., peer interaction).

Video-Based Instruction

Video models, used in the present study, have been proposed as one way of making evidence-based practices more accessible to educators (Brock et al., 2018; Dieker et al., 2009; Gaudin et al., 2014) and graduate students (Ezell & Justice, 2000). For example, Dieker et al. (2009) developed video models of well-studied instructional practices in three subject areas (reading, math, and science) and presented them to both preservice and in-service teachers. Their goals were to develop videos appropriate for online delivery, ensure these videos helped teachers understand and retain information concerning the instructional techniques presented, and evaluate teachers' learning gains from the videos. The participants were divided in two groups, a video group (who viewed the targeted strategies) and a no-video group (who read about them). Then participants were judged as effective or ineffective on their implementation of the strategies. The results showed that both preservice and in-service teachers in the video group were more effective than the no-video group (Dieker et al., 2009).

Dieker et al. (2009) outlined some of the advantages of video models, particularly those under learner control, in teacher education and preparation. First, they suggest that video models can address variations in the quality of teacher education programs, as not all programs offer a comprehensive curriculum reflecting new research. Second, they note that making videos available to learners allows them to regulate their own learning; for example, learners can stop the video to read any embedded text or take notes, and/or replay segments to review (Dieker et al., 2009). Thus, students are actively involved in their own learning, in line with a constructivist approach to education. However, the authors indicated that simply watching videos of experts modeling strategies is not enough for novice teachers to learn. This issue is directly addressed in

my study by using diversified methods of instruction.

Researchers have also investigated video models specifically to teach print preferencing. Ezell and Justice (2000) investigated the impact of video-based instruction about print referencing on graduate students' use of print referencing strategies before and after instruction. The pretest and posttest measures consisted of two book-reading sessions with children, where each participant read to one child aged between 4 and 5 years old. The graduate students, all of whom were enrolled in a program in speech and hearing sciences, were assigned to an experimental or control group. The students in the experimental group individually viewed a 7-minute video describing and modeling the five different print referencing strategies, three verbal and two nonverbal, right before the posttest. The authors predicted that the participants would acquire the five print referencing techniques through video-based observational learning (Ezell & Justice, 2000). Results showed the participants made very few references to print at pretest which were almost all non-verbal. However, the experimental group used significantly more print referencing strategies at posttest compared to the control group, and also increased their use of verbal strategies (Ezell & Justice, 2000). The authors concluded that participants need instruction on print referencing in order to increase their focus on print. They also demonstrated that video observation was effective in changing students' behavior during storybook reading, a finding of particular relevance to the present study.

Furthermore, research has shown that video is a successful tool to deliver knowledge and model practices to preservice teachers, as well as connect it to their university learning and support their attempts to apply this knowledge in their classrooms (Bloomberg et al., 2013). Gaudin and Chalies (2015) reviewed over 250 articles on video viewing in teacher education and professional development, including the use of video to present teaching strategies. The authors

suggested that teachers utilize skills learned from video in their classroom. They also point out that when using video to demonstrate new strategies to preservice or in-service teachers, it is important to avoid overwhelming them. For example, the authors advise using video recordings that do not have too much going on in the video and keeping the video instruction simple to decrease the cognitive load (Gaudin & Chalies, 2015). Simply viewing videos, however, does not ensure learning; rather, a productive discussion with a facilitator (such as a university supervisor, a researcher, or an experienced peer) after viewing is recommended (Gaudin & Chalies, 2015). Moreover, as Dieker et al. (2009) propose, the learning experience can be enhanced by narration of the video. In their conclusions, Gaudin and Chalies (2015) described video viewing as "a unique and potentially powerful tool" (p. 59) that can improve teaching quality and "modernize education" (Brouwer, 2011, cited in Gaudin and Chalies, p. 59).

The literature recognized many objectives for video viewing in teacher education and professional development. These include guiding or coaching, teaching, and reducing the gap between theory and practice by showing evidence-based practices (Gaudin & Chalies, 2015; Karsenti & Colin, 2011). Video-mediated content then aims to building teacher knowledge about "what to do" to better promote learning of a particular subject (Gaudin & Chalies, 2015).

Furthermore, research has demonstrated the place of video in the education world as a desirable and effective learning tool. In fact, studies showed that students preferred getting information from video than from textbooks (Dieker, et al., 2009; Gaudin & Chalies, 2015). Also, Gaudin et al. (2014) suggested that video viewing influenced preservice teachers' classroom practices when their professional concerns related to what was presented to them. Dieker et al. (2009) demonstrated that video-mediated content allowed preservice teachers to broaden their understanding of the topic. Moreover, they expressed greater confidence in their

ability to implement evidence-based practices in literacy instruction after viewing a video to complement traditional instruction. Preservice teachers stated that the video was engaging and helped them understand the strategy more deeply and reported appreciating a video model showing exemplary implementation of a new technique (Dieker et al., 2009). The authors also evaluated the preservice and in-service teachers' ability to recall important features of the video-mediated content. When they asked them to write a description of the strategy one week after viewing the video content, the results were positive. The authors conclude that video models of evidence-based teaching practices have a great potential to enhance knowledge and practice of preservice and in-service teachers (Dieker et al., 2009).

A very recent study by Hedge and Hewett (2021) also examined the effects of a multi-method teaching approach to teach undergraduate students about developmentally-appropriate practices for guiding children's behaviour. They combined PowerPoint presentations, interviews with in-service teachers, and video models in five modules, available on a learning management system (like Moodle), to students in two classes: one class of students that typically was held in person and the other that was described as a distance education course. The participants were in a Human Development and Family Science department, focusing on childhood education. The objective in this study was to improve students' knowledge regarding developmentally appropriate practices. Student feedback was gathered after the completion of every module and at the end of the semester with a survey, including open- and closed-ended questions (Hedge & Hewett, 2021). The findings support the use of a diversified teaching method, including asynchronous online presentation and videos, and in-class discussion: all instructional methods in line with my study. The students' feedback from the open-ended questions indicated that the instructional modules were perceived positively and that having a complete module, addressing

both theory and practice, aids in student learning. The authors concluded that the modules were effective as instructional tools. The students also gave recommendations and suggestions concerning the content of the modules which could serve future curriculum development in this area. Finally, the authors stated that the flexibility of the module allowed students to work at their own pace. Specifically, the participants reported performing and learning better when the diversified resources were presented to them online and when the visual representations were followed by concrete and practical examples and discussion (Hedge & Hewett, 2021).

In conclusion, video-based instruction, alone or in combination with other teaching strategies (e.g., discussion and reflection), are well-studied methods for conveying information. The results presented above from different studies are positive in terms of improving knowledge and potentially influencing preservice teacher behaviors in the classroom. It appears to be an effective way to decrease the gap between research and practice and may be a useful strategy for learning during a pandemic.

The Present Study

Research indicates that emergent literacy skills predict and influence later literacy competencies and that educator-child interactions in naturalistic activities such as storybook reading can support emergent literacy development. Preservice educators pursuing an undergraduate degree in education are likely to read research articles on new methods and strategies for teaching and learning. However, the transfer between research and teachers' practice is not always realized, sometimes because research articles have not provided information that can be clearly and directly applied to practice, and other times because practical new information is not well-conveyed (Denton et al., 2003; Dieker et al., 2009). Additionally, the COVID-19 pandemic has changed content delivery and restricted preservice educators'

interactions with children. This poses a challenge in terms of getting new information about teaching strategies across to preservice educators and seeing if they apply it.

This study addresses these challenges by investigating the benefits of a multi-faceted approach to instruction, combining direct teaching (video-based instruction); reading, observing, and reflecting independently; and discussing and practising the targeted strategies in a group with support by the researcher. It is the first study to address gains in preservice educators' knowledge of the components and importance of print awareness, as well as the strategies to support it, through instruction delivered entirely online. Moreover, to the best of my knowledge it will be the first study of print referencing by preservice educators, both prior to and following instruction. The immediate aim is to enhance preservice educators' knowledge of print referencing to promote print awareness, which will serve as a precursor to incorporating the technique in their practice. The study addresses both declarative knowledge (i.e., knowledge about print awareness and print referencing) and procedural knowledge (i.e., knowledge about how to implement print referencing strategies).

My research questions are 1) What strategies do preservice educators spontaneously mention when they are asked about the strategies they would use to promote emergent literacy, and when reading a storybook to preschoolers (ages 4 to 5 years)?; 2) Does knowledge about emergent literacy and print referencing increase following the instruction provided in the study?; 3) Do preservice educators use print referencing during storybook reading (as measured via a role play), prior to instruction, and does use increase following instruction?; and 4) Are their print referencing strategies more varied following instruction?

I hypothesize that preservice educators will not spontaneously name print referencing (question 1) and will rarely attend to print during storybook reading (question 3) at pretest. As

revealed by Zucker et al., (2009) and Justice and Ezell (2000), teachers and parents rarely refer to print during storybook reading. My second hypothesis is that preservice educators' knowledge regarding emergent literacy and print referencing will increase following diversified online instruction (question 2). While my study is the first to examine this question for preservice educators, Cunningham et al. (2015) demonstrated that educators who showed low initial levels of emergent literacy knowledge, specifically phonological awareness, gained in knowledge after professional development. Finally, I hypothesize that the frequency of print referencing will increase following instruction, and that the types will also be more varied. As shown by Ezell and Justice (2000), their participants (graduate students) used all five print reference types significantly more often after viewing an instructional video on print referencing.

Methods

Design

This study used a pretest posttest control group design with random assignment of preservice educators (undergraduate students) to one of two groups: the treatment or control group. The treatment group received instruction focused on how to engage children and support their emergent literacy, specifically their print awareness, during interactive storybook reading by using print referencing. The instruction elaborated below includes: 1) direct teaching (video-based instruction); 2) reading, observing, and reflecting independently; and 3) discussing and practising the targeted strategies in a group with support by the researcher. The control group received instruction on asking literal and inferential questions, an approach to support a different emergent literacy goal: inferencing. Participants were assessed at pretest and posttest using the same procedures in both groups.

Participants

The participants were 25 students from a large university in Eastern Canada enrolled in an Education undergraduate program. The program is a 90 to 120 credits program (depending on college-level credits prior to entry), 45 of which must be specifically in the Education Department and constitute the Major of the degree. The program offers students a strong foundation in child development and practical skills needed to work with children.

The participants were enrolled in a field experience course and complementary seminar (the former focuses on gaining direct experience with children and the latter focuses on theoretical aspects including curriculum planning and reflective practices). These two courses are each worth three credits and must be taken by students concurrently. Due to restrictions related to the COVID-19 pandemic, the courses were adapted and provided entirely online (through synchronous and asynchronous activities) during the academic term when the current study was conducted. Direct contact with children was replaced by a sequence of simulated and indirect experiences. Specifically, the course instructor replaced the direct experiences with children with remote simulations and relevant assignments. Students were provided weekly tasks, which represented experiences, situations, or responsibilities that early childhood educators face. For example, students were asked to observe children in videos and design lesson plans and activities and to create materials for their classroom based on their observations. All class meetings were conducted using the Zoom videoconferencing platform.

