Images of Accessible Spaces in Children's Picture Books:

A Content Analysis 2007-2017

Masters Thesis

Christie Longmire

Supervisor: Dr. J. Turner

Mount Saint Vincent University

A thesis submitted to the Department of Child and Youth Study in fulfillment of the requirements for the degree of Master of Arts in Child and Youth Study

ACKNOWLEDGEMENTS

The completion of this thesis would not be possible without the guidance of Dr. Joan Turner. Her dedication to this field is both empowering and inspiring. Thank you for the numerous hours spent editing and collaborating. A special thank you to Mount Saint Vincent Librarian, Sandra Sawchuk for her guidance in writing and to committee member, Patricia Doyle. Your commitment is much appreciated. Finally, it is because of my family that I was able to embark on such a journey. Thank you to my brother, Drew, for his encouragement and to my husband, Jesse, for believing in me and supporting me throughout this process. Finally, thank you to my children, Owen and Brayden for providing me with the greatest inspiration of all.

ABSTRACT

Picture books can act as mirrors and windows for children. Children can see themselves in picture books, as well as gain an understanding into the lives of others. However, little is known about what environments look like in picture books and what messages they are portraying, particularly regarding children with disabilities. With increased attention on inclusive practices in Canada, it is unknown whether environments in picture books follow a similar trend. Using a deductive content analysis method, examples of universal design were coded in a sample of 106 picture books from the Canadian Children's Book Centre collection. Frequencies of the elements of universal design were also calculated and the five most frequent elements were identified. These elements included smooth floor/path, clear pathway, space for a wheelchair, seating present, and seat with a back. When comparing the number of elements over time, no consistent pattern was found. *A Resource for ECE's using Picture Books to Support Discussion of Universal Design* was created to assist those reading to children in identifying examples of universal design within books. This tool can also be used by critical thinkers and researchers who wish to expand upon the topic. Based on findings and previous research, additional strategies for reading books to children are also recommended.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

Every day, Canadian children, caregivers and teachers share the experience of reading through picture books. Adult participation is vital in both the learning and pleasure that occurs while engaging in literature with children (Spitz, 1999). Such an interaction is a form of indirect exposure to the world beyond the home. Through the images and text presented during this intimate adult-child interaction, children are exposed to various messages. Despite efforts to promote inclusion, studies have shown that unrealistic themes and stereotypes are found within children's picture books representing differently-abled characters (Biklen & Bogdan, 1977; Symeonidou, 2014; Tassiopolus, 2006). As principles of universal design have been introduced and promoted across Canada, the availability of accessible spaces for differently-abled people has become a topic of interest across a range of sectors (Connell, Jones, Mace, Mueller, Mullick, Ostroff, Sanford, Steinfeld, Story & Vanderheiden, 1997; Joines, 2009; Rick Hansen Foundation, 2018). Whether this has translated into the content of children's picture books, however, is unknown. Previous research has found that images of people of different abilities are not accurately portrayed in children's picture books (Dyches, Prater & Jenson, 2006; Martinez, Koss & Johnson, 2016). Therefore, I aim to answer whether or not images of accessible environments for differently-abled people are presented in children's picture books. If built environments ought to be accessible for all, what do images of environments in children's picture books communicate to children relative to concepts of universal design?

Picture Books in the Lives of Children

Many children ages 4 to 8 years old are familiar with picture books in which illustrations are featured as an important element of the story telling. This category of literature frequently contains books that are approximately 1,000 words long and centered around one main character (Klems, 2009). Picture books are approximately 32 pages, with images most frequently spread between the two open pages. Individual pictures may also be shown on single pages, as is such at the beginning and the end of many picture books (Pattison, 2008). Bader (1976) defines a picture book in the following way:

> "A picture book is a text, illustrations, total design, an item of manufacture and a commercial product, a social, cultural, historical document; and foremost an experience for a child. As an art form, it hinges on the interdependence of pictures and words, on the simultaneous display of two facing pages, and on the drama of turning the page" (p. 1).

Texts and images work in tandem to tell a story and convey messages to readers. Such messages can be ideas that are well-known to children, though books may also be used as a resource to teach children about new concepts (Barrow & Woods, 2006). Children's literature can widen a listener's awareness and also provide an opportunity to explore personal roles (Koenig & Zorn, 2002). Therefore, picture books are an ideal medium for introducing children to social and cultural concepts.

Not only do picture books promote early literacy skills in children, the reading activities between adults and children also support the development of close relationships (Braid & French, 2015; Saracho & Spodek, 2009). As adults and children view books together, attention is drawn not only to the words on the page, but the images included in each book. Pictures can generate alternative thoughts not explicit in the text, or meanings that may not be conveyed by

only attending to the words (Braid & Finch, 2015). Illustrations in children's literature are designed to serve a number of purposes for the reader; according to Fang (1996), images are crucial for establishing the mood and context of the story, depicting and developing characters, extending or developing the plot, providing an alternative viewpoint, adding to the coherence of the story, and reinforcing the written text. Therefore, images in picture books act as "mirrors" reflecting physical, emotional, or psychological characteristics of the young reader. Children's literature is also used to explore and expand upon new viewpoints, serving as "windows" into such ideas and practices (Bishop, 1990).

Images presented in children's picture books are rich with content and detail. People, animals, natural and built spaces (Williams, Podeschi, Palmer, Schwadel & Meyler, 2011), as well as very specific themes such as children with autism, illness and injury, racial and cultural differences, and hearing impairments have all been subject to research analyses (Aronson, Callahan & O'Brien, 2018; Azano, Tackett & Sigmon, 2017; Maich & Belcher, 2012; Mendoza & Reese, 2001; Turner, 2006). Specific to images of people with disabilities, Biklen & Bogdan (1977) analyzed media portrayals of disability. They identified stereotypes within children's literature and found references to characters that included themes like 'pitiable and pathetic'; 'an object of violence'; 'sinister or evil'; 'curio or exotica'; 'an object of ridicule'; or 'supercripple'. Recently, a content analysis performed by Beckett, Ellison, Barrett & Shah (2010) also identified stereotypes and unrealistic themes relative to disability. Barnes (1992) has argued that such negative stereotypes lead individuals to deny their disability in order to avoid negative perception.

Disabilities in Canada

One in seven Canadians have a disability (Statistics Canada, 2017). This equates to 3.8 million Canadians, which is approximately 13.7% of the national population. People with disability face social isolation, an increased risk of poverty, as well as increased abuse rates. This population also faces significant social, physical, and attitudinal barriers (Woodward, 2017). The term 'disability' itself has a negative connotation. The Latin prefix "dis-" means apart or away, demonstrating how language dehumanizes individuals without even labeling the impairment specifically (Pennell, Wollak & Koopenhaver, 2018).

Over 80% of persons with disabilities in Canada use a type of specialized equipment to allow them to perform activities of daily living or ADLs (Statistics Canada, 2017). These activities include fundamental actions such as walking, speaking, dressing, etc. Individuals may require the use of wheelchairs or augmentative and alternative communication devices. Although specialized equipment exists to aid individuals in daily routines, accessing spaces can become challenging. This is of particular concern as we consider the aging population. In regard to children's literature, such assistive devices have been described with a negative undertone (Pennell et al., 2018). For example, children in wheelchairs are described as confined, while in fact wheelchair users are able to perform fundamental tasks what would be impossible without such accommodations.

Awareness of the importance of accessible public spaces has been on the rise due to the activities of the Rick Hanson Foundation (RHF) in Canada. The RHF devotes resources to removing barriers from environments to promote fully accessible spaces. For instance, the Foundation dedicated 1.5 million dollars to the *Access4All Project* that allotted $30,000 to a

number of recipients to support their work in removing barriers from community spaces and promoting community awareness. The organization also offers an Accessibility Certification Program, devoted to educating architects, planners, and other contractors on concepts of universal design, the impact of accessibility on Canadians, and relevant legislation and regulations.

Universal Design Framework

The universal design framework promotes manufacturing of environments and products to allow for maximized use by all individuals. This approach is also commonly referred to as inclusive deign, design for all, lifespan design, and barrier-free design (Joines, 2009). Universal design can also be defined as a philosophical ideology, which promotes access and inclusion for all through environments that do not oppress those with limitations (Reich & Lindgren-Streicher, 2005). These environments do not require adaptations or modifications to be used independently (See Table 1.1).

Table 1.1

Definition of Universal Design

1. "The design and composition of an environment so that it may be accessed, understood and used
    i. To the greatest possible extent
    ii. In the most independent and natural manner possible
    iii. In the widest possible range of situations
    iv. Without the need for adaptation, modification, assistive devices or specialized solutions, by any persons of any age or size or having any particular physical, sensory, mental health or intellectual ability or disability.

    (Centre for Excellence in Universal Design, 2012).

Accessible design, however, refers to what is legal and required to meet building codes and requirements (Joines, 2009). A building may be accessible yet not universally designed. Universally designed environments are not designed specifically for those with varying abilities, rather they are intended to serve people of all abilities. For example, when installing a door handle, choosing a lever-type handle is a concept of employing universal design as it is easily used by most people. This benefits those with weak hand grips as well as people carrying numerous bags. Automatic doors are crucial for those using wheelchairs, but they also benefit people with strollers, people relying on crutches, and people carrying items in and out of doorways. Elevators and curb cuts also serve a similar purpose in supporting ease of access to

spaces. A universally designed space can reduce dependence, empowering numerous members of society (Joines, 2009).

This perspective identifies with the social model of disability. The social model of disability asserts that social, environmental, and political forces create “disability”, rather than diverting attention away from bodily impairments or differences (Matthews, 2009). Therefore, disability is a social construct, enforced by barriers and discriminative legislation (Shakespeare, 2010). This structural approach to understanding disability can be differentiated by three key components.

First, impairment is distinguished from disability. Shakespeare (2010) suggests that impairment is individual and private, while disability is structural and public. He also compares the concept of disability to that of gender, stating that “like gender, disability is a culturally and historically specific phenomenon, not a universal unchanging essence.” (p. 267).