Recruitment and Consent

The course instructor was contacted to discuss the possibility of including an instructional unit on promoting literacy in early childhood settings in the field experience courses, and the potential participation of students in the study. The class instructor welcomed the idea and

collaborated on aligning instruction with the course design and requirements.

Following approval of my study by the University Human Research Ethics Committee. I contacted the course instructor asking her permission to join a regularly scheduled online class meeting to explain the study to the students, as well as their rights as research participants. I did this using a PowerPoint presentation. Consent forms (see Appendix A) were provided to the students. Students were informed on the consent form and at the class visit that they could opt out of the study but were still expected to engage in the learning activities involved in the study since these were part of the course tasks, as described previously in the Design section. Student participation in this study was voluntary and the instructor did not know who had agreed to participate and who had not until the term was over (in fact, all students agreed to participate).

All the students accepted to participate in the study and were randomly assigned to one of the two groups: the print referencing (PR) group (12 students) and the Question (Q) group (13 students). In order to randomly assign the students, each student was allocated a number, the numbers were entered to an online tool (https://www.random.org/lists/) to randomize their order, and the resulting list was divided (first 12 students to the PR group and next 13 to the Q group). The students in the PR group continued the study, including meetings, tasks, and role play with me, whereas the Q group completed the study with another graduate student. This graduate student was also pursuing her MA in Child Studies and worked in the same lab under the same supervisor, Dr. Diane Pesco.

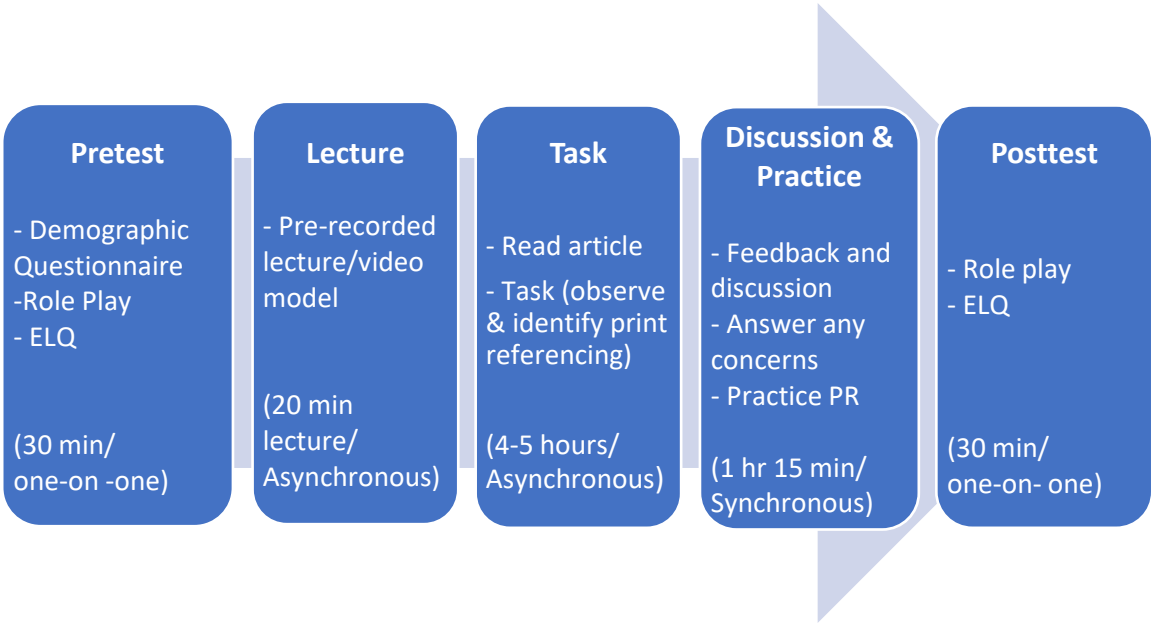
The two groups were comparable for various demographic variables including, age, gender, years/credits completed in the program, and experience with children, as described in the Results (Participants section).

Measures and Procedures

Figure 2 provides an overview of the procedures followed by the experimental group, and the subsequent sections below expand on what was done at each point in this study.

Figure 2

Sequence of Study Procedures for the Experimental Group



Note. Participants in the control group followed an identical sequence, but content was focused on asking children inferential questions during storybook reading. Learning logs of participants in the PR group were collected following the posttests (see Method).

Pretest Session

Participants were asked to book a meeting with me or the other graduate student using a Google form booking system. The meeting lasted approximately 30 minutes, was held via videoconference (Zoom platform), and required a password to enter. During the meeting, the student filled out a demographic questionnaire covering age, gender, completed credits, and experience with caregiving and working in childcare environments (see Appendix B). The student also completed two pretest measures: Role Play and Emergent Literacy Questionnaire.

The student received 1 point out of 5 in total, for completing the tasks related to the week's learning. All final decisions about grades were up to the course instructor.

For the role play, each participant in the PR group interacted with me and each participant in the comparison (Q) group interacted with the other examiner. The students were asked to play the role of an educator reading a storybook to a child, with me or the other examiner (i.e., the other graduate student) in the child's role. Since we did not have a child present for the role play, each examiner used a puppet (see Figure 3) in their role as the child. To minimize potential effects of the examiner, both researchers/puppets only gave correct responses to the questions that the participants ask and did not initiate interactions.

Figure 3

Puppet Used during the Role Play with the PR Group

The instructions to students were: "I am going to show you a book. I'd like you to look through the book first to familiarize yourself with it. Then, I'm going to ask you to imagine you are an educator in a daycare working with children four- to five-years-old, and to read the storybook to me as you might to a child." Participants were told before beginning the role play to "use the cursor to show anything you wish in the book" (achieved by using the Share Screen

function in Zoom). The role play was recorded via Zoom and the recording was stored locally (rather than on the web) on a password-protected computer.

All students role-played using the same book for the pretest, entitled *Mr. King's Things* (Côté, 2012), and a different book for the posttest: *Mr. King's Castle* (Côté, 2013). These books were selected because they are age-appropriate and have a clear beginning; a middle, including a problem encountered by characters; and a resolution/end. Important to the goals of my study, the books also offer print saliency (see Figure 4). Additionally, the two books were written and illustrated by the same author, and are highly comparable to each other in length, imagery, and size. The two books were purchased in electronic format for each examiner. Thus, we each had access to the books on our private computers and shared them with the students via screen sharing. Students were given a maximum of 10 minutes to familiarize themselves with the book. They were also given remote control of the book through Zoom, so they could proceed at their own pace. Then, they read the book to me or the other examiner.

Figure 4

A Page from the Book Mr. King's Castle Used during the Second Role Play

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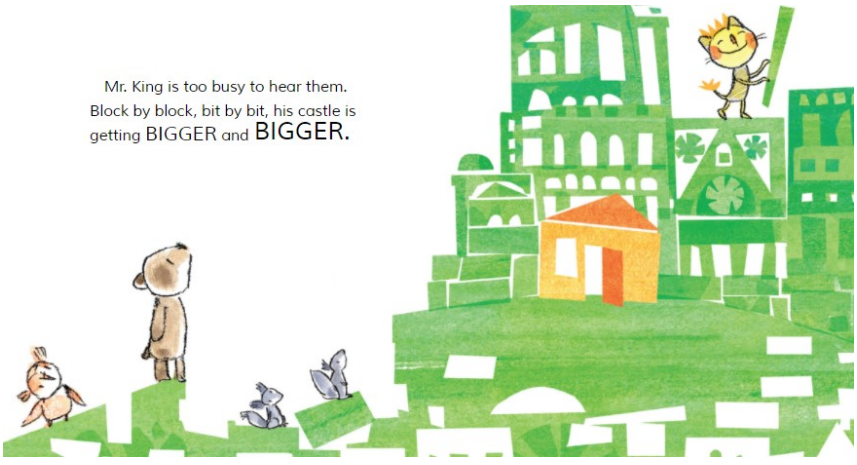


Note. This image is from *Mr. King's Castle* by Genevieve Côté (Côté, 2013)

Following the role play, the students completed the Emergent Literacy Questionnaire (see Appendix C), intended to assess their knowledge about emergent literacy and the strategies linked to their instructional condition: print referencing or literal and inferential questions during storybook reading. The measure comprises (a) multiple choice questions targeting basic knowledge of emergent and conventional literacy skills (2 items); (b) ratings on a 5-point Likert scale targeting knowledge of emergent literacy (1 item), literal and inferential questions (5 items), and print referencing (5 items), and (c) questions focused on strategies to support children's emergent literacy and engage children in storybook reading (with 1 open-ended, and 1 rating question inviting the students to self-rate their confidence about supporting emergent literacy during storybook reading). The scoring is described in the Data Analysis section (below).

Instruction

In the Fall term, I developed an instructional unit on print referencing guided by my research supervisor and the literature on the topic. I then implemented it with students in the field experience course as a guest speaker, under the supervision of the course instructor and research supervisor. Students were asked their willingness to give feedback, and permission for us to view their thoughts on storybook reading. Students viewed a video recorded introduction on the topic of emergent literacy and print referencing where I was the speaker. They were also assigned tasks to complete, mainly reporting on storytelling strategies. Students submitted their observations and I examined these to get insight into the students' prior knowledge. Students were then assigned an article on print referencing that was also used in the current study, the article is "Enhancing Phonological Awareness, Print Awareness, and Oral Language Skills in Preschool Children" by Pullen and Justice (2003). Students were generally very enthusiastic

about print referencing. Many students mentioned they learned how important and easy it can be to make children aware of print from a young age. It appeared to be a new strategy to them, and none of them mentioned it as a tactic they used when reading a story to preschoolers (most of them confirmed focusing on the images). The ideas and findings from the above-mentioned process have been used to refine the measures and procedures of the current study.

Direct Teaching (Video-Based Instruction). In the week following the pretest, all the participants in the experimental group were asked to watch the pre-recorded video-narrated lecture I prepared on early literacy practices (mentioned above), read a peer reviewed article on print referencing (mentioned above), and reflect individually through an observation and reflection task. The video-narrated lecture consisted of a review of emergent literacy concepts and their importance for the success of children in reading and writing in the future. It also included a detailed explanation and presentation of print referencing, a well studied, evidence-based technique to promote print awareness, a pillar of emergent literacy. The verbal and non-verbal print referencing techniques are described and slides on the ideal books to use for print referencing are presented, as per the evidence from the research. Guidance on which component of print awareness will be supported by this technique, as well as how often to use the technique, were also incorporated.

At the end of the presentation, a video modeling the print referencing technique was shown. This video is available on the Early Childhood at Ohio State University website (The Ohio State University, 2017) and on the Early Childhood at OSU (2019) You Tube channel.