Second, Shakespeare (2010) differentiates the social model from the medical model, whereby medical approaches are reactionary and social model approaches are progressive. Rather than focusing on cures or issues of medical prevention as key components described in the medial model, social model thinking seeks to remove social oppression, such as environmental barriers and oppressive regulations. Joines (2009) stresses that this model does not necessarily compete with the benefits of a rehabilitation model, rather it seeks to focus on solutions to benefit multiple members of society.

Third, disabled people are distinguished from those who are not disabled. This is because disabled people are subject to social oppression from non-disabled people and organizations. Rather than organizations developing their own strategies to aid in accessibility, people with

disabilities ought to be involved in the discussion. Individuals with disabilities provide the most accurate insight into developing solutions to their oppression and barrier removals. Therefore, a greater insight would be developed into how barriers can be removed with this participatory approach. This approach also limits the social oppression felt by individuals with disabilities as their voices are heard and their needs are taken into consideration.

Employing a universal design framework not only benefits people on an individual level, it also improves business markets, and society as a whole (Centre for Excellence in Universal Design, 2012). These principles benefit people with significant impairments, and people with no limitations who simply can benefit from the design. Products can be used by anyone of any ability, age or size. As every person experiences a level of reduced functioning at some point, the appreciation and need for such an approach varies. Therefore, by using such principles on a continuous basis in the design of spaces, accessible environments are available at all times to people of varying abilities and situations. In a business context, employing such a framework leads to increased consumer satisfaction and retention, as well as a more positive public image (Centre for Excellence in Universal Design, 2012). Increasing accessibility leads to a greater profit financially, as well as socially. Individuals with disabilities are able to be more independent when environments are designed according to this framework. By increasing autonomy, individuals with disabilities are able to participate and be increasingly present. This leads to increased acceptance by all (Joines, 2009).

In 1997, Ronald Mace, founder of the Center for Universal Design at North Carolina State University, launched the universal design movement, leading a group of planners and architects in defining seven principles of universal design. These principles of universal design (see Table 1.2) have been applied when modifying existing spaces to enhance accessibility. In

Canada, these principles have been adapted by Home Modification Canada (2018), which is an initiative aiming to improve accessibility within homes.

Table 1.2

Principles of Universal Design

- **Principle 1: Equitable Use.** The design is useful and marketable to people with diverse abilities.
- **Principle 2: Flexibility in Use.** The design accommodates a wide range of individual preferences and abilities.
- **Principle 3: Simple and Intuitive Use.** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
- **Principle 4: Perceptible Information.** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
- **Principle 5: Tolerance for Error.** The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- **Principle 6: Low Physical Effort.** The design can be used efficiently and comfortably and with a minimum of fatigue.
- **Principle 7: Size and Space for Approach and Use.** Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility (Rick Hansen Foundation, 2017).

Universal design principles are also implemented when constructing new buildings and built environments (ie. playgrounds, trails) as described in the Universal Design Handbook created by the City of Calgary (2010). This handbook provides an overview of universal design, disability and accessibility. Additionally, extensive checklists with precise measurements for built environments are listed, ensuring accessibility by all. This is attained by describing requirements for each designed space as well as details for such requirements. For example, hallways are required to be wide enough for two wheelchairs to pass. The details for such requirements are that public corridors must be 1,525 mm wide and private corridors 920 mm wide (minimum). Ensuring accuracy of these details involves measurement tools and related equipment which is useful for real spaces. However, the majority of the requirements can be simply observed and subjectively rated. With adaptations, these recommendations could be used in examining images, such as illustrations in books. Therefore, such a tool could be adapted for the evaluation of images of spaces in children's picture books based on the seven principles of universal design.

Equitable Use (Principle 1), is intended to ensure that the design can be used by all people. Each individual should be able to use and enjoy the product or space equally. This avoids segregating or stigmatizing and provides means of use for all (Connell et al., 1997). A common example of this principle in built environments is an automatic door which allows equal access for all individuals, regardless of ability.

Flexibility in Use (Principle 2), states that the design must incorporate flexibility for use in different ways. This may be either for preference or a requirement for ability or mobility. Some individuals may be more or less mobile than others, particularly in terms of speed. This principle provides adaptability for the user's pace, accuracy and precision (Connell et al., 1997).

Simple and Intuitive Use (Principle 3), states that the user must be able to use and understand the design easily. Decreasing complexity is most relevant within this principle, therefore serving those of varying levels of comprehension and reading abilities. The design should be consistent with user expectation and intuition (Connell et al., 1997). For example, IKEA stores have implemented a path designed to guide shoppers throughout the store by simply projecting images of arrows on the floor. Additionally, clearly visible signs are examples of implementing Principle 3.

Perceptible Information (Principle 4), stresses the need for implementing distinguishable information. Such information is found when adequate contrast between essential information and the surroundings are present. Providing compatibility with techniques and/or devices used by those with sensory limitations also falls under this principle (Connell et al., 1997). This design encompasses the need of all individuals in all situations, including those who are visually impaired or individuals in a noisy environment. Tactile flooring, braille signs and buttons, as well as legible signs are examples of Principle 4.

Tolerance for Error (Principle 5), emphasizes the need for designs to incorporate features that minimize risks and hazards. Removal of hazards is preferred, however if not possible, adaptations to minimize risk must be implemented. Fail safe features and warnings of hazards are components of this principle (Connell et al., 1997). For example, though stairs are an important feature of a building, they are also responsible for frequent accidents. Installing handrails on the stairs minimizes the risk of accident on the stairs, which fulfills the requirement of this principle.

Low Physical Effort (Principle 6), aims to implement a design that is effortlessly used. The individual should be able to operate and use the space or product without unnecessary physical effort or fatigue at a comfortable position. Repetitive movements should also be minimized and transitions to different flooring should be seamless (Connell et al., 1997). Using lever door handles as opposed to knobs reduces the need for strong handgrip, making this design a clear example of incorporating Principle 6.

Size and Space for Approach and Use (Principle 7), states that the design must allow for approach and use from varying heights and of various sizes and ages. Adequate space is necessary to enjoy the product or environment and must be accustomed to account for those with additional devices and components must be in reach of users from a standing and sitting position (Connell et al., 1997). In addition to being used when designing buildings, these principles can be applied when designing play spaces such as those identified by the Rick Hansen Foundation (2018).

The Rick Hansen *Let's Play Toolkit* offers an overview of best practices and a guide on how to build a universally designed play place, or modify and existing one (Rick Hansen Foundation, 2018). While it does not provide the same level of detail as the Universal Design Handbook, examples of universally designed play spaces are provided as well as tips on ensuring best practices are implemented. For example, the Toolkit provides descriptions, details and explanations on amenities, equipment, walkways, surfacing materials, parking and curbs, walkways, circulation, borders and access to equipment, clearances, and landscape elements. Key definitions of terms from this toolkit are provided in a list of definitions at the end of Chapter 1. Ensuring benches and seating areas are available, with arm rests and back supports

are suggested design principles that can be easily identified when analyzing other spaces, such as those illustrated within children's picture books.

Although assessment of existing spaces for accessibility has captured the attention of institutions in Canada, little is known about the images of accessible spaces for children that are presented in picture books. The social model of disability suggests that barriers to full participation in society are caused by environmental characteristics. This perspective proposes that "disability" is caused by man-made societal arrangements, not by medical diagnoses (Oliver, 1990). As illustrations in picture books communicate societal thoughts regarding those with disabilities, Oliver (1990) suggests the onus is on society to ensure the needs of all people are taken into account to minimize disability. For instance, a wheelchair user would be considered disabled when attempting to enter a building with only stairs present. However, the social model of disability shows how the lack of universal design principles in physical spaces (ie. ramp) result in "disability", rather than characteristics of the person in the specific space. The principles of universal design are useful in assessing the accessibility of physical environments. With adaptations and a coding scheme, these principles can be observed and applied for the documentation of images in children's picture books.

Purpose of the Study

Picture books provide the reader with both text and visual support, expediting comprehension about more abstract concepts (Newton, 1995). If children are provided with the opportunity to discuss sensitive issues, such as disability and accessibility in the familiar context of reading, awareness of differently abled-people and ways that the environment supports (or not) accessible spaces can be raised.

As society focuses on inclusive movements and promoting accessibility, the ideology of universal design has been developed. The framework of universal design stresses the importance of building and constructing environments that are accessible to all people, regardless of individual ability (Joines, 2009). Although many topics have been the focus of analysis in children's picture books, the concept of accessibility relative to the physical space portrayed by images has yet to be examined.

Accessibility assessment checklists based on principles of universal design are now promoted as one way to assess accessibility of built environments. Therefore, a similar framework applied to images in children's picture books could advance this body of literature and place attention on the context within which characters are placed.

The content analysis methodology can be used for qualitative and quantitative data and is widely used when analyzing text, images and speeches (Krippendorff, 2004). Therefore, this approach was used to explore the images presented in a sample of children's picture books to determine whether images of accessible environments for differently-abled people are presented in children's picture books and, what images of environments in children's picture books communicate to children relative to concepts of universal design. A coding scheme, developed using the seven elements of universal design, was applied. Analysis of the data collected through the content analysis provides evidence of the level of content related to universal design found in a sample of picture books.

Early childhood educators can be provided with resources identifying appropriate picture books titles and commentary in order to support their understanding and communication about inclusive environments (Adomat, 2014; Leininger, Dyches, Prater & Health, 2010). When shared with educators, resources designed from this study equip educators with information on how to

introduce concepts of universal design to children through picture books and hands-on experiences. When educators apply this knowledge, they are able to lead discussions regarding ability and accessibility through books, extending reflection and critical thinking to the local, physical environment (ie. home, day care, etc.). Such an active learning approach increases positive attitudes toward inclusion (Orlansky, 1979). Access to these resources can prepare educators prior to initiating these discussions and activities, leading to an increase in positive attitudes by educators toward inclusion, which is transferred to the participating students (Andrews, 1998). Children will have increased opportunities to look through windows to view, comprehend, and embrace individuals of all abilities when educators use the practical resources created from the results of this study.

LIST OF DEFINITIONS

Accessible: Accessibility is a general term used to describe the degree to which a product, device, service, or environment is accessible by as many people as possible. An accessible playground is one that can be physically accessed and used by everyone.

Inclusive: Inclusion is the practice of ensuring that people feel they belong, are engaged, and connected. Inclusive playgrounds are ones designed specifically to ensure that children of multiple abilities can play together - not just alongside each other.

Universal design: Universal design produces buildings, products, and environments that are usable and effective for everyone, not just people with disabilities, without the need for adaptation or specialized design (Rick Hansen Foundation, 2018).

Chapter 2

LITERATURE REVIEW

In addition to entertainment and contributing to the adult-child relationship, picture books can be used to educate children on a variety of topics. Bishop (1990) argues that this is done when picture books serve as mirrors, windows, and sliding glass doors to the world. Books serve as mirrors when readers are able to see reflections of themselves and the world in which they live. This not only allows them to connect with the story, but also becomes a means of self-affirmation in which readers become more valued as human beings (Bishop, 1990). This idea is reinforced by Mendoza & Reece's (2001) reference to the psychosocial element of picture books that suggests children are able to view themselves and identify personal emotions and common beliefs within the text and illustrations present in a story.

When children are exposed to a variety of perspectives offered in picture book images and text, the medium may act as a mirror. Children are able to see themselves in the literature when characters mirror their situation and ability. Picture books can also serve as a metaphorical window. Readers can experience realities of new worlds, allowing for them to consider other perspectives (Andrews, 1998). The sliding door metaphor is also used by Bishop (1990) to represent the way in which readers are then able to enter this newly depicted world, engage in it, and be directly influenced by it. This happens when engaging and appropriate books are read and readers guide discussion establishing connections with the characters and the story (Martinez et al., 2016).

Historically, images in children's picture books have promoted stereotypes and false concepts when characters with disabilities are present (Symeonidou, 2014; Tassiopolus, 2006).

Not only have people with disabilities been misrepresented in literature, they are often denied access to spaces due to inaccessibility in the real world. Spaces are not easily accessed by people of varying abilities, such as those using a wheelchair. The universal design framework has been subsequently created to ensure spaces can be accessed by people of all abilities (Joines, 2009). The purpose of this chapter is to discuss the importance of picture books in the lives of children, how those with disabilities have been portrayed thus far, and strategies for using picture books in introducing novel concepts to children.

The Role of Picture Books

Children's picture books play a crucial role in socialization, providing opportunities to examine social relations and belief systems (Houston-Price, Burton, Hickinson, Inett, Moore, Salmon & Shiba, 2009). They allow readers to gain information, be entertained, and to experience alternative perspectives. Illustrations in children's picture books allow children to view novel perspectives, places, and people, and may be used as a method to establish appropriate emotions such as empathy toward others ("Getting the Most Out of Picture Books", n.d). The psychosocial element of reading is of particular interest as it suggests that children are able to view themselves and identify personal emotions and common beliefs within the text and illustrations present in a story. Picture books portraying an array of characters and concepts must be readily available to provide such opportunities as they provide readers with the opportunity to identify with characters while considering their own emotions and beliefs (Mendoza & Reece, 2001). This idea supports Bishop's (1990) mirror and window metaphors.

Picture books generally contain a learning component in which readers gain knowledge on a particular subject. By age four, children are able to acquire new knowledge from picture

books and transfer to real life contexts (Ganea, Ma & DeLoache, 2011). Therefore, illustrated content should be free of stereotypical opinions to decrease the likelihood of children attaining these attitudes (Elleman, 1992); however, this is not always the case.

Young readers often focus on illustrations to decipher meaning from the text, leading Newton (1995) to conclude that pictures can facilitate knowledge and comprehension. When introducing children to new concepts through a picture book, adult readers are encouraged to recognize what the images portray and if negative stereotypes are present, these ideas can be challenged during the reading process. Adults play a crucial role in determining what books children have access to and how this literature is presented to children during the reading process (Andrews, 1998).

The Role of the Reader

How information in a picture book is communicated to children impacts the message they receive (Andrews, 1998). In this sense, children can be exposed to either positive or negative messages about a topic such as accessibility; however, what they learn is relative to how the content is presented. Messages conveyed depend on how prepared readers are to discuss topics present in the book and their beliefs on the subject. According to Andrews (1998), when teachers are prepared and educated on topics being discussed, negative attitudes decrease. Therefore, teachers would benefit from resources that provide appropriate books on, for example, the topic of accessibility as well as strategies for leading related discussions with children.

With inclusive practices on the rise, ways of including people of all abilities ought to become increasingly familiar which may lead to these individuals becoming more accurately portrayed. For example, Nova Scotia passed Bill 59, Accessibility Act, on April 27th, 2017

(Justice, 2017). This will start the process of removing barriers for people with disabilities with the goal of making Nova Scotia accessible by 2030. In addition to passing the bill, the provincial government also invested $1.8 million to increase provincial grants for community buildings and small businesses to become accessible (Justice, 2017). Given the increased attention on accessibility, children may begin to ask more questions about the topic. Picture books can be used to answer these questions and a resource created to guide educators in the subject.

Integration of Images Portraying Disabilities in Children's Picture Books

Illustrations are beneficial in engaging children in a story, which can lead to broader discussions (Beaumont, Mudd, Turner & Barnes, 2016). Because illustrations are engaging, they can be used to promote inclusion, acceptance and understanding. Unfortunately, many children's picture books depicting characters of varying abilities are found to continue to contain oppressive terms, fueling stereotypes and misconceptions regarding those living with varying levels of impairment (Symeonidou, 2014). Andrews (1998) argues that educators are obliged to be informed and educated about a range of disabilities in order to present materials that are free of stereotypes, misinformation and perpetuate myths. Understanding media portrayals of characters with disabilities is one way for educators to begin to understand the benefits of critically examining materials used with children to engage discussions.

The way in which the media portrays characters with disabilities can be described by three models: The medical model, the social pathology model and the supercrip model (Clogston, 1990). In the medical model, an individual with a disability is portrayed as dependent, looking to health professionals for a cure. In this model, the health care professionals are observed as a higher authority to which the individuals with a disability are dependent on. In the

social pathology model, such individuals are depicted as disadvantaged as they must look to society for support. Similar to the medical model, individuals with disabilities are portrayed as dependent upon other individuals in order to become successful. Within the supercrip model, people with disabilities are represented as “superhuman”, overcoming their disability and able to lead a “normal”, and subsequent happy life (Clogston, 1990). Unrealistic outcomes for characters are a common example of this model.

A content analysis by Dyches et al. (2006) provides evidence of these models by identifying four commonalities among the picture books sampled. Firstly, the population of children with disabilities was vastly underrepresented when compared to factual rates of disability. Only 4% of books evaluated contained a character with a disability, despite the global rate being 15% (World Bank, 2018). Martinez et al. (2016) also examined a sample of children’s picture books with the purpose of identifying instances of disability in Caldecott award winning picture books. These books are considered to be of high quality and serve as a benchmark to which other books are compared to (Dyches et al., 2006). Picture books from the past 25 years were analyzed that portrayed at least one human character, for a total of 68 books. The research revealed that no books illustrated a character with a cognitive disability. One character had a fear of heights which was coded as an emotional disability. Finally, 12% of characters were identified as being physically impaired due to the fact that they were wearing glasses. This is an underrepresentation as over 60% of people in the United States wear glasses (Vision Council, 2015).

Second, Dyches et al. (2006) found that the disabilities represented in their sample were actually ones that school-aged children were less likely to encounter. For example, the majority of children with disabilities have a learning-related disability, which was not found in any of the

books analyzed. One picture book inaccurately portrayed a child with mental retardation. This is of note as intellectual disabilities constitute a large portion of individuals who identify as having a disability. Not only does the title, *The Fool of the World and the Flying Ship*, express a negative connotation, the character was "cured" of his "disease" at the end of the story and was only then accepted by his peers.

Third, young readers would likely experience difficulty relating to the characters described within the study completed by Dyches et al. (2006), as the stories that depicted a character with a disability were folk tales and unable to be interpreted realistically. Historically, books that have included images of children with disabilities demonstrate stereotypes and promote myths (Kama, 2004; Mendoza & Reese, 2001). For example, characters with disabilities are often described as weak and pitiful until they are able to overcome their disability and become "cured" in an impossible manner (Beckett et al., 2010). Finally, the sample used by Dyches et al. (2006) inaccurately portrayed characters with disabilities by insinuating the disability was temporary and/or the individual was miraculously "cured".

Regardless of text, illustrations allow for visual representations of the story, allowing readers to immediately form judgement and opinions. Books depicting children with disabilities are generally written to educate typically-developing children and often contain patronizing language. For example, language such as "you" versus "they" is used, suggesting these individuals belong to a separate, less adequate group. Disability activists have even argued against producing more depictions of people with disabilities as it is hypothesized that such coverage would only perpetuate stereotypes and continue to misinform others (Zhang & Haller, 2013). Decreasing books with characters with disabilities would not provide children with

similar diagnoses with a mirror in which they are able to view themselves in the literature. Rather, appropriate books and strategies in discussing the topic in the book is necessary.

Evidently, based on preceding studies, images in picture books are often inaccurate, misinforming readers and allowing for the drawing of inaccurate conclusions. This is concerning as picture books are an ideal medium to engage and educate children on less familiar topics. If these images depict the majority of themes in children's picture books, understanding the strategies to promote discussion about environments within such an integral body of literature ought to be available to prepare educators when reading picture books with children,

Strategies for Integrating Images Portraying Disabilities in Children's Picture Books

Sigmon, Tackett, Azano & Price (2016) provided useful strategies on integrating picture books that include children with disabilities into the classroom. While their research focused on teaching children empathy and acceptance of students with Autism Spectrum Disorder, the strategies can be generalized to encompass other abilities.