Reading, Observing and Reflecting. The students in the PR group were assigned to read the article entitled "Enhancing Phonological Awareness, Print Awareness, and Oral Language Skills in Preschool Children" by Pullen and Justice (2003). The article is an overview of the

components of emergent literacy: phonological awareness, print awareness, and oral language development. It includes a brief review of recent research and provides strategies for developing phonological awareness, print awareness, and oral language in the preschool classroom.

Lastly, the students were asked to complete a written assignment, drawing from the article they read, and the videorecorded lecture to answer the questions (see Appendix D). Specifically, the students were invited to view a YouTube video (Vento, 2020) of a teacher reading a book to her students where she uses some print referencing strategies. The students were asked to identify and classify the print referencing strategies she used by type and subtype, and to identify others she did not use. Other questions related to the suitability of the book for print referencing and a reflection of how print referencing promotes emergent literacy in children (see Appendix D). The purpose of those tasks was to allow students to observe and reflect individually on the print referencing technique. I corrected the tasks according to the answer key provided in Appendix D. This task was worth a maximum of 3 points towards the student's course grade.

Participants in the Q group received an article with a similar focus on emergent literacy, "Providing preschool foundations for later reading comprehension: The importance of and ideas for targeting inferencing in storybook-sharing interventions" by Van Kleeck (2008), as well as a pre-recorded narrated PowerPoint presentation on inferential questions to promote inferencing. The presentation was prepared by another graduate student with guidance from the same research supervisor, Dr. Diane Pesco. The Q group also engaged in observation and reflection, using a highly similar process to the one I have described for the experimental PR group.

Discussion and Practicing the Targeted Strategies. I met with the participants in the experimental group 1 week following the asynchronous instruction described above. This

meeting was conducted via Zoom during the usual class meeting time. During the meeting, I guided the discussion by asking the participants for their feedback and thoughts on print referencing. I asked questions such as the following: "Have you read or heard about print referencing before?", "Have you ever seen educators use this technique before?", "Do you think it is feasible to implement this strategy in the classroom?", and "What are the obstacles you foresee with print referencing?". Moreover, during the Zoom meeting, I showed the students pages of a storybook *Don't Let the Pigeon Stay Up Late* by Mo Willems and asked them to practice print referencing. This book contains salient print and was recognized as a suitable book for print referencing on the Early Childhood at Ohio State University website (Star, 2017). One by one, I invited the students to name a verbal or non-verbal print referencing method they might use if they were reading the book to preschool children in a classroom. The Q group was with the other graduate student, discussing in the same format, other early literacy strategies, specifically inferential questions for oral language development.

Posttest Session

One week after the general discussion (two weeks after the pretest), the participants were invited to book another meeting to again engage in a role play, but with a new book: *Mr. King's Castle* (Côté, 2013) as described above. As for the pretest, the participants had 10 minutes to review the book and the same instructions were given (that is, to read the book as they would to a 4 to 5-year-old child). Participants were also asked to complete the Emergent Literacy Questionnaire again. These two components (role play and questionnaire) made up the posttest. As with the pretest, the student received 1 point for participating in these activities.

Data Analysis

Scoring of Emergent Literacy Questionnaire. For Part A of the questionnaire (see

Appendix C), the two multiple choice questions had 10 possible answers and 5 correct answers each, and every correct response received 1 point (up to a maximum of 5 points per question). For Part B, the ratings were scored as follows for true statements: "strongly disagree" and "disagree" received 0 points, "neutral" 1 point, "agree" 2 points, and "strongly agree" 3 points. For false statements, reverse scoring applied (i.e., strongly agree and agree received 0 points, "neutral" 1 point, "disagree" 2 points, and "strongly disagree" 3 points). For my study, 8 items were analyzed: the two items from Part A and six items from Part B (one item on emergent literacy and five on print referencing). There are respectively shaded green and pink in Appendix C (the blue shaded items were analyzed only in the study of inferencing). Thus, the maximum score for the questionnaire for the current study was 13 points for questions on emergent literacy and 15 points for questions on print referencing. For Part C, the percent of students naming different strategies was calculated, including the ones targeted in the current study. The confidence ratings stated by the students were also analyzed.

Transcription and Coding. I transcribed each of the participants' verbal and noted each of the nonverbal print referencing strategies used in the video role play. I then coded them according to a system developed by Ezell and Justice (2000). First, verbal print references were identified, assisted by searching related key words (print, read, say/says, spell, illustrator, author, lines, symbol, title/name, write, alphabet, letter, word, and sentence). I also identified references to reading or writing conventions (such as directionality), counting of words or letters, punctuation marks, or letter names (for example, "This is the letter Z" or "Do you see an A on this page?") (Ezell & Justice, 2000). Once the verbal print references were identified, they were categorized as a question, comment, or request about print (see Appendix E).

Nonverbal print references were recognized when the participant pointed or tracked

printed text using the cursor. As indicated in Appendix E, nonverbal references to print were coded in one of two mutually exclusive categories: pointing to print (placing the cursor on a letter or a word) and tracking print (using the cursor and moving it along a printed text while reading) (Ezell & Justice, 2000). The type (verbal or nonverbal), subtype and frequency of the print referencing strategies were identified, coded, and tabulated, for the pretest and posttest, to look for a change in behavior by the preservice educators.

Data Analysis. For statistical analysis, when the data was normally distributed, I used a series of mixed ANOVAs with group (PR and Q) as the between group variable and time (pretest and posttest) as the within group variable. The dependent variables, namely preservice educator's knowledge of 1) emergent literacy and 2) print referencing, were measured by scores on the Emergent Literacy Questionnaire. For the role play, the data was not normally distributed. I thus used nonparametric tests to analyze the data, specifically an Exact Sign test to investigate within group (pre- to posttest) differences and a Mann-Whitney U test to examine between group differences. Two scores from the role play coding, the number of verbal references and the number of nonverbal print references, served as the dependent variables. The storybook reading strategies named by the participant were examined with descriptive statistics.

Participant Feedback on Print Referencing and Instruction

Participant feedback on the print referencing instruction was obtained via learning logs that were a regular part of the course (i.e., students were asked to complete them each week by their course instructor). In the course syllabus, reflection through the learning logs was presented as central to becoming a professional educator. The logs were intended to help students document their own learning, progress, and development throughout the course. Students were asked to reflect on each week's readings, recorded lectures, and seminar meetings, as well as

their experience completing the weekly task for the course. The content of the learning logs was not graded by the course instructor for correct information; rather, students were given points if they gave answers that were thorough and relevant.

After participants in my study had completed the instructional unit on print referencing (including the asynchronous lecture, reading, task completion and the synchronous group discussion and practice), they were asked to fill out the weekly learning log. The learning logs were not part of the original set of measures for the study, but I asked students for consent to access the logs later (following approval by the ethics committee), thus, the students' answers were not influenced by them knowing I would read the logs. I requested access to the logs because I was interested in how the instruction was perceived by the participants. Also, I thought the logs were likely to capture anecdotes, ideas, and reflections related to print referencing that were unlikely to be acquired through the other study measures. Lastly, I felt that the logs would give me an indication of the participants' willingness to adopt print referencing in the future.

Six students out of twelve gave me consent to examine their learning logs. Once I received the logs from the course instructor, I read them, and coded them using two broad categories: perceived benefits and challenges faced. Then, I coded them by topic of comment: print referencing as a strategy and instruction. Finally, within the topic category, I further noted the aspect of the instruction the student was commenting on (i.e., video, article, task, etc.)

Results

Participants

Participants in this study were 25 undergraduate students in the Department of Education. All of them had completed at least 60 credits towards their degree and the majority (88%) had taken at least 39 credits out of 45 towards a Child Studies major. However, none of the

participants had completed a college diploma (DEC) in Early Childhood Education. All of the participants in the PR group (n = 12) were females aged between 18 and 30 years old and none of them were primary caregivers to a child at home. In the Q group (n = 13), 11 students were female, and 11 students were in the age group 18 to 30 years-old. Two participants in the Q group were older than 30 and were primary caregivers to a child at home, and two were males.

As for their work experience, 5 participants (43%) in the PR group were currently working in a childcare setting, and 6 (50%) were not (1 student did not respond). In comparison, 4 (30%) in the Q group reported currently working in childcare or other early childhood settings; the remainder (9 students, 70%) were not. Lastly, 66% of participants in the PR group and 62% in the Q group reported having previous work experience in childcare settings, including day camp, daycare, afterschool program and others.

Emergent Literacy Questionnaire

Data from the Emergent Literacy Questionnaire was used to answer two research questions. First, what strategies do preservice educators spontaneously mention when asked about what strategies they use when reading a story to 4 to 5-year-olds. Second, does their knowledge about emergent literacy and print referencing increase following the online diversified instruction? The data for the first question were be reported as descriptive figures, where as the data for the second question was normally distributed and were analyzed as mentioned earlier.

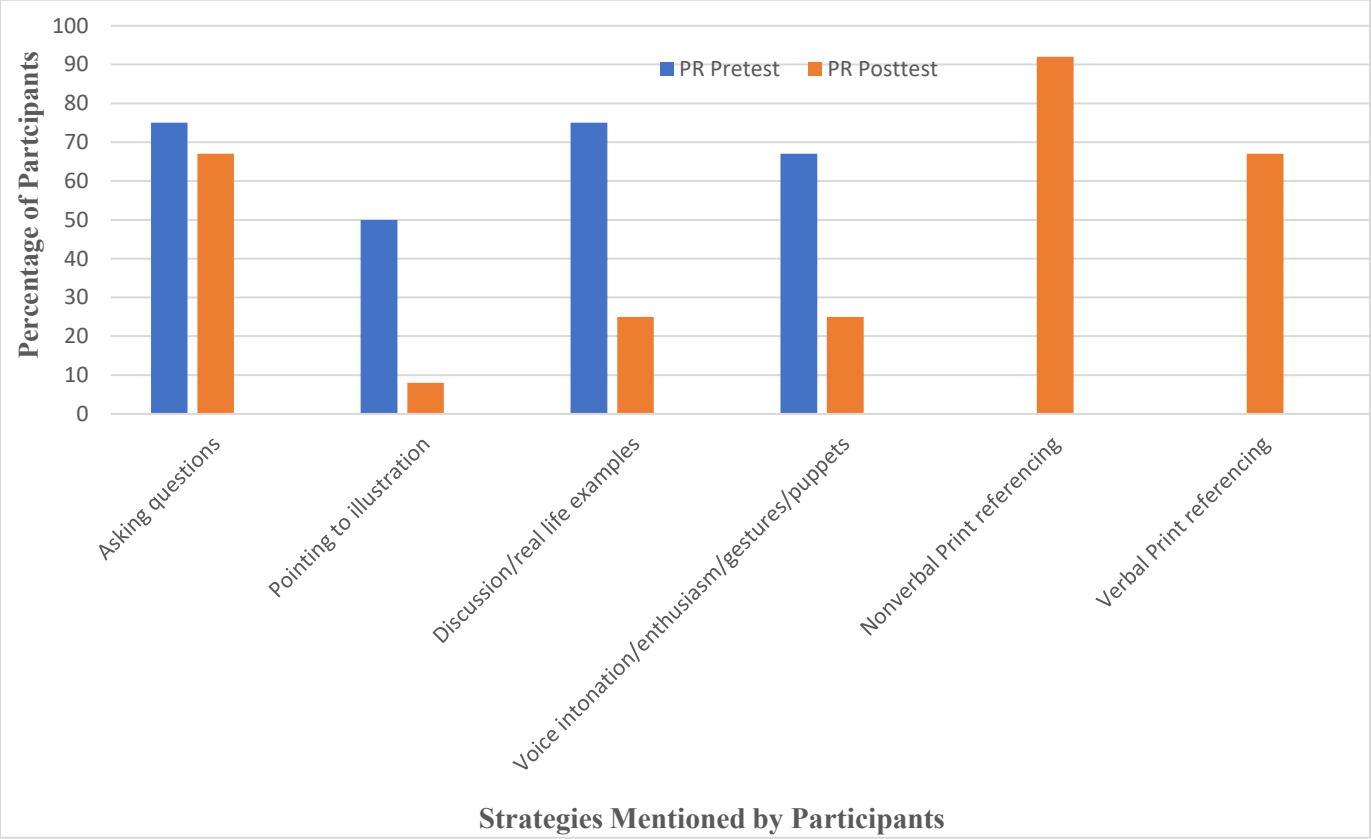
Storybook Reading Strategies Mentioned

Participants were asked to spontaneously name the strategies they would use when reading a book to a group of preschoolers. They mentioned a variety of strategies, as seen in Figures 5 and 6. More specifically, at pretest more than 70% of participants in the PR group

mentioned asking questions or having a discussion with the children and linking the story to real life examples (see Figure 5). As expected, none of them spontaneously mentioned print referencing or attending to the print in the book at pretest. At posttest, more than 90% of the participants in the PR group mentioned nonverbal print referencing, and more than 60% mentioned verbal print referencing as strategies they would use when reading a storybook to children. Whereas reference to other strategies decreased noticeably.

Figure 5

Storybook Reading Strategies Mentioned by the PR Group

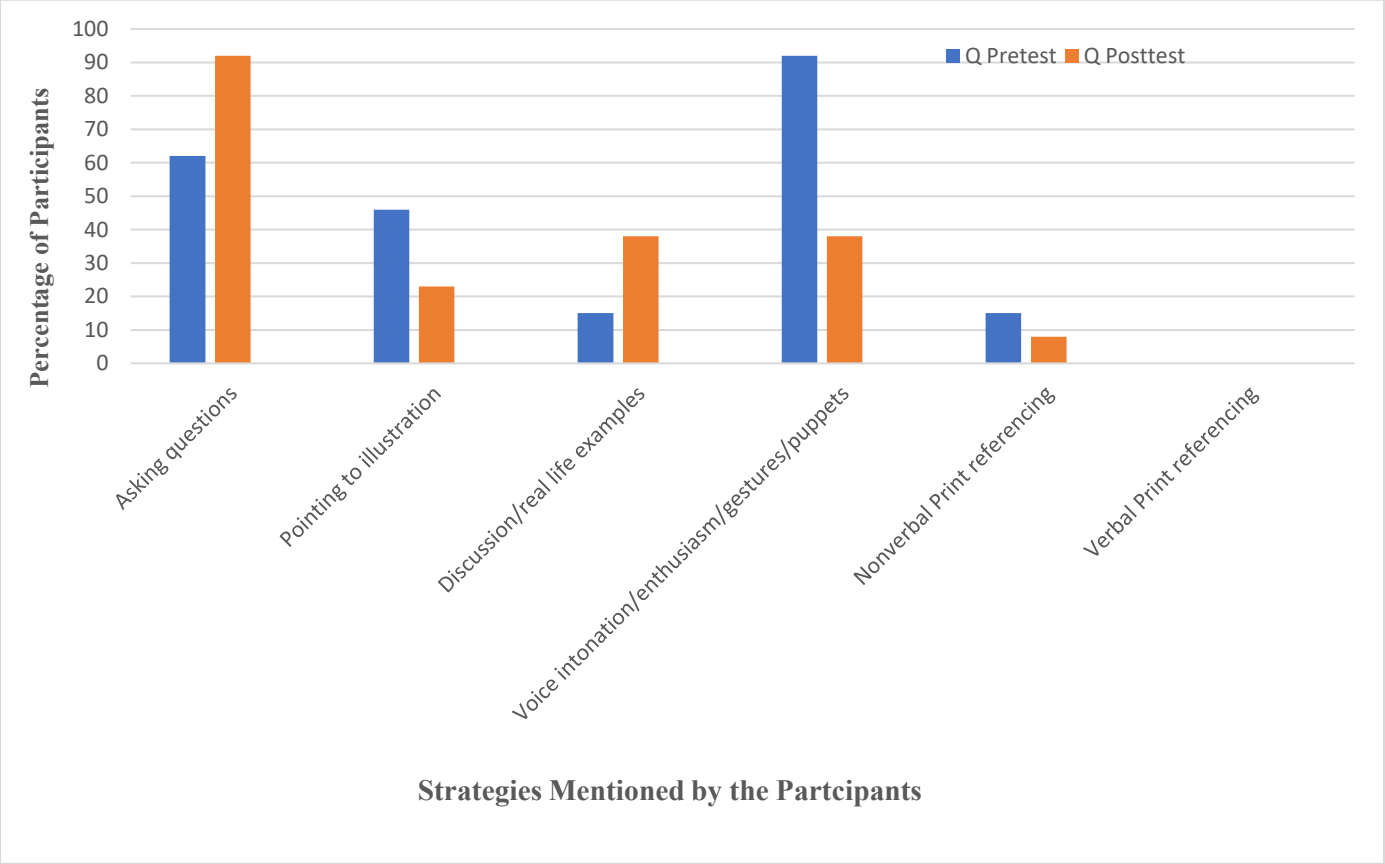


Participants in the Q group similarly reported a multitude of reading strategies they would use when reading a story (see Figure 6). In fact, at pretest, more than 90% of them mentioned relying on voice intonations/ enthusiasm/gestures and puppets and more than 60% reported asking questions as some of the strategies they would use. Moreover, 2 out of 13 (15%)

of participants in this group mentioned pointing to the words, a nonverbal print referencing strategy as one they would employ during storytime and no one mentioned any verbal print referencing strategy. At posttest however, only 1 participant mentioned pointing to the words in the book and no one reported any verbal print referencing technique. Furthermore, the percentage of participants mentioning asking questions and discussion remarkably increased at posttest.

Figure 6

Storybook Reading Strategies Mentioned by the Q Group



Knowledge of Emergent Literacy

Knowledge about emergent literacy was observed through the Emergent Literacy Questionnaire (questions 1 and 2, Part A and 1 question Part B). The data was normally

distributed, as assessed by the Shapiro-Wilk test of normality at pretest (p = .649 for PR; p = .125 for Q) and posttest (p = .262 for PR; p = .155 for Q). Furthermore, the data met the other assumptions for a mixed ANOVA: a boxplots assessment showed no extreme outliers, and there was homogeneity of variances and covariances as measured respectively by Levene's test of homogeneity of variances ($p > .05$) and Box's M ($p > .05$).

A mixed ANOVA was run to determine the effect of instruction on participants' knowledge of emergent literacy concepts. Table 1 shows the means and standard deviations of emergent literacy knowledge in the two groups as well as the score for both groups together at pretest and posttest.

Table 1

Emergent Literacy Knowledge by Group at Pretest and Posttest

	Pretest		Posttest	
Group	Mean	SD	Mean	SD
Print Referencing	6.42	2.99	8.42	2.19
Question	7.54	1.90	10.23	1.83

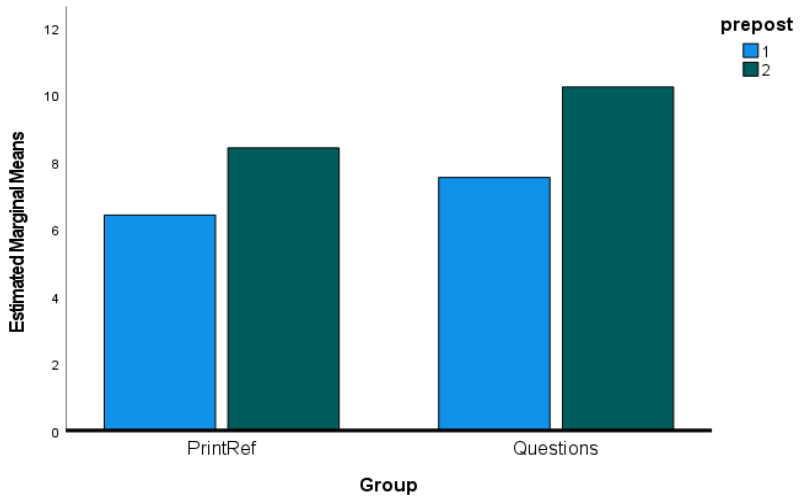
Note. Maximum score = 13

The scores of both groups on the knowledge of emergent literacy were rather low at pretest; the PR group's score of 6.42 (in Table 1) was only 49%, and the Q group's score of 7.54 was 58%. At posttest, the scores were 8.42 (65%) and 10.23 (78%) respectively, for the PR and Q groups. A mixed ANOVA was conducted to compare the scores by group and from pre- to posttest. Since both groups received comparable instruction on emergent literacy, I did not expect a significant difference between groups, but I did expect a difference between the pretest and posttest scores. The mixed ANOVA confirmed my expectations. It showed that the scores increased significantly from pretest to posttest $F\ (1, 23) = 44.65$, $p < 0.001$ partial $\eta^2 = .66$ (M =

7, *SD* = 2.5 at pretest, *M* = 9.36, SD = 2.18 at posttest). There was no statistically significant difference between the two groups: F (1,23) = 3.09 p =.092, partial η^2 = .119). The interaction of group and time (pretest, posttest) was also nonsignificant F *(1,23)* = .972, p = .334, partial η^2 = .041, as shown in Figure 7, suggesting that gains in each group were comparable.

Figure 7

Knowledge of Emergent Literacy by Group at Pretest and Posttest



Knowledge about Print Referencing

Knowledge about print referencing was also measured through the Emergent Literacy Questionnaire (the 5 questions in part B indicated in Appendix C). Descriptive statistics are provided in Table 2.