The first suggestion proposed is to teach common characteristics of autism while also focusing on unique individual qualities. By employing this suggestion, children and readers can gain an understanding of common features that may be observed. It is important that readers also be introduced to individual talents of the portrayed characters to limit generalizability (Sigmon et al., 2016). This also reinforces that each individual is just that, an individual. While one may have a diagnosis, this is only one aspect of the whole person. Whoever is reading to the child is encouraged to discuss the identified characteristics of disability in the story and talk with the child about similarities and differences that the child shares with the character identified in the

story. Addressing similarities between the character and the listening child furthers the notion of promoting individualism and allows for concrete examples related to the child's context.

The second suggestion is that readers are encouraged to choose picture books to read to children that celebrate acceptance rather than change. For example, Sigmon et al. (2016) described examples of how in one story, *Waiting for Benjamin: A story about autism* (Altman, 2008), the older brother begins to learn how to play and accept his younger brother with autism. Coincidently, such acceptance occurs when the younger sibling begins making progress in language and play skills. Rather, students should be taught to be accepting regardless if change occurs or not (Sigmon et al., 2016). This concept relates back to Biklen's & Bogdan's (1977) analysis of stereotypes present in stories depicting characters of varying abilities. One major theme identified was labeled "supercripple", in which the character was able to overcome an "obstacle" and/or was miraculously "cured". Adult readers could discuss ways of empathizing with others who may have similar difficulties outlined in the story, leading to increased acceptance. Subsequent validation of those with disabilities may also follow.

The final suggestion proposed by Sigmon et al. (2016) is directed toward teachers. The researchers suggest that teachers read books depicting characters with disabilities that closely align with the families of the children whom they are teaching. In order to consider the familial context of the children, books must be read in advance and the concepts that are discussed must be understood. This is especially relevant when picture books are used to educate children on new topics.

Using picture books to discuss novel concepts

Stories provide children with opportunities to explore personal roles and to make sense of their lives (Koening & Zorn, 2002). Picture books provide a way for children to be comfortably exposed to novel ideas and they initiate early learning and acceptance of unfamiliar concepts. For example, using the descriptive research method, Gonen & Guler (2011) concluded that young children exposed to information regarding the environment develop more compassion and empathy towards the environment when they age.

Picture books can provide words and visual representations that adult readers find difficult to generate when discussing ideas, especially sensitive topics such as death (Arruda-Colli, Weaver & Wiener, 2017). Using the method of content analysis, Arruda-Colli et al. (2017) generated practical implications for using picture books to discuss death. These suggestions can be used in discussing other novel topics as well, such as disability and accessibility. First, readers (teachers, parents, etc.) should pre-read books before they are introduced to children. This will provide the reader insight as to what is presented in the book and allow for increased comfort in reading and delivering the intended messages. Second, selected books should be interesting to the children being read to as well as developmentally-appropriate. Third, readers should provide children with an introduction about what the book is about and the potential emotions that may arise due from the story. For example, if the book discusses the death of a grandparent, this information should be conveyed prior to reading the book to allow the reader to gauge the temperament of the children. This also prepares children for what type of information is going to be discussed in the book. Fourth, if children interrupt with questions or comments regarding the subject, the reader should stop, listen patiently and address questions immediately. Fifth, readers should ask children gentle questions in relation to the material to allow them to reflect on their

own experiences and that what was read to them. Sixth, readers should also share a personal story to the children about the topic that is developmentally-appropriate. This provides children with the ability to see the reader relating to the story and may assist in their own ability to reflect. Finally, readers should understand that using picture books in this way may act as a teaching tool for both the reader and the children. Therefore, the reader may need to seek out additional resources to answer questions children ask or to respond to feelings the children share. These strategies reinforce how crucial advanced planning is when using picture book to discuss novel concepts.

Once readers decide to use literature to introduce novel topics, they must decide what the purpose of its use is and the message that is to be conveyed since effectively using picture books to discuss novel topics depends on the reader's ability and comfort level (Arruda-Colli et al., 2017). Bishop (1997) generated five purposes of using multicultural children's literature which can be adapted to encompass other topics, such as disability and accessibility. First, a picture book can provide knowledge or information, which readers can build upon if sufficient information regarding the subject has been retained. Second, picture books can offer multiple perspectives, offered through either the characters present or through those provided by the reader. Third, picture books can promote or develop an appreciation for diversity if appropriate books are being read to children. These must be sought out beforehand by the reader, such as early childhood educators and parents. Fourth, picture books can prompt critical thinking about self and others. Examples of when children are able to do this through picture books can be then replicated in their physical environment to further promote learning. Finally, picture books can illuminate human experiences and prompt questions. Discussions can arise from ideas and

images represented in picture books; however, the reader must be knowledgeable in the subject to lead these conversations and appropriate books must be used.

In order for these strategies to be used to discuss disability and accessibility, information on what images in picture books communicate in regard to these topics is necessary. When educators are equipped with knowledge as to what environments look like in picture books, appropriate books can be more readily identified, as well as practical ways in which the topics can explored. A tool identifying books and practical suggestions would benefit readers through providing knowledge and increasing comfort levels of addressing the material.

Natural and Built Environments in Picture Books

Images of human interaction with the natural environment has been steadily declining since the 1970's in children's literature (Leung, 2012). Children are exposed now more than ever to stories illustrated in built environments (Williams et al., 2011). With universal design principles established, illustrations within picture books should also be portraying accessible environments to ensure accurate representations and content. As Marriott (2002) found in in an analysis of 1074 picture books, illustrations fail to depict accurate representations of natural environments in relation to animal habitat. As examples of picture books lack representation of how people of varying abilities think, feel and live, portrayals of realistic environments may also be lacking. In order to generate understandings of what environments look like, images of real objects and people can be presented in picture books, rather than images of fantastical ideas and animal characters. While fantastical ideas can be engaging to children, it is impossible to evaluate how accessible an environment in these books. Lessons can be learned through fantastical ideas and are often appealing to children. However, the environment portrayed is not realistic, making it impossible to evaluate how the accessible the environment portrayed.

Canadian Children's Book Centre Collection

The sample of books used for this study will be taken from the Canadian Children's Book Centre collection. The Canadian Children's Book Centre (CCBC) was founded in 1976 with the intention of supporting and promoting the reading, writing, illustrating and publishing of Canadian books (Canadian Children's Book Centre, 2018). The Centre reaches over a half a million people every year and continues to grow through their offered programs, magazines and selection guides. The CCBC has children's book collections in five cities across Canada, located within Universities in Vancouver, Edmonton, Winnipeg, and Halifax, in addition to their regional office located in Toronto (Canadian Children's Book Centre, 2018). The library at Mount Saint Vincent University hosts the collection for the Atlantic region, which is home to over 6,000 books dating back to the early 1990's (Mount Saint Vincent University, 2018). The collection shelved in Toronto contains nearly every Canadian children's picture book published since 1976 (Canadian Children's Book Centre, 2018). This collection served as the sample in this study that was analyzed using a deductive content analysis method.

Content Analysis of Picture Books

Content analysis is a method in which written, verbal or visual messages can be analyzed (Cole, 1988). This process dates back to the 19th century in which political speeches, hymns and advertisements were analyzed (Harwood & Garry, 2003). Content analysis allows for making replicable and valid inferences from data to concepts with the intention of providing new knowledge as well as a practical guide to action (Krippendorff, 2004). This methodology can be used for qualitative and quantitative data and is widely used when analyzing text, images and speeches. The overall concept is that text is classified into much smaller content categories. What

is coded and analyzed is determined by the purpose of the study, therefore there are no specific or precise rules in place for analyzing the data (Elo & Kyngas, 2007).

Content analysis can be used in either an inductive or deductive way. Inductive analysis is used if there is little prior knowledge regarding the subject, allowing for categories of data to emerge and be derived from the content analysis (Elo & Kyngas, 2007). Therefore, observations are taken and inferred to a larger, general statement (Chinn & Kramer, 1999). Deductive analysis is employed when the analysis is operationalized on the basis of previous knowledge and the purpose is to test theory or employ and existing framework (Elo & Kyngas, 2007). Information within this approach moves from the general to the specific. This study used a deductive content analysis approach using the principles of universal design to assess images in a sample of children's picture books.

Picture books can be used to engage children in the concepts of disability and inclusion, as this method has been used to introduce children to novel and sensitive topics (Arruda-Colli et al., 2017). However, previous research indicates that children have not been provided with accurate mirrors and windows in picture books (Bishop, 1990). Children with disabilities have not been accurately portrayed, therefore they are unable to see themselves represented in the books they engage in. This also means that typically-developing children have not been provided with a window into which they can observe how the lives of children with disabilities may differ. As inclusive movements continue to emerge, the focus on accessibility and building universally accepting spaces continues to receive attention. However, understanding how environments in children's picture books are portrayed in relation to the concepts of universal design is unknown. The presence and frequency of specific principles of universal design within picture books has not been studied. Understanding how environments are illustrated and represented to children is

crucial in engaging in conversations regarding accessibility and universal design. By employing content analysis, elements of universal design can be identified and coded accordingly.

Chapter 3

METHODS

A random sample of children's picture books from the Canadian Children's Book Centre Collection at Mount Saint Vincent University was selected and examined for content related to accessibility. The study design used a deductive content analysis and applied criteria determined from a review of existing universal design assessment tools. A pilot test was completed and the final procedure for examining the images and books is described. A mixed-method approach to data analysis was applied to a final sample of 106 books.

Study Design

The study used content analysis, a systematic approach to examining bodies of literature to identify themes, patterns or biases (Leedy & Ormrod, 2005). Such analysis bridges the gap between qualitative and quantitative data, with the goal of quantifying qualitative data for the purpose of generalization (Northey, Tepperman & Albanese, 2018). This method is common in the social sciences when examining and analyzing various forms of texts and books. For example, Roper & Clifton (2013) used content analysis to examine images of physically active girls in children's picture books and developed a coding scheme derived from research in the areas of gender representation in children's literature and media representations of physically active women. Similarly, in this study a deductive approach to content analysis was used and coded based on the principles of universal design. Information obtained from the children's picture books is focused on what elements of universal design and accessible environments do look like rather than concentrating on the absence of universal design concepts.