Table 2

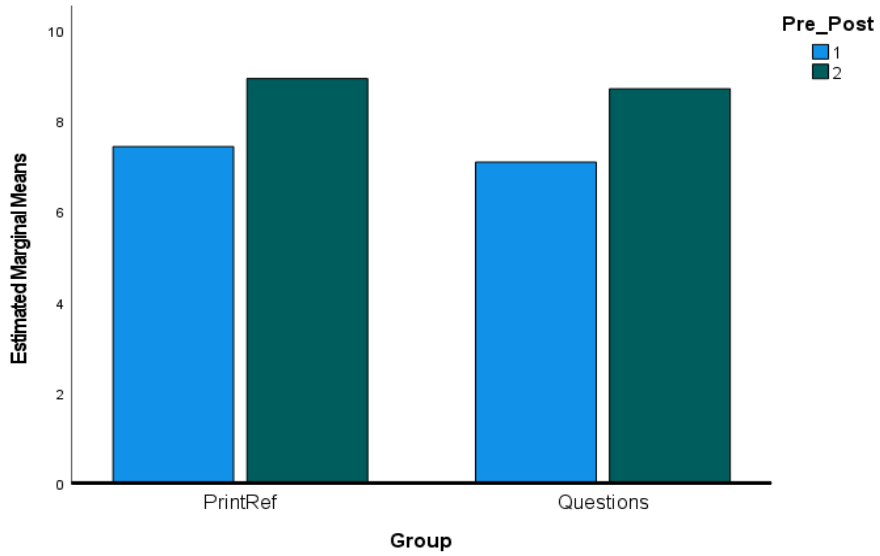
Knowledge of Print Referencing by Group at Pretest and Posttest

	Pretest		Posttest	
Group	Mean	SD	Mean	SD
Print Referencing	7.42	1.78	8.92	2.71
Questions	7.08	1.85	8.69	2.53

Levene's test of homogeneity of variances and Box's M test for homogeneity of covariances were both nonsignificant ($p > .05$). I thus conducted a mixed ANOVA to analyze the participants' knowledge about print referencing. As revealed in Figure 8, there was a statistically significant difference for time (pretest to posttest) F (1, 23) = 5.36, p =.03, partial η^2 = .189, but no significant difference between groups: F (1, 23) = .221, p = .643, partial η^2 = .01. The interaction of group and time was also nonsignificant F (1, 23) = .007, p = .932, partial η^2 = 0.

Figure 8

Print Referencing Knowledge by Group and Time (from Mixed ANOVA)



This means that both groups (PR and Q) significantly increased at posttest for knowledge on print referencing. Given that gains in the Q group were unexpected, I examined the data further for extreme values since in a small sample these can have a large effect. In the PR group, one student's score decreased dramatically 6 points (from 9 to 3), which brought the average score of the PR group down, and two students in the Q group gained a considerable 7 points (from 4 to 11, and 6 to 13) which subsequently brought the average of this group up. These results will be thoroughly addressed in the discussion.

Confidence in Supporting Children's Emergent Literacy

The last question in the Emergent Literacy Questionnaire asked the participants to rate their confidence in supporting children's emergent literacy during storybook reading on a 5-point scale (not at all to very confident). Table 3 presents the descriptive statistics for participants' confidence in supporting children's emergent literacy during storybook reading.

Table 3

Confidence in Supporting Emergent Literacy During Storybook Reading

		Confidence Rating	
Group		Pretest	Posttest
Print Referencing	Mean	3.08	3.25
	Median	3.00	3.00
	SD	.79	.87
	Mean rank	12.33	10.33
Questions	Mean	3.23	3.85
	Median	3.00	4.00
	SD	.93	.80
	Mean rank	13.62	15.46

Shapiro-Wilk's normality test demonstrated that the data for this variable was not normally distributed ($p < .05$, except for the PR group at posttest; see Appendix F). The data did not meet the assumptions for a Wilcoxon Signed Rank test, because the distribution of the differences from pretest to posttest was not symmetrical in the two groups. I therefore used an Exact sign test to look at within-group (pretest-posttest) differences, followed by a Mann Whitney U test to investigate between-group differences (PR and Q).

The confidence of the participants in the PR group did not increase significantly at posttest: 2 participants increased in confidence, 9 stayed the same, and 1 reported a lower

confidence rate (*Mdn* = 3 at pretest and posttest, *p* = 1). However, the confidence scores were going in the right direction and increasing for this group (from *M* = 3.08 at pretest to *M* = 3.25 at posttest). The Q group showed significant difference in the level of confidence at posttest, with 7 participants increasing in confidence and 6 remaining the same (*Mdn* = 3 at pretest and *Mdn* = 4 at posttest, *p* = .016).

A Mann-Whitney U test was run to determine if there was a difference in the level of confidence between the PR group and the Q group. Distributions of the confidence scores for the PR and Q groups were similar, as assessed by visual inspection. Median confidence score was not statistically significantly different between PR and Q groups, at either pretest *p*= .689 or posttest *p* = .087, using an exact sampling distribution for *U*.

Role Play

The primary way to assess procedural knowledge in this study was through the role play. Most of the data for the role play was not normally distributed, according to Shapiro-Wilk's tests, $p < .05$ (except for one measure: the posttest verbal print referencing in the PR group). Therefore, to analyze the data I again used mostly nonparametric statistics. Additionally, the data did not meet the assumptions for the Wilcoxon Signed Rank test, in that the distribution of the differences from pretest to posttest were asymmetrical. Thus, I conducted Exact sign tests to examine most pretest to posttest scores, followed by a Mann Whitney U test to investigate the difference between the two groups (PR and Q). For the Mann Whitney U test tests, either the median or the mean rank are reported, depending on whether the two group's distribution were similar or not.

Number of Verbal Print References

Table 4 provides the descriptive statistics for the number of verbal print references (questions, requests, and comments on print) made by the participants during the role play, before and after the instruction.

Table 4

Number of Verbal Print References in the Role Play by Group and Time

		Verbal Print References	
Group		Pretest	Posttest
Print Referencing	Mean	0	3.58
	Median	0	4.00
	SD	0	3.26
	Mean rank	12.50	18.42
Questions	Mean	0.08	0
	Median	0	0
	SD	.28	0
	Mean rank	13.46	8.00

An exact sign test was conducted to determine the effect of instruction on the use of verbal print referencing strategies. In the PR group, the online instruction elicited a significant increase in the use of verbal print referencing in 10 participants, and 2 participants stayed the same, at posttest (*Mdn* = 4) compared to (*Mdn* = 0) at pretest, $p = .002$. The Q group showed no significant difference in the use of verbal print referencing at posttest, with the vast majority of participants not using this technique at neither pretest nor posttest (*Mdn* = 0, $p > .05$).

To determine if there was a significant difference between the two groups for the number of times they used verbal print referencing during the role play, a Mann-Whitney U test was

conducted. The distributions of the number of verbal print referencing used were similar at pretest between the two groups (PR and Q), therefore I used the median to compare them (*Mdn* = 0, for the PR group and *Mdn* = 0 for the Q group), at posttest however, the distributions are dissimilar therefore mean ranks were used, PR mean rank = 18.42 and for the Q group mean rank = 8, $U = 13$, $z = -4$, $p < .001$). Thus, the PR group used verbal print referencing significantly more times during the role play than the Q group.

Number of Nonverbal Print References

Table 5 provides the descriptive statistics for the number of nonverbal print references (pointing and tracking print) by participants during the role play, before and after the instruction.

Table 5

Number of Nonverbal Print References in the Role Play by Group and Time

	Nonverbal Print References		
Group		Pretest	Posttest
Print Referencing	Mean	4.00	18.75
	Median	1.50	21.00
	SD	5.26	8.84
	Mean rank	11.04	18.17
Questions	Mean	8.38	4.31
	Median	5.00	1.00
	SD	8.95	5.65
	Mean rank	14.81	8.23

The sign test for the PR group showed that the online instruction elicited a significant increase in the use of nonverbal print referencing in 11 participants, and 1 participant stayed the same, at posttest (*Mdn* = 21) compared to (*Mdn* = 1.50) at pretest, $p = .001$. In the Q group there was no significant increase in the medians of the nonverbal print referencing strategies used

during the role play (*Mdn* =5 at pretest and *Mdn* = 1 at posttest, $p > .05$).

Mann-Whitney U test at pretest showed that the median was *Mdn* = 1.5, for the PR group and *Mdn* = 5, for the Q group), at posttest however, the mean ranks were used, PR mean rank = 18.17 and for the Q group mean rank = 8.23, $U = 16$, $z = -3.41$, $p < .001$). Thus, the PR group used nonverbal print referencing significantly more times during the role play than the Q group.

Diversity of Print Referencing Strategies

During the role play, participants had an opportunity to use up to 5 different print referencing strategies, 2 nonverbal and 3 verbal. In this part of the results, I wanted to see if instruction affected the diversity of their print referencing reading strategies, did they stick to one or two strategies or did they expand the types they used? To do this, I created another variable for the number of print referencing strategies used during the role play, from 0 to 5, and I counted how many verbal and/or nonverbal strategies participants used. Table 6 provides the descriptive report for the number of print referencing strategies by group, at pretest and posttest.

Table 6

Number of Print Referencing Strategies in the Role Play by Group and Time

	Print Referencing Strategies		
Group		Pretest	Posttest
Print Referencing	Mean	1.00	3.5
	Median	1.00	3.5
	SD	0.85	1.45
	Mean rank	11.83	18.67
Questions	Mean	1.31	0.77
	Median	1.00	1.00
	SD	0.95	0.83
	Mean rank	14.08	7.77

Since the data was mostly not normally distributed (see Appendix F), I conducted an exact sign test followed by a Mann Whitney U test, to see the difference between the PR group and the Q group. The sign test for the PR group showed a significant positive change in the number of different print referencing strategies used in 11 participants, and 1 participant stayed the same, at posttest (*Mdn* = 3.5) compared to (*Mdn* = 1.00) at pretest, $p = .001$. This means that at posttest, after receiving the online instruction, participants in this group used at least three different print referencing strategies during the role play. In the Q group there was no significant increase in the medians of the number of different print referencing strategies used during the role play (*Mdn* =1 at pretest and *Mdn* = 1 at posttest, $p > .05$). This means that without instruction on print referencing strategies, participants spontaneously may use one type of print referencing technique.

Mann-Whitney U test showed that the distributions of the number of print referencing strategies used were similar at pretest between the two groups (PR and Q), and the median were comparable (*Mdn* = 1.00, for the PR group and *Mdn* = 1.00, for the Q group). However, at posttest, the distributions are dissimilar and the PR mean rank = 18.67 and for the Q group mean rank = 7.77, $U = 10$, $z = -3.77$, $p < .001$). Thus, participants in the PR group used significantly more diverse print referencing strategies during the role play than the Q group.

Participant Feedback on Print Referencing and Instruction

As the reader will recall, the comments in the learning logs were first broadly categorized into perceived benefits and challenges faced, and then coded further by topic (print referencing strategy and instruction). The comments were almost all about benefits. In fact, only 8 out of thirty four addressed challenges; further details are provided below.