Selection Criteria

Picture books included in the sample were English texts, excluding literature written in any other language. While only images were coded, text may have had to be reviewed in order to understand the context of an illustration. Given that I am only fluent in English, books written in other languages were excluded. The date of publication ranged from 2007-2017 inclusive. This time frame was used given the recent attention placed on accessible environments, as well as the need for a sufficient sample size. Based on Klems (2009) definition of a picture book, books with more than 32 pages were excluded. Fiction and non-fiction publications were used; however, images portraying unrealistic contexts (e.g., fantastical or abstract) were not considered. This would include pictures that are fantasy-based or creative art. Such images are difficult to identify the context to which they belong, making it impossible to code accordingly.

Images representative of pure nature with no built components were excluded. Built environments are defined as products and possessions of human creation (Bartuska & McClure, 2007). These features are not naturally-occurring, and as such, have been recognized by various design disciplines as a mode to increasing inclusion. For this study, elements from three Canadian resources focusing on implementing principles of universal design in built environments were used to determine which elements could be coded in a picture book. The remaining elements were exempt from this study.

Sample

Taking a subset from an entire population is called sampling (Taherdoost, 2016). Sampling can be used to make an inference about a population as well as to make generalizations relating to current theory (Taherdoost, 2016; Thompson, 2012). Taherdoost (2016) recommends

3 stages in the sampling process. First, prior to sampling, the target population must be identified (Taherdoost, 2016). Children's picture books were of interest in this study. Therefore, children's picture books are identified as the population. Second, a list of cases from which the sample will be drawn must be collected. For this study, a database of all of the books in the Canadian Children's Book Centre Collection at Mount Saint Vincent University Library was assembled by Mount Librarian, Sandra Sawchuk. Third, a sampling technique must be identified. The sampling process is used to make inferences about a specific population, or generalizations relative to a theory (Taherdoost, 2016). As it is not feasible for one person to evaluate each book within the Canadian Children's Book Centre Collection, a sample must be collected to understand what universal design elements look like in children's picture books.

Random sampling is a method in which units are selected from the total sample in a way that every possible combination of units is equally as likely to be selected (Thompson, 2012). Such a method removes human sources of bias while also reducing the volume of material. The main idea is that each unit has the same likelihood of being selected, which is useful in identifying which children's picture books to code. In this study, an online random number generator was used to select the sample of books from the Canadian Children's Book Collection. A list of random numbers within the range of the numerically coded database allowed the researcher to identify and screen books using the predetermined inclusion/exclusion criteria resulting in the study sample.

After applying inclusion/exclusion criteria to the database of books retrieved from the Mount librarian, 324 books remained. Therefore, each book was allotted a number from 1-324 which was then entered into an online random number generator. Once a book was identified by the random number generator, it was pulled from the shelf in the library and again subjected to

the inclusion/exclusion criteria to ensure accuracy. If the book fit the identified criteria, it was coded and documented on the created coding sheet. While a total number of 110 books was anticipated, 106 books were coded due to the low number of books available from 2017.

Procedure

The Development of a Coding Scheme

A coding scheme was created to identify elements of universal design in illustrations. Three Canadian resources were combined and reduced to a single checklist. These included: *The Toolkit* from the Rick Hansen Foundation (2019), the *Measure of Accessibility Checklist* created by Gamache et al. (2012), and the *Universal Design Checklist* created by the City of Calgary (2010). Elements of universal design that are visible in images in children's picture books in built environments were retained and the others were excluded. For example, a sidewalk is identifiable in a picture book, however adequate lighting is not. Elements adapted for this study from each resource are described below.

In reviewing the resource from the Rick Hansen Foundation (2019), 12 were retained as identifiable in a picture book. The elements retained included: clear pathways, smooth surfaces, rough textures on stairs, clear signs, braille available, enough space for a wheelchair, power-operated doors, ramps, rails along stairs, reserved parking spaces, sidewalks and curb cuts. Each element was then categorized under the overall principle of universal design it is representative of.

The resources from Gamache et al. (2012) and the City of Calgary (2010) revealed similarities, however, each did offer additional elements. Lever handles and easy to operate controls (can be used with a closed fist), were new elements derived from Gamache et al. (2010).

The novel elements mentioned by the City of Calgary (2010) were related to the presense of seating in built environments. Specifically, such seating should have a back-rest support and two arm rest supports. Additionally, door entrances must be wide enough for a wheelchair to enter, sidewalk edges must be present, textured ground to indicate change, and fencing that is not rope or chain-linked. Each element and its overall principle of universal design used can be found in Appendix A, along with its definition.

A data sheet was also created to capture the title of the book, the name of the author, number of pages and which pages were coded. As pictures in children's picture books frequently extend over two pages, this was also accounted for and documented by identifying both page numbers. Principles of universal design present in that book were coded next to the page numbers, with the elements then described in the comments section.

Pilot Study

A pilot study to determine usability of the coding system was conducted. This is of importance due to the need for objective coding for the content analysis. A pilot study conducted with the thesis supervisor was completed. A random sample of 20 books selected from the Canadian Children's Book Collection list were reviewed and checked against the inclusion/exclusion criteria for picture books: two board books, two set in historical contexts, three with anthropomorphic (non-human) characters, and two with natural (non-built environments) were excluded. The pilot sample consisted of 11 picture books. Background data collected for each book included: title, author, date of publication, number of pages, presence and type of character with a visible difference, and the number of pages coded for a universal design principle. The final coding sheet is available in Appendix B.

Redundant categories across the space descriptor codes were integrated with the inclusion of a “space descriptor” variable: coded as indoor, outdoor, or floating/not grounded. Images that appeared to be simply floating on the page were coded as floating/not grounded. Due to the low frequency of universal design principles relative to the number of pages in each book a decision was made to only document those pages coded for the presence of a universal design principle. A rule-based system for the determination of page numbers (first page of the story, each individual page number) was created. The coding sheets and format (categories, columns, notes) were adjusted to reflect these decisions.

Analysis

After coding was completed, data was entered into an Excel worksheet. Excel is a spreadsheet application created by Microsoft, which allows for calculations of data, as well as charting tools and tables for visualizing obtained data (Computing Services and Systems Development, 2014). Each book was representative of one case, therefore, each row in the Excel document was assigned to each book coded. Columns contained specific book information and the principles of universal design. For example, the first three columns were devoted to the book title, author and year published. Following this information, the total number of pages in the book was counted, as well as the total number of pages coded. Whether or not a disability was portrayed in the book was captured (Y/N) and listed if applicable. The remaining columns were used to which principles of universal design were present. Specifically, when a principle was present in the image, this was coded by identifying the numerical value of the principle of universal design. For example, if an automatic door was seen, a number 1 was placed in a principle column to indicate that principle 1, Equitable Use. This allowed for coding and subsequent analyses of quantitative data.

Quantitative analysis was captured using the COUNTIF function in Microsoft Office Excel 2013 (v15.0). The COUNTIF function calculates how often a single value occurs within a data set. Therefore, this frequency data was used to calculate how often each principle of universal design was present. Additionally, this function was used to calculate frequencies of principles of universal design from 2007-2017. This method of analysis assisted in determining if images of accessibility were present. Averages were computed to compare the number of universal design principles throughout the sample.

Qualitative description was documented from comments describing specific elements of universal design, clarifying how environments are portrayed in children's picture books. For example, if an automatic door was present, a 1 was indicated in the principle column (quantitative) and "automatic door" was documented in the comments section. This qualitative piece provides a more detailed description of how each principle was illustrated in the text, expanding on the quantitative data obtained.

In order to ensure results produced are not based on subjective representations, intercoder reliability is frequently performed when undergoing content analysis. There are no predetermined methods assigned in content analysis on how choosing codes or judging quality of results (Bengtsson, 2016). Evidence of credibility, dependability, transferability and confirmability are often sought out by two or more coders coming together to code the same books, ensuring the information is coded in the same way (Bengtsson, 2016; Neuendorf, 2002). For example, in a content analysis of how physically active girls are represented in children's literature, intercoder reliability was established by two coders reviewing some of the same books (Roper & Clifton, 2013). In this case, the coders also met to discuss codes until consensus was achieved. In this study, two coders, Christie Longmire and her supervisor Dr. Joan Turner, met

during the pilot study to independently code books based on the established coding scheme to ensure consistency. After the coding process was complete, the two coders met again to independently code five books from the sample to establish reliability. The presence of textured ground surface required further clarification and definition to reach consensus.

Drawing from McGee & Marshall-Baker (2015), the decision to create a data matrix for each principle was determined, which was then developed into a practical resource for ECE's to use to support discussions of Universal Design. McGee et al. developed a matrix for coding playroom spaces for evidence of biophilia. Each space was labeled, coded and given a "rating" indicating the strength of the evidence based on the presence of the number of biophilia indicators. In this study, the data resource contains four columns: Book title and author, principle of universal design present and description, photograph example (removed for copyright purposes), and practical strategies for early childhood educators. As the principles of universal design are central to this study, the four most recent books depicting each principle were captured and are presented in Appendix E. More recent books were used as they may be more easily accessed if this study was to be replicated and may be more readily available for early childhood educators to access.

Chapter 4

RESULTS

Overview

A deductive content analysis was completed on a sample of children's books selected from the Canadian Children's Book Centre Collection at Mount Saint Vincent University. A total of 106 books were examined with 780 pages of images meeting the inclusion criteria of the study. Total frequencies for the presence of differently-abled characters and the seven principles of universal design were calculated. Within each principle, frequencies of the elements of universal design were also calculated and the five most frequent elements were identified. Total frequencies for each principle per year were also calculated (see Appendix C). A graphic display of these elements presented by year does not indicate a consistent pattern.