The benefits students perceived ranged from general to specific. As an example of a

general comment, one student wrote: "I enjoyed this topic a lot, I found it very interesting, and it is something we need to know moving forward and eventually put it into practice in our future jobs". Regarding the print referencing strategies, all six participants wrote that they were excited to learn about them, and also about emergent literacy and how the two were connected. They also reported their thoughts on the importance of print referencing for 4- to 5-year-old children. For example, participants shared the following: "It [print referencing] gives the children the opportunity to identify letters they are familiar with. Especially those who are getting ready to head to kindergarten.", "Print referencing is extremely beneficial for children and should be done as early as possible", "I believe this is good to know because I could really try to bring children's attention to print in a fun and engaging way. This is a good tool to know as it may make learning easier". Some students also noted that print referencing can be easily done during storybook reading, as in this example: "It [tracking print] is such a simple task and shows children what you are reading and may direct their attention to the print".

Moreover, many of them stated they would make print referencing part of their practice in working with children, "I am happy that this topic was brought to my attention and I don't think I will go back to how I used to read and engage with a book", "These are strategies that I should be aware of and use it as an educator to support children's learning", "Now that I am aware of these strategies and by using the feedback, I will adopt [it] in the daycare". "It was exciting to learn new strategies that I can apply into practices". One participant reported that she actually tried print referencing at the childcare setting where she worked, and reported the children's reactions, namely children saying, "they love it" … and … "they constantly ask me why I am doing it and what is the word my finger is on". This means that this participant did not only use print referencing for this study, but her knowledge translated to practice. A couple of

participants added they would adopt this strategy during storytelling, pointing out how the online instruction helped them: "Print referencing is something I would probably practice in storytelling time. So, everything we learned, all the strategies, the theory, will help me with that", "I really enjoyed this week! Strategies such as pointing, tracking, and making comments are things I do while reading books to my class now".

The literature is clear about how little attention educators and caregivers give to print during storybook reading, often because they are unaware of print reference strategies. In my study, most students who completed the learning logs reported that the concepts and strategies were new to them or were not in their conscious awareness. For example, one student said, "I had never really thought about integrating print knowledge when reading to the children" and another mentioned "these are strategies that I should be aware of and use it as an educator to support children's learning". Still another wrote "it was a very informative topic and there was some new terminology for me". One participant also reported on print saliency and how as an educator it is important to choose books that are good for print referencing. There were only two comments on print referencing that referred to challenges. Both had to do with getting more familiar with the strategies and the need for more practice to be more at ease using them, "I think one type of print referencing that I have not fully grasped or am still confused about is questions about print", "I still need much more practice, but with time and adopting the strategies it may become easier to do and implement". These comments demonstrate that even though students had some uncertainties, they were able to reflect on what they had learned and identify the need for and even areas for improvement.

The learning logs were also coded for comments on the online instruction as a way to teach/provide information, taking into account both the asynchronous and synchronous teaching

formats. Students' responses were generally positive and encouraging and touched upon different facets of the instruction.

With regards to the asynchronous teaching and learning, one student wrote "I loved the pre-recorded PowerPoints; they were simple and easy to understand, I learnt more about the role of the adult and the child in terms of print referencing". Several participants also gave positive feedback on the article I chose for them to read; "The tips and tricks mentioned in the reading are helpful tools to practice in the daycare center especially with preschoolers", "The reading is a great source of knowledge for educator like myself, as it shares lot of important information and practices that support children's learning", "I learnt a bunch of strategies and activities to use when promoting oral language and print awareness".

Others commented on the videos provided in the pre-recorded lecture and for the task, evaluating the videos positively "The videos were interesting to watch" and revealing active viewing: "I remember when I was watching the storytelling of *Teacher's rock*, there was certain part when the educator didn't use strategies and I was telling myself: 'Oh, she could of ask a question over here!'. Finally, one participant shared her enjoyment of reflecting on the videos and suggested the task was well within her reach: "I really liked this last task, I found it very fun and engaging, the task itself was not very long or hard to complete".

Many students gave their opinion on the synchronous Zoom class meeting and discussion. These were also overwhelmingly positive. One student mentioned "I really liked that we were able to practice our print-referencing skills. I was able to see how other's approached print referencing techniques in their reading as well as receiving constructive criticism from the teachers". Another added "I liked this because it gave me the clarity, I needed on how to actually print reference." Some participants gave feedback on my role as a facilitator in the discussion

session as in the following two excerpts: "Dima made it very clear and simple for us and I felt as if we were not too bombarded with all this information"; "Dima gave me feedback: my use of strategies was good however, I should focus on the print [rather] than comprehension. I found it interesting doing that activity".

Some challenges also emerged related to instruction. Three of these related to the task of identifying strategies used by a teacher in a video. One student wrote: "I found it challenging to identify strategies being used as she [the teacher in the video *Teacher's Rock*] may only use a strategy once". Another one was unsure about how to identify the strategies in the video: "When I was completing the print referencing activity, I had [a] hard time figuring out which strategies because sometimes it looks like the educator was using more than 1 strategy". These issues are addressed in the discussion by considering the video provided.

Three other comments alluded to concerns regarding the elements of the instruction or the pretest/posttest measures. One participant remained confused even after instruction about how to make a verbal reference to print:

> I gave an example and Dima had said it's not really spot on. I did not understand as it was a question in regard to the print. I provided another example … which … I was told was correct. With that being said, I think I was just confused as both questions were about the print.

The second participant raised a thoughtful question related to the frequency of print referencing strategies and how often one should use the strategy during storytelling: "When reading to children, how much print referencing is appropriate as to not over do it and overwhelm them?". Finally, one participant commented on the pretest/posttest measure. This student felt that reading a story to a puppet did not exemplify a typical storytelling activity in a

daycare: "Reading to a teddy bear, I feel that this does not really represent what story-time looks like". This comment and others are addressed further in the Discussion section.

Discussion

The participants in this study were divided in two groups the experimental group (PR group) and the comparison group (Q group), and they were asked to fill out a questionnaire about emergent literacy and do a role play, where they acted as an educator reading a story to 4- to 5-year-old children. Emergent literacy, specifically print awareness and print referencing, an evidence-based reading technique (Justice & Ezell, 2004), were at the heart of this study. The efficacy of an online, diversified/multi-faceted instructional unit on emergent literacy and print referencing was explored with preservice educators. The instruction included (a pre-recorded lecture, an article, a relevant task to review the concepts learned and a discussion/practice session). The declarative (through the Emergent Literacy Questionnaire) and procedural (through the role play) knowledge of the preservice educators was evaluated through storybook reading before and after the instruction. I will discuss each of the study's key findings below.

Emergent Literacy Questionnaire

Storybook Reading Strategies Mentioned

When asked to spontaneously mention storybook reading strategies they would use to promote emergent literacy, the participants in this study mentioned a variety of strategies at pretest, including asking questions, pointing to illustrations, using voice intonations, gestures, and puppets. However, none of them stated print referencing at pretest in either of the two groups. At posttest, there was a striking increase in the percentage of participants in the PR group who mentioned verbal and nonverbal print referencing strategies. This finding indicates that the instruction provided to the PR group broadened their choice about strategies and increased their

knowledge about print referencing in general and its two types, verbal and nonverbal. For example, at posttest, participants in the PR group replaced their strategy of pointing to illustrations with pointing to words in the text, a nonverbal print referencing technique.

Very few participants in the comparison Q group mentioned pointing to the words (a nonverbal print referencing technique) and even less mentioned it at posttest. No one mentioned any verbal print referencing strategy at either pretest or posttest. Their most named strategies remained asking questions and discussing the story with the children. They did not make any reference to a strategy drawing attention to the text or print in the story. These results conform with the literature that early childhood educators may not be engaging in the kind of book discussions that provide children with the emergent literacy skills they need to be successful as early readers (Nickel et al., 2011).

Knowledge of Emergent Literacy

The results from my study showed that participants in both groups had little knowledge about emergent literacy at pretest. Nickel (2011) similarly reported that some participants in her study of early childhood education students were confused about print awareness and phonological awareness. Moreover, in a recent study, Meeks et al. (2020) asked early childhood and primary preservice teachers in Australia who had just graduated about their preparation to teach early literacy using open-ended questions. The results indicated that most of the interviewees had inadequate content knowledge on emergent literacy and confused the meaning of various literacy terms.

However, in my study, at posttest, there was a significant increase in emergent literacy knowledge in both groups (PR and Q). This result is expected because both groups received similar instruction on emergent literacy. Even if the focus of the two instructional units was on

different components of emergent literacy (mainly print awareness and oral language), the content regarding emergent literacy was highly similar and a comparable amount of time was devoted to the topic in the lectures and articles we provided. Therefore, it was expected that instruction would be effective at increasing emergent literacy knowledge. In addition to supporting my hypothesis, the results are consistent with those obtained by Cunningham et al. (2015) who saw an improvement of emergent literacy knowledge amongst early childhood educators following professional development training. These results are promising, since the more teachers know about literacy concepts, the greater the benefits to children's literacy learning (Piasta et al., 2009).

Knowledge about Print Referencing

Knowledge about print referencing and print awareness was also evaluated. At pretest the participants in both group were not familiar with these concepts and scored low on the questions about print referencing and print awareness. At posttest, participants in the PR group gained knowledge and had a higher score on these items compared to the pretest. This is consistent with my hypothesis. However, it was surprising to me to see that participants in the Q group also gaining knowledge on print awareness and print referencing even without getting explicit instruction on the subjects. These results could be explained by the possibility that some participants in the Q group wanted to know about the content that the PR group received and viewed some of the material their classmates were invited to use, or maybe participants in both groups shared information regarding what they learned between each other or talked about what the other group is learning as I did not instruct students not to talk or share information between them. In fact, as I was reading the learning logs of some of the participants in the PR group, the indication of inferential questions caught my attention because this was never mentioned in the

instruction provided to the PR group. One participant further wrote in her log:

> "I feel it would be necessary to judge that children are not overwhelmed by questions [about the story] and that they can continue to follow along the context of the story."

This was an indication to me that students exchanged information on their respective group topic, which might have resulted in a few participants in the Q group gaining knowledge on print awareness and print referencing. Another explanation for this result, is the fact that one of the students in my group lost a remarkable 6 points at posttest, (from 9 to 3) which brought the average of the PR group down, with simultaneously, two students in the Q group gaining a striking 7 points which increased the average score of the Q group. Thus, because the sample size is small, one extreme value in one group and two in the other group can really affect the mean and the statistical results thereafter. Moreover, when I did follow up analyses and removed those extreme values, the difference between the PR and Q groups increased and the gain of the PR group was more prominent at posttest compared to the Q group.

Furthermore, the gains on the measure of print referencing knowledge observed in the two groups might relate to the types of questions I asked in the Emergent Literacy Questionnaire. Reflecting back on the questions (see Appendix C), I think they might have been too general, concerning more emergent literacy in general and when children acquire it, for example two questions were about print awareness and when it emerges. Also, other questions could be deduced from one's work-related experience in a childcare setting. For example, if a student worked at a daycare, they might have observed other educators and how they read stories, as one question pertains to this issue, and another question has to do with children being able to recognize their names, which is another issue that a student working in a daycare or caring for children can easily notice. Actually, two students in the Q group were older than the majority of

the students and were primary caregivers to a child at home, therefore having more experience from work and from being parents. However, as expected this increased declarative knowledge about print awareness and print referencing among the participants in the Q group did not translate into procedural knowledge or change in practice as observed in the posttest role play (See section Role Play).