Frequency of Differently-abled Characters

Images of differently-abled characters were observed in the picture books. Of the main characters observed, 10 represented a differently-abled character by illustrating eight characters wearing glasses and two characters using a wheelchair. Characters seen in the background of the images also represented differently-abled characters. These images included 15 characters wearing glasses, two characters using a cane and two characters using a wheelchair. For example, *Look Where We Live* (Ritchie, 2015) illustrated both an older man and a child with glasses, an older man with a cane, and a child using a wheelchair.

Total Frequencies of Principles of Universal Design

The seven principles of universal design were documented. A total of 440 examples were counted. The most frequently observed principle was Tolerance for Error, which was observed 102 times at 23.19% of total occurrences. The least frequently observed principle was Low Physical Effort, which was observed nine times at 2.05% of total occurrences (see Figure 4.1).

Figure 4.1 Total Frequencies of Principles Observed

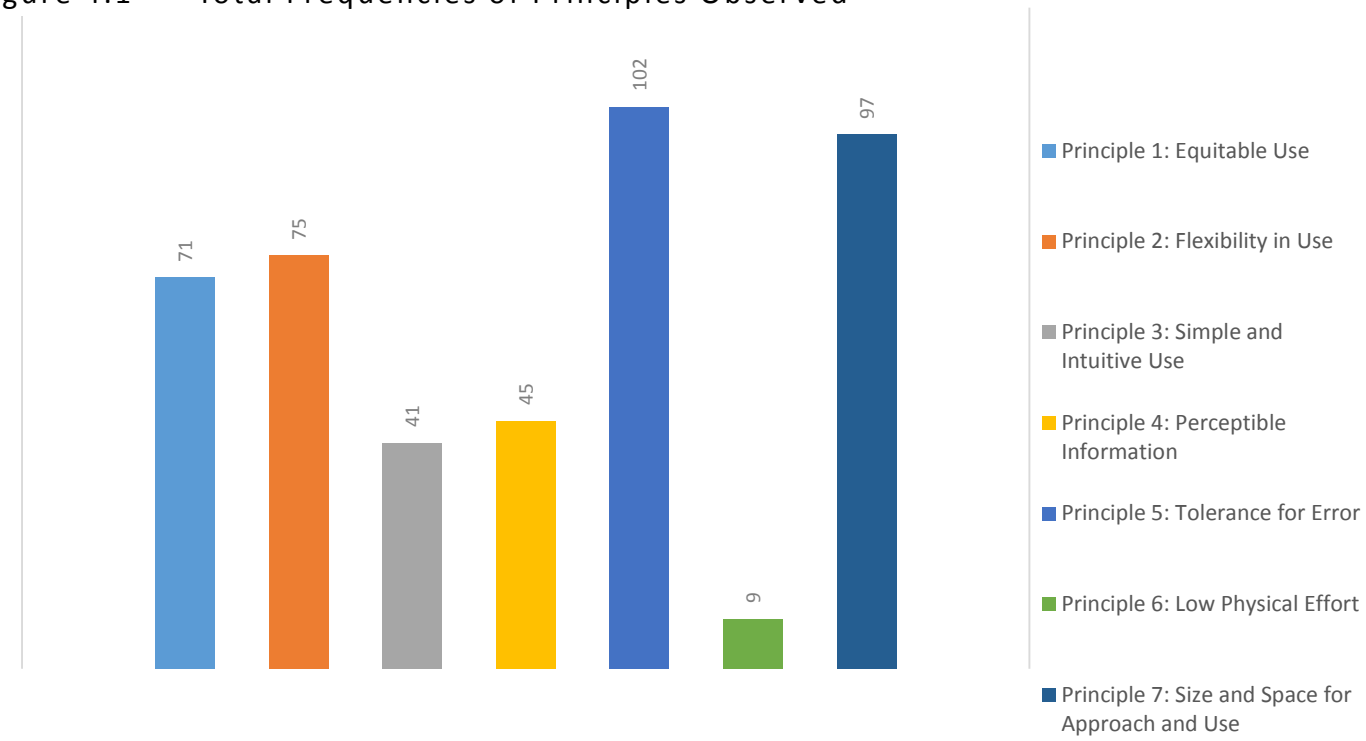


Figure 4.1. Total counts of Principles of Universal Design present in the study from 2007 to 2017.

Principle 1: Equitable use

Equitable Use ensures the design is useful and marketable to people with diverse abilities. This was observed 71 times at 16.14% of total occurrences, making it the 4th most frequently observed principle. This principle was most often represented by a seat with a back. A seat with

arms was the 2nd most frequent element within this principle. The 3rd element, an automatic door, was the least frequent element observed.

Principle 2: Flexibility in Use

Flexibility in Use ensures the design accommodates a wide range of individual preferences and abilities. This was observed 75 times at 17.05% of total occurrences, making it the 3rd most frequent principle observed. This principle was most often represented by the presence of a seat. This may be either for preference or a requirement for ability or mobility. No ramps were illustrated. Common contexts in which a seat was observed were kitchens, living rooms, and restaurants. This principle was frequently observed in conjunction with principle 1, Equitable Use, as a back and arms for seating is represented by that principle. On occasion, a stool was observed, such as in *Meet My Neighbor, The Doctor* (Crabtree, 2013), making this principle independent from Principle 1, as no back or arms were illustrated.

Principle 3: Simple and Intuitive Use

Simple and Intuitive Use ensures the design is easy to understand, regardless of the user's experience, knowledge, language skills or current concentration level. This was observed 41 times at 9.32% of total occurrences, making it the 6th most frequent principle observed. The presence of clear signs and/or symbols were evidence of this principle. Most often this element was depicted by signs outside of stores, as observed in *When We Go Walking* (Best & Brooker, 2013), as well as bus stop signs. In *The City Speaks In Drums* (Grant & Tooke, 2010) a wheelchair symbol was illustrated on a bus window, which is universally recognized as accessible transportation by most seeing people, regardless of ability.

Principle 4: Perceptible Information

Perceptible Information ensures the design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. This was observed 45 times at 10.23% of total occurrences, making it the 5th most frequent principle observed. The principle was most often represented by an illustration of a fence. Fences were often drawn around homes communities as shown in Fullerton's (2013) *Community Soup*. Principle 4 was also represented by the sidewalk protection and textured ground change. Neither Braille nor stair treads were observed.

Principle 5: Tolerance for Error

Tolerance for Error ensures the design minimizes hazards and the adverse consequences of accidental or unintended actions. This was observed 102 times at 23.19% of total occurrences, making it the most frequent principle observed. This principle was represented by six elements, two of which were the most frequently observed in the entire study. Smooth floors or pathways were observed in 98 out of 106 books. A clear pathway was the 2nd most frequent element within this principle. Sidewalks present was the 3rd most frequent element, followed by the presence of railing. Lever handles were observed in kitchen and bedroom environments, such as in *Good Morning Sunshine* (Markusson & Hearne, 2016). Finally, a bus stop on an accessible path was observed in Sulzenko & Moore's (2007) *Boot Crazy* and again in Grant & Tooke's (2010) *The City Speaks in Drums*.

Principle 6: Low Physical Effort

Low Physical Effort ensures the design can be used efficiently and comfortably and with a minimum of fatigue. This was observed nine times at 2% of total occurrences, making it the

least frequently observed principle of universal design in the study. This principle was most often represented by easy to operate controls, such a lever handles, as illustrated in *The Greatest Goal*, (Leonetti & Thompson, 2010). Principle 6 was also represented by curb cuts. Accessible parking spaces were not observed.

Principle 7: Size and Space for Approach and Use

Size and Space for Approach and Use ensures the appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility. This was observed 97 times at 22.05% of total occurrences, making it the 2nd most frequently observed principle. The principle was most often represented by space for a wheelchair. Door wide enough for a wheelchair was the 2nd most common element observed. Bed of appropriate height was the least commonly observed element, however was present in *Bella And The Bunny* (Larsen & Endle, 2007).

Frequency of Elements

Frequencies of elements of universal design were counted. Within the 23 elements, a total of 775 examples were counted (see Figure 4.2). The most frequent element illustrated was smooth floor/path (100). The second most frequent element illustrated was clear pathway (94). Space for a wheelchair (81) and seating present (79) also ranked in the top five most frequently observed elements. Finally, seat with a back (74) was the fifth most frequently observed element.