Confidence in Supporting Children's Emergent Literacy

The level of confidence in supporting children's emergent literacy during storybook reading was estimated through the participants' self-reporting on this issue in the Emergent Literacy Questionnaire. The level of confidence of the participants in the PR group did not significantly increase, although the means were in the expected direction (i.e., higher at posttest than pretest). While their ratings remained in the "somewhat confident" category at posttest, they moved closer to being "quite confident". Participants in the Q group had significantly higher confidence levels at posttest compared to pretest but also did not reach the "quite confident" level and there was no significant difference in the level of confidence between the two groups (PR and Q) at either pretest or posttest. One explanation for why the PR group's confidence did not increase more could be due to the novelty of the PR strategy (compared to asking questions). Some students expressed that the strategy was brand new to them and that they felt they needed to practice it. Participants were nonetheless excited about this strategy, as revealed by the learning logs and live discussions.

Role Play

The culminating point of this study is the role play through which procedural knowledge is demonstrated and any change in reading behaviour is detected. Print awareness constitutes an integral part of emergent literacy, and print referencing is a reading technique proven to promote

print awareness (Justice & Ezell, 2004). Print referencing can be easily identified through the role play measure, where the participants were instructed to read a story book as an educator in a class of 4- to 5-year-old children and their print referencing behaviours, verbal and nonverbal were identified and coded, results are discussed in the next three sections.

Number of Verbal Print References

Previous studies showed that preschool teacher used a relatively low level of print referencing during storybook reading (Piasta et al., 2010). Moreover, the participants (early childhood education students) in a study by Nickel (2011) admitted they rarely talked about the print in a storybook by calling attention to key words or particular letters. This was also observed in the current study, where participants in both groups at pretest, did not verbally refer to the printed words in the book during the role play. Even with the print salient storybooks chosen (see figure 4) none of them commented, asked questions, or requested anything related to print. After instruction however, and as expected, the participants in the PR group had significantly more verbal print references than those in the Q group. This finding is consistent with the literature, where after diversified training on print referencing, a change in the use of verbal print refencing was observed amongst graduate students, educators, and preschool teachers (Ezell and Justice, 2000; Girolametto, 2007 and Piasta et al., 2010). Results from this study add to the literature that preservice educators can benefit from an entirely online training instruction on print referencing, adopt it and use more verbal print referencing during storybook reading.

Number of Nonverbal Print References

The use of nonverbal print referencing was low during pretest in both groups, compared to the non-existent/absent verbal print referencing. Consistent with previous studies (Ezell & Justice, 2000, Piasta et al., 2010), participants in the current study from both groups, rarely paid

attention to the printed words in the book during the role play by tracking them or pointing to them with the cursor. Participants in the PR group pointed or tracked the print an average of four times during the storytelling exercise, whereas participants in the Q group used slightly more nonverbal print referencing techniques at pretest. However, at posttest, a significant increase in the use of non-verbal print referencing techniques was observed in the PR group, in fact all the participants in this group employed it. This was contrasted with a sharp decline in the use of nonverbal print referencing in the comparison Q group.

As discussed in the previous section these findings mean that the participants in the PR group gained knowledge about print referencing and implemented it in their storytelling behaviors. Whereas the participants in the Q group may have gained knowledge about print awareness and print referencing but they did not adopt the technique and their declarative knowledge did not transfer into procedural knowledge.

Diversity of Print Referencing Strategies

As predicted, the diversity of the print referencing strategies used by the PR group at posttest during the role play significantly increased compared to the Q group. As previously presented in the two previous sections, participants were unfamiliar about print referencing and its effect on promoting print awareness, this resulted in them mostly ignoring print. In fact, at pretest participants in both groups only rarely using one print referencing strategy, the nonverbal tracking. However, with the online multifaceted instruction participants in the PR group were taught five print referencing strategies, and on average, at posttest they used at least three of them; mainly tracking, pointing, and commenting about print. Asking questions about print followed closely and making requests about print was used the least. These findings align with Ezell and Justice (2000), where after a brief video the graduate students in the study used more

diversified print referencing strategies, and specifically in the order mentioned just above.

Participants' Feedback on Print Referencing and Instruction

The learning logs provided unique and valuable information about what the participants thought and felt with regards to print referencing and the instruction provided. They were effective in eliciting anecdotes, reflections, and concerns that could not be captured with the other quantitative measures in this study. Lastly, they provided some positive evidence regarding students' willingness to adopt print referencing in their future work with children. While the students who agreed to share their learning logs might have been those who were most enthusiastic, verbal feedback during the synchronous discussion suggest this was not the case. It may have been that some students simply neglected to respond given the time delay between the posttest and the request for the learning logs and the heightened demands on student incurred by the pandemic.

The quotes gathered from the learning logs suggest that most students were enthusiastic and excited to learn about emergent literacy and print referencing and that the information was novel to them. The findings confirm evidence from other studies suggesting that preservice educators and teachers and even in-service teachers rarely think about print referencing while reading books to children. Most of the participants in my study said that learning about print referencing was important for them as future educators, and that they would apply it once in the field. Nonetheless, because print referencing was novel to most, it is not surprising that a couple of participants mentioned needing to practice the strategies more before feeling comfortable using them.

The findings from the learning logs also showed that the online instruction was a success amongst the students. Their responses were generally positive and are testimony that all facets of

the instruction were needed to achieve this success. While some participants praised the article assigned to them, others described the pre-recorded lecture as good, relevant, and easy to understand. However, most students agreed on the importance of having a synchronous meeting for discussion to address their concerns and misunderstandings, and to allow them to practice what they learned. They seem to have appreciated getting feedback from the researchers.

The feedback from a couple of students via the learning logs related to challenges they faced or concerns they had. One issue raised was the video all students were asked to watch; three students noted that they had a hard time identifying the print referencing strategies in the video. In designing the instruction, I scoured the internet to identify a video where a teacher, educator, or another adult was smoothly incorporating several print referencing techniques into the story reading session. It was very difficult to find an ideal video modeling print referencing (the vast majority of videos focused on other reading strategies such as using varied intonation or asking questions). The one or two videos I found with some print referencing had captions or notes stating the print referencing strategy, thus revealing the answers I wanted students to come up with on their own. In summary, the choices were extremely limited, and the video provided had fewer examples than might be ideal. In retrospect, I could have recorded a video of myself or another adult modeling print referencing. Another student questioned the frequency of print referencing during a typical story telling session. While this was a thoughtful question, I did discuss the matter of frequency in the pre-recorded lecture; perhaps this participant had forgotten about it. The last issue reported in the learning logs revolved around a student's puzzlement about my feedback regarding questions about print. When a storyteller encounters the word "house" for the first time in a book and asks the question "What does this word mean?", even if the question is about the printed word, this is not developmentally appropriate for a child 4 to 5

years old, because they are not in the conventional literacy stage and cannot read, and it is not print referencing. A print referencing question would be "How many letters are in this word?" While I explained this distinction to the participants during the pre-recorded lecture and the discussion, the student's confusion indicates that some students may need more practice and feedback. However, as the results for the study indicate, all five print referencing techniques can be learned with the instruction provided, and all the participants, whether through the learning log or in the group discussion, expressed their enthusiasm about learning strategies to promote emergent literacy. One participant mentioned that reading to a puppet did not feel natural. The pandemic made face-to-face interaction very difficult, but I think in retrospect that a puppet with more human features might have been more appropriate (however, only one student raised this concern).

In conclusion, the learning logs revealed the small developmental journey the students experienced from the first role play at pretest to the second role play at posttest. As one student put it: "When going into the first meeting with Dima, I was not thinking about print referencing. I may have used some throughout my reading, but once I got to the assignment, I had realized that there was some techniques that I could have included."

Limitations and Future Directions

Some important limitations could be detected in this study. The rather small sample size meant that the mean of a measure can be pulled in one direction and would be dramatically affected by an extreme value, this was the case in the measure on Knowledge about Print Referencing. A larger sample size would reduce such errors and would be more representative of a population. However, enrollment in the education course where I recruited my participants was typical, and all of the students enrolled in the course gave their consent to participate in the

study. Another limitation was raised by one student in the learning logs and concerned the use of a puppet, however this limitation was addressed in the previous section. Lastly, it would be interesting to see how this enthusiasm for print referencing develops over time. Specifically, I am curious to see how many of the 12 participants in the PR group, who all used print referencing strategies at posttest, would continue using print referencing and how they might perfect it.

Conclusion

In her study Nickel (2011) stated that learning and reading about preschool literacy may inform early childhood educators about this issue but integrating these skills into practice requires extensive modeling and coaching. The results from this study showed that preservice educators, who received a multifaceted video-based instruction on print referencing, which included modeling and coaching, used verbal and nonverbal print referencing techniques more frequently than the other comparison group during the story book role play.

Additionally, the results showed that following instruction, participants' knowledge about both emergent literacy and print referencing increased. In their study, Piasta et al. (2020), found that higher levels of content knowledge were associated with better classroom emergent literacy practices amongst in-service educators. However, the authors speculated that possibly a knowledge threshold should be reached in samples of preservice educators to actually see a change in practice. This theory was supported by the findings in my study, where an increase in one aspect of declarative knowledge was not enough to lead to a change in practice, as seen on the Q group, however, a higher level of content knowledge (with readings, discussions and practice) led to a difference in behavior in the PR group. This idea is reinforced in a study by Gillentine (2006), where the author states that reflection and narrative are useful tools for improving teaching. He further emphasized that dialogue among his participants allowed them to

share knowledge and create a collaborative learning community. In the same way, the multifaceted instruction on emergent literacy and print referencing used in this study, offered the participants a space to reflect individually as well as share knowledge and practice in a group which all together had positive results on the use of print referencing.

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Appendix A

Consent Form

INFORMATION AND CONSENT FORM

Study Title: The Effects of Instruction to Enhance Preservice Educators' Storybook Reading

Researcher: Dima Tajrine (Master's student in Child Studies) and Xiuquan Zhu (Master's student in Child Studies)
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Faculty Supervisor: Diane Pesco, Associate Professor, Dept. of Education
Contact Information: diane.pesco@concordia.ca , 514-848 2424 (Extension 7338)

You are being invited to participate in the research study mentioned above. This form provides information about what participating would mean. Please read it carefully before deciding if you want to participate or not. If there is anything you do not understand, or if you want more information, please ask the researcher.

A. PURPOSE

The purpose of the research is to teach participants ways to read storybooks that have been shown to be beneficial to children, and to assess the effectiveness of the instruction.

B. PROCEDURES

If you participate, you will be asked to:

- complete a short questionnaire about yourself, focused on your experience working with children and credits in the Child Studies program. (5 minutes)
- do a role play, where you read a storybook and complete a questionnaire about your knowledge related to storybook reading, on two different occasions. Your role play will be recorded during a private Zoom session and your responses will be assessed for research purposes. (25 minutes x 2 times)
- participate in online instruction and complete an assignment on reading storybooks to children (these are both integrated to your course). (6.5 hours)

In total, participating in this study will take approximately 7.5 hours. These hours will be part of your course, as all students will participate in the instruction. However, we will only gather data from students who wish to participate in the study.

C. RISKS AND BENEFITS

Potential risks: You might feel shy to engage in the role-play, but we will do our best to put you at ease.

Potential benefits: You may benefit in this study as you will be learning about and practicing storybook reading strategies that you may later choose to apply when working with children. The instruction methods used in this study allow you to be in control of your learning: for example, you can stop the video to review and take notes, and to replay segments of the video. You may find this an advantage to learning. You will also have an opportunity to discuss the methods with your peers during class time and might find this valuable.

D. CONFIDENTIALITY

We will gather the following information as part of this research:
- Demographic information
- Storybook reading role play
- Storybook reading questionnaire

We will not allow anyone to access the information, except people directly involved in conducting the research. We will only use the information for the purposes of the research described in this form.

The information gathered will be coded. That means that your information will be identified by a code, rather than by your name. The researcher will have a list that links the code to your name.

We will protect the information in password-protected files on the researcher's password-protected computer.

We intend to publish the results of the research. However, it will not be possible to identify you in the published results.

The data from the study will be deleted from the researchers' computers once the study is complete but will continue to be stored by the thesis supervisor in in password-protected files on a private account located on the Department of Education server. The files will be retained for an indefinite period, as the data collected in the study could inform the design and interpretation of future studies.

F. CONDITIONS OF PARTICIPATION

You do not have to participate in this research. It is purely your decision. If you do participate, you can stop at any time. You may withdraw from the study by contacting one of the researchers or by contacting the research supervisor or course instructor if you are more comfortable.

There are no negative consequences for not participating, stopping in the middle, or asking us not to use your information. There will be no penalties should you choose not to participate or withdraw from the study. Your course instructor will not be told who accepts and declines to participate in the study.

G. PARTICIPANT'S DECLARATION

I have read and understood this form. I have had the chance to ask questions and any questions have been answered. I agree to participate in this research under the conditions described.

☐ I accept to participate in the study and agree that my name typed below serve as my signature

☐ I do not accept to participate in the study

NAME _____

DATE_____

If you have questions about the scientific or scholarly aspects of this research, please contact either of the researchers. Their contact information is on page 1. You may also contact their faculty supervisor.

If you have concerns about ethical issues in this research, please contact the Manager, Research Ethics, Concordia University, 514.848.2424 ex. 7481 or oor.ethics@concordia.ca.

Appendix B

Demographic Questionnaire

Name: _____

Instructions: Please provide a response for each of the following questions.

1. Age: 18-30 ☐ 31-39 ☐ 40-49 ☐ 50 or above ☐

2. What do you identify as: Male ☐ Female ☐

3. How many credits have you completed in the Child Studies program?

< 30 ☐
31-45 ☐
46-60 ☐
61-75 ☐
76-90 ☐

4. Did you complete a DEC in Early Childhood Education? Yes ☐ No ☐

5. Are you a parent or primary caregiver for any children in your home? Yes ☐ No ☐

If yes, how many: _____ Age(s) of the child(ren) :_____

6. Do you presently work or volunteer in a childcare environment, other than your field experience?

Yes ☐ No ☐

If yes, in what kind of environment (e.g., daycare, preschool, or specify other)?_____

For how long? _____ (year) _____ (month)

7. Have you worked in a childcare environment in the past, other than your field experience?

Yes ☐ No ☐

If yes, in what kind of environment (e.g., daycare, preschool, or specify other)?_____

For how long? _____ (year) _____ (month)

Appendix C

Emergent Literacy Questionnaire

Part A. Please highlight the response (s) that you think best fit(s) the question. There might be more than one correct answer.

1. Emergent literacy skills include: (correct answers are B, C, F, H, J)

   A. decoding
   B. phonological awareness
   C. letter writing
   D. writing
   E. reading comprehension
   F. alphabet knowledge
   G. reading fluently
   H. oral language
   I. spelling
   J. print awareness

2. Conventional literacy skills include: (correct answers are A, D, E, G, I)

   A. decoding
   B. phonological awareness
   C. letter writing
   D. writing
   E. reading comprehension
   F. alphabet knowledge
   G. reading fluently
   H. oral language
   I. spelling
   J. print awareness

Please continue to Part B on the next page

Part B. Below are several statements regarding children's literacy. Please read each one and indicate to what extent you agree or disagree with each statement.

NB to committee: The statements are currently ordered by domain, Inferential Questions then Print Referencing. The order was randomized for the study. The green and pink shaded items were used in my analyses. The blue shaded items were analyzed in the study of inferencing.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Emergent literacy skills predict later reading and writing.	1	2	3	4	5
Inferential questions are questions children can answer by giving facts from the book or pictures	1	2	3	4	5
Teachers should avoid asking young children (4-5 years old) challenging questions during storybook reading.	1	2	3	4	5
Young children (4-5 years old) are not able to make inferences.	1	2	3	4	5
Inferencing is a strong predictor of children's reading comprehension.	1	2	3	4	5
Children are able to answer literal questions before inferential questions.	1	2	3	4	5
Children acquire print knowledge mainly through explicit teaching	1	2	3	4	5
Print concepts emerge after children begin to read and write.	1	2	3	4	5
Print awareness includes (Print concept, word concept and alphabet knowledge)	1	2	3	4	5
Five-year-old children are unable to recognize their name in print	1	2	3	4	5
Most educators draw children's attention to the printed words when reading storybooks.	1	2	3	4	5

Please continue to Part C on the next page

Part C. Open-ended questions

1. Name some strategies you would use when reading a book to a group of preschoolers. (Take 5 minutes to answer this question).

2. How would you rate your confidence in terms of supporting children's emergent literacy during storybook reading?

   ☐ not at all confident

   ☐ only a little confident

   ☐ somewhat confident

   ☐ quite confident

   ☐ very confident

Appendix D

Print Referencing Tasks (Observation and Reflection)

Name (type your name here, last name first):

Instructions

1. Watch the video here: https://www.youtube.com/watch?v=2jY9Gdqb7iw&t=2s. Drawing on the prerecording and readings, list any print referencing practices you observe in the table below. Specify whether the strategy is verbal or nonverbal. Use the Table - Insert Row command to expand the table below as needed. (.75 point)

Print referencing strategy: Name and type (verbal or nonverbal)	Time in video when you would use it (see instructions above)

2. List all other print referencing practices that you did **not** see but could use. Write what you would say or do. Suggest a time in the video where you would use it.

   For this step, click on the "More actions" button (3 horizontal dots) located next to the Share button beneath the YouTube video, and then click on "Open transcript". This will open a transcript to the right of the video that gives times for parts of the video. Use these times to list the start time of the segment where you would use the practices you suggest. (.75 point)

   Use the Table - Insert Row command to expand the table below as needed.

Print referencing strategy: Name strategy and give two examples of exactly what you would do or say to children.	Time in video when you would use the strategy (see instructions above)

For the next two questions, draw on the pre-recording and the readings to respond.

3. Respond to the following question (maximum 200 words). Do you think this is a suitable book to use for print referencing? Why or why not? (.75)

4. How does print referencing support children's learning? (.75 points)

ANSWER KEY

Verbal references to print	Put check mark when appropriate
Questions About Print. *For example, Where's the name of the book? What do you think this sign says? Do you know this word? Where do we read?*	
Comments About Print. *For example,* *That's a letter J.* *This sign says "Danger."* *Her grocery list says "Flour, butter, eggs."*	
Requests About Print. *For example,* *Show me where to read.* *Look at the words on that sign.* *Point to the letters in your name*	
Nonverbal references to print	
Pointing to Print. *For example, Adult points to letter in the narrative. Adult points to word in picture. Adult points to narrative print*	✓
Tracking Print *Tracking the print occurs when the adult runs her finger along the narrative text while reading*	✓

1. Next, name any other print referencing practice that you did not see and could use, and using the video transcripts suggest a time in the video where you would use it.
   Students can choose any of the above practices, identify it and mention where in the video they would use it using the video transcript.

2. Lastly, do you think this is a suitable book to use for print referencing? Why or Why not.
   Yes, this is a good book to use for print referencing, because it had salient print which attracts children to it. Answer should include brief explanation of saliency

3. Finally, what benefits do you see with print referencing? OR WHY DO YOU THINK PRINT REFERENCING IS IMPORTANT?

   Students may mention benefits concerning print awareness (Print concept, Word concept, and alphabet knowledge), and therefore emergent literacy and future reading skills.

Appendix E

Coding System for Verbal and Nonverbal Print Referencing

Type of Print Referencing	Sub-types and explanation	Examples
Verbal References to Print	**Questions about Print** They refer to print in the text or in the illustration	Where is the name of the book? What do you think this sign says? Do you know this word?
	Comments about Print Comments provide information about print in the text or illustration.	That's a letter J. This sign says "Danger" Her grocery list says "Flour, butter, eggs"
	Requests about print The adult's use of a directive, where the child is asked to perform an action	Show me where to read. Look at the words on that sign. Point to the letters in your name.
Nonverbal References to Print	**Pointing** Pointing out words or letters in the text or illustrations (alone or while providing verbal reference)	Pointing to a letter in the text, or a word in the picture. Pointing to narrative print and saying, "We need to read up here".
	Tracking Running with finger or cursor along the narrative text while reading.	Sweeping across words Tapping on the text

From Ezell and Justice, 2000

Appendix F

Tests of Normality

Measure	Group	Shapiro-Wilk		
		Statistic	df	Sig.
ELQ_Common_Pre	Print Referencing	0.951	12	0.649
	Question	0.898	13	0.125
ELQ_Common_Post	Print Referencing	0.917	12	0.262
	Question	0.905	13	0.155
ELQ_PR_Pre	Print Referencing	0.950	12	0.635
	Question	0.841	13	0.022
EL_PR_Post	Print Referencing	0.950	12	0.636
	Question	0.841	13	0.473
ELQ_Confidence_pre	Print Referencing	0.824	12	0.018
	Question	0.809	13	0.009
ELQ_Confidence_post	Print Referencing	0.884	12	0.099
	Question	0.821	13	0.012
RP_Total_Verbal_Pre	Print Referencing		12	
	Question	0.311	13	0.000
RP_Total_Verbal_Post	Print Referencing	0.890	12	0.118
	Question		13	
RP_Total_Nonverbal_Pre	Print Referencing	0.787	12	0.007
	Question	0.833	13	0.017
RP_Total_Nonverbal_Post	Print Referencing	0.781	12	0.006
	Question	0.790	13	0.005
RP_Strategies_Pre	Print Referencing	0.811	12	0.012
	Question	0.886	13	0.087
RP_Strategies_Post	Print Referencing	0.853	12	0.040
	Question	0.785	13	0.005