Figure 4.2. Total Frequency of Elements Observed

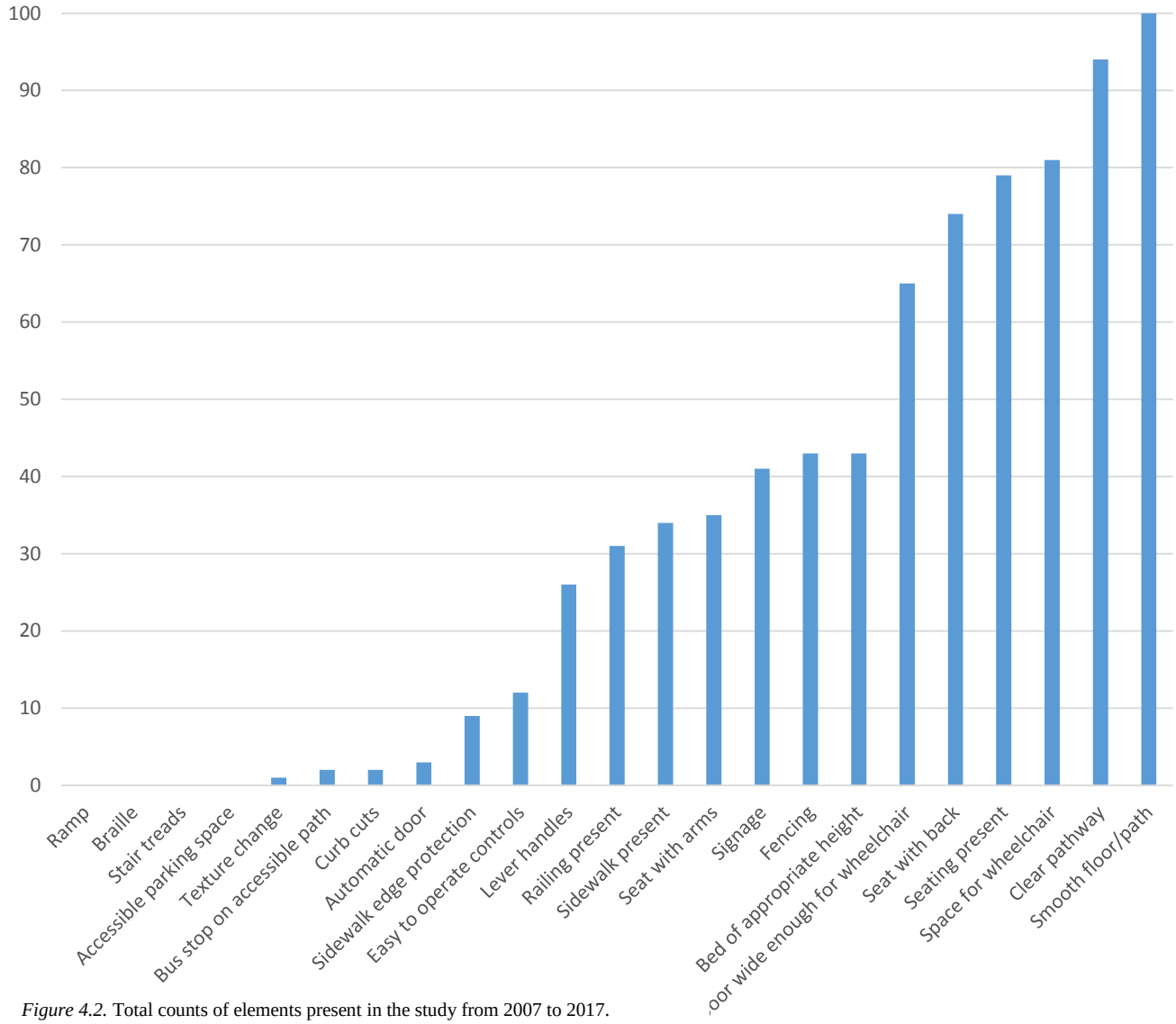


Figure 4.2. Total counts of elements present in the study from 2007 to 2017.

Frequency across Time

Total frequencies of elements in each year from the 2007-2017 sample were counted (see Figure 4.3). Universal design elements were counted most frequently in 2012 (83), followed by 2014 (80), 2009 (78), 2007 and 2015 (75), 2010 (73), 2013 (70), 2008 and 2011 (61), and 2017 (60). The least number of elements were counted in the sample from 2016 (59).

Figure 4.3. Total Frequency of Elements across Time

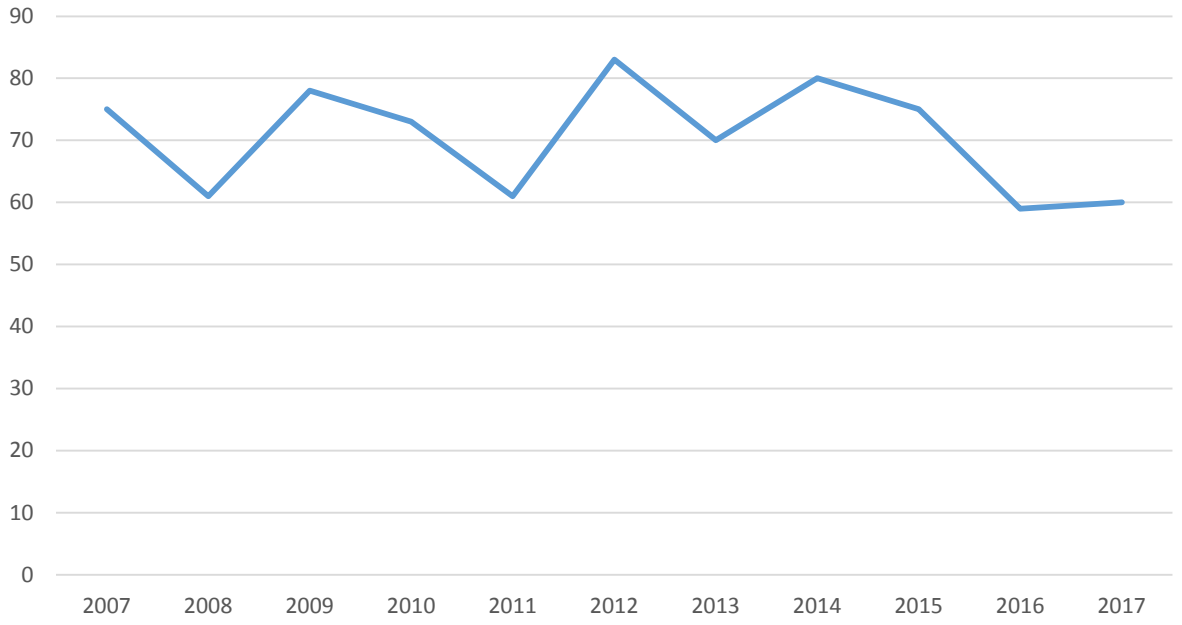


Figure 5.3. Visual representation of elements counted from 2007 to 2017

Chapter 5

DISCUSSION

The purpose of this study was to examine a sample of Canadian children's picture books for elements of universal design. This is the first study known to the researcher looking specifically at ways in which the principles of universal design are presented in images in children's picture books. Results of the study found limitations on the ways in which differently-abled people are presented as well as the accessibility of environments. However, the findings allow for the development of a resource for educators interested in expanding the use of appropriate materials related to abilities, inclusion and accessibility of environments, *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* (see Appendix D) .

For picture books to act as mirrors for children with different abilities, differently-abled characters must be present in proportions near what may be experienced in day to day life. This study did show relatively few differently-abled characters presented in the images; however, it is key to note that there were more instances found than in previous research (Dyches, 2006; Martinez et al., 2016). Dyches et al. (2006) found that characters with disabilities were grossly underrepresented and Martinez et al. (2016) found disabilities that were present were ones in which children were less likely to encounter. These underrepresentation's hinder opportunities for individuals with disabilities to see themselves in stories and for children to be exposed to concepts in which they are likely to encounter. Attention to the inclusion of children with diverse needs and abilities is recommended to not only allow differently-abled children to see themselves within stories but to allow everyone to be represented and included. Children need

characters to relate to in the story to examine their own circumstances and beliefs (Mendoza & Reece, 2001).

This limited representation also hinders the ability to provide windows for typically-developing readers to experience stories with characters with disabilities. Harrington (2016) found that children gained awareness of cultural similarities and differences and also expressed less chauvinism when exposed to text and images portraying lives of children in other countries. Therefore, further attention to the inclusion of characters with diverse abilities may also provide readers with an opportunity to gain an understanding of what life may be like for these characters. An increase in this understanding could potentially aid in promoting acceptance and decreasing negative attitudes as children are able to relate information from picture books to their daily context as early as age 4 (Ganea, Ma & DeLoache, 2011).

After reviewing 106 books meeting the inclusion/exclusion criteria, 440 examples of universal design were observed. Images of environments in children's picture books most commonly illustrated clear and smooth floors/pathways, space for a wheel chair, presence of seating and seating with a back. These commonly viewed elements not only show the environments in children's picture books that are available for discussion with children, they also present opportunities to identify where universal design elements can be introduced. Those elements identified in this study are so frequently seen in daily life that they hardly constitute innovation in the introduction of accessible environments.

Inaccurate, unrealistic and stereotypical features were identified when presenting a character with a disability. *My Granny Loves Hockey* (Weber & Liska, 2014) was an example from this study in which unrealistic abilities were described. The book illustrated a grandmother

in a wheelchair who was an excellent hockey player, despite not playing before. Her wheelchair was also pictured on the ice, even on two wheels. Other content analyses of children's picture books also found evidence of unrealistic portrayals (Beckett, Ellison, Barrett & Shah, 2010; Symeonidou, 2014; Tassiopolus, 2006). Educators and children will benefit from reading books that do not continue to perpetuate these thoughts.

It is left to educators to raise their own awareness and also find ways to explore ways to incorporate problem solving activities when discussing ways in which space and environments are used. Appendix E provides examples of books that represent principles of universal design and can be used by educators when searching for books for their library. *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* serves to aid educators on how to identify aspects of universal design they wish to cover in their curriculum, as well as how to guide conversation about the topic in picture books and through active learning experiences.

Environments illustrated in the children's picture books coded in this study did represent principles of universal design. All seven principles as defined by the Rick Hansen Foundation (2017) were observed in the study. However, readers must go above and beyond simply reading literature with elements present. As discussed by Andrews (1998), using picture books to perpetuate problem-solving and perspective taking is also dependent on reader who is guiding the discussion. The educator needs to immerse him or herself in understanding how elements of universal design can be presented in picture books.

An active learning approach can further promote positive attitudes toward inclusion and accessibility (Orlansky, 1979). Through using open-ended discussions, role playing, and problem-solving, students are able to make stronger connections to the messages, rather than

simply being read to. Therefore, in addition to reading material with children regarding accessibility, educators are encouraged to promote positive attitudes through hands-on experiences. When discussing universal design, each principle can be discussed by its presence or absence in a picture book. The concept can then be reinforced through opportunities provided by early childhood educators. *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* included provides ideas and information for educators to begin integrating these approaches in their current practice.

Principle 1, Equitable Use, is to ensure the environment or product can be used by all. Automatic doors are also an example of this principle and considered one of the most frequent elements of universal design (Rick Hansen Foundation, 2017). However, it is rarely found in this study. Further attention to these frequently observed elements of universal design within every day environments can be increased to reflect what is actually seen on a daily basis by using ideas in *The Resource for ECE's using Picture Books to Support Discussion of Universal Design.* For example, a seat with a back as pictured in *You Can Read* (Becker & Hoffmann, 2017) is an example of equitable use that can be described by adults to children when reading together (See Appendix D). In addition to discussing similarities and differences between chairs (chairs with back, chairs with arms, both, etc.) in picture books, early childhood educators can make this a hands-on learning experience for children by exploring the chairs their school environment and compare the way the chairs look, feel and who may use each of them. Other activities relating to this principle would be having children find all the entrances to the centre and observe how many automatic doors are present. This activity may lead to discussion about why automatic doors are used and by whom. Children could ask when they have used this type of door and think about

when they have seen others use it. This task is relevant whether automatic doors are present or not as it gives children the chance to reflect upon and think critically about their environment.

Principle 2, Flexibility in Use, provides adaptability for the user's pace, accuracy and precision (Connell et al., 1997). Chairs and benches are examples of this principle that can be seen in both indoor and outdoor environments and are easily identified to children during the reading process. In *Let's Play a Hockey Game* (Winters & Flook, 2016), benches are pictured within a hockey rink (See Appendix D). This is an example of when discussions of universal design can be introduced. For example, since no back on the bench was pictured, educators could lead discussion about who may or may not be able to use this type of seat.

Educators can take children on a community walk and have them see how many seats are present. Critical thinking can be developed by asking questions about where the children believe seats could be placed and what they should look like. Conversations about other locations in which seating is present (mall, park, etc.) can take place as well. Ramps at an entryway is another element within this principle. While no ramps were found in the sample used in this study, this is a frequently observed element in daily life that can be discussed with children. Outside the centre or on an outing, children could go up and down the stairs, and then up and down the ramp, reflecting on the differences between these ways of entering a building. When ramps are not present, children can be encouraged to think critically about how the environment could be adapted to be more accessible.

Principle 3, Simple and Intuitive Use, asserts that the user must be able to use and understand the design easily. Clear store signs were observed within this study (see Appendix D) and are ways in which this principle can be discussed with children during the reading

experience, as well as in the community. Extending beyond the reading experience, educators can ask children what symbols they have seen in environments and what they mean. Children could also draw signs they commonly see and then take turns describing what they believe its purpose is to the class. If children are unable to generate examples, pictures of commonly observed symbols in the community can be shown and children could be asked to identify them, with the educator then leading further discussion. Picture schedules may be a commonly observed example within the classroom. Signs and symbols could be identified when walking throughout the community to provide children with real-life examples of signs and symbols being used in addition to their purpose, promoting active learning to increase attitudes toward inclusion (Orlansky, 1979).

Principle 4, Perceptible Information, encompasses the need for adequate contrast between essential information and the surroundings. Stair treads were not observed in this study, however they may be more likely to be present in the built environment. The use of these, whether they are present in the centre or not, as well as their texture, can be discussed with children in order to generate ideas on why they are present. The educator can then elaborate on the purpose of this element with information obtained from *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* and answer questions. Other outdoor elements such as sidewalks, curb protectors and textured ground surfaces could be identified when on a community walk. Textured ground surfaces are recommended for playgrounds (Rick Hansen Foundation, 2019), therefore educators should be looking for these when visiting other playgrounds if these are not present at playgrounds the children frequently use.

Braille was not observed in the books used in the study, however, may be present either within the centre or at local community buildings in which educators may take children (gyms,

library, etc.). These outings can be used as an opportunity to identify this perceptible information and as critical questions to children regarding who may use this and why it is present in addition to signage.

Principle 5, Tolerance for Error emphasizes the need to incorporate features that minimize risks and hazards. This was the most commonly observed principle in the study, which was most often represented by the presence of smooth floors or pathways. This principle can be easily identified since when characters are present in rooms or move to other contexts by walking on smooth floors or paths, it is easily identified.

Clear pathways and floors can also be identified by children. For example, educators could have the children find surfaces are smooth and which are not. To reinforce which are smoother than others, children could use small cars or doll strollers on various surfaces and discuss where it was easier to push. This is also an excellent opportunity to discuss the various surfaces at playgrounds and how uneven or rough surfaces are more difficult for some to use.

Railing on stairs is another example of Tolerance for Error that is commonly observed in built environments, with the intention of minimizing the risk of falling on stairs (RHF, 2017). These occurrences, such as the railing in *Zap! Nikola Tesla Takes Charge* (Kulling & Slavin, 2016) can be pointed out to children as the purpose described (see Appendix D).

Principle 6, Low Physical Effort, aims to implement a design that is used with the least amount of effort possible. Despite the fact that this principle was the least frequently observed in this study, The Rick Hansen Foundation (2018) states that curb cuts, an element of this principle, is one of the most frequently observed elements in our environment. Therefore, educators may have more opportunities to introduce this element to children when out in the community, then

discussing absences in picture books. For an active learning approach, children could easily step up on to the sidewalk without using the curb cut, and then again with using it, describing differences and how it felt to use each of them. This conversation can be directed toward thinking about when people use this. These experiences can later be referenced when this feature is not seen in a book being read, allowing children to make connections between their environment. This uses the psychosocial element of reading proposed by Mendoza & Reece (2001) in which children can directly relate their experiences and beliefs. *The Greatest Goal* (Leonetti & Thompson, 2010) did in fact show an example of curb cuts (see Appendix D). The visual examples found in *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* are useful for adults reading to children as common and concrete examples are identified.

Finally, Principle 7, Size and Space for Approach and Use states the design must allow for approach and use from varying heights and accommodate various sizes and ages. Children with, or without wheelchairs could easily identify space in a picture where a wheelchair could fit, providing an accurate mirror for children in wheelchairs, as well as a window for those who are not. Within the early childhood setting, educators could bring a wheelchair and have children identify where it would fit, such as play areas or stations, playgrounds, and washrooms. Additionally, the chair could be taken in and out of all the doorways in the building to see how many it can fit through, demonstrating the element of doorways being wide enough for a wheelchair. Alternatively, children could stand in side by side and could see how many children fit through each door way at the same time to provide a visual representation. A bed of appropriate height was also an element of this principle observed in only an indoor space. Since beds are likely not available in early childhood centres, practical implications can be found in

Appendix D to assist educators on how they can still discuss the element and make it relevant to children.

Increased attention had been placed on creating universally designed environments (Rick Hansen Foundation, 2017). However, of the books sampled in this study, the least number of elements of universal design were counted in the sample of books from 2016. The sample included books from 2007-2017, therefore it would be reasonable to assume that there would be an increase in the number of elements counted across time rather than a decrease. It is discouraging that picture books have not captured this movement to accurately reflect changes in environments. Examining this result is a suggestion for further research.

Implications

Strategies on using books to relay novel concepts suggested by Arruda-Colli, Weaver & Wiener (2017) can be modified to introduce the concept of universal design to children. Educators are more prepared, able to select interesting and relevant books and encourage positive attitudes toward inclusion when they pre-read and select books (Andrews, 1998). *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* (see Appendix D) created from this study provides information on ways to identify principles of universal design in picture books and then reinforce the information with practical hands-on experiences. Using this tool, educators can proactively identify relevant books and prepare conversation based on what is observed in the book, leading to a more positive attitude demonstrated by the educator (Andrews, 1998).

When children ask questions or comment, critical thinking is promoted by the reader stopping, listening patiently and addressing questions immediately. If this does not occur, readers

can ask children gentle questions in relation to the material to allow them to reflect on their own experiences. The practical ideas provided in *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* (Appendix D) provide educators with ideas on how to encourage such reflection and critical thinking through active learning to allow children to view what was discussed in the picture book in their physical environment.

Early childhood educators are encouraged to read books that celebrate acceptance rather than change (Sigmon et al., 2016). The supercrip model, as described by Biklen and Bogdan (1977) is an idea described in children's picture books that celebrates change rather than acceptance. If such a book was read, educators can identify these circumstances, allow children to reflect on what the story communicated and how their environment may differ. By preparing to have these conversations beforehand, both children and educators will feel more comfortable leading to a positive attitude toward inclusion (Andrews, 1998).

In addition to early childhood educators, *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* (Appendix D) can provide recent examples of books that show principles of universal design to families and ways to further understanding of the material within the home. Those applying a critical lens to picture books, such as university students or researchers may also use *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* as a tool for further research.

Finally, picture books can serve as a teaching tool for both the reader and the children. The flow of conversation regarding the story should be natural (Andrews, 1998) to assist in discussion development. Therefore, educators are encouraged to also share personal experiences with the children relating to the story. Additionally, educators may need to seek out additional resources

to answer questions asked by the children. *The Resource for ECE's using Picture Books to Support Discussion of Universal Design* can be produced and shared with educators to encourage enhanced knowledge and understanding of the children's books published in Canada that may be introduced in the early childhood classroom.

Limitations

Information regarding what environments look like in a sample of Canadian children's picture books was produced as a result of this study. Previous research on documenting what environments portray in picture books was examined, yet no existing evaluation tool was found. The coding scheme used in this study was created by the researcher; therefore, it is not established as a valid and reliable tool. The decision to develop the coding scheme modified from three Canadian resources describing accessible environments and universal design was made to expediate this important documentation of how accessibility and universal design are illustrated in children's picture books. Future work is necessary to create a valid and reliable tool.

One limitation on the coding scheme is that it does not address cultural differences presented in the picture books. These criteria may not have been appropriate for coding books depicting other cultures and countries. Specifically, in *Kamik Joins the Pack* (Baker & Leng, 2016), an Aboriginal village was illustrated. Children were drawn sleeping on the floor; therefore, the bed would not have been of appropriate height according to the coding scheme used. It is difficult to claim that principles of universal design were not present given the researcher's lack understanding of how universal design principles would be interpreted outside of Canada.

Definitions of elements of universal design were adapted to capture those that could be observed in picture books. While the definitions created are well-understood by the researcher, further development may be required prior to being used by others. For example, space for a wheelchair and a wide door was documented when the researcher observed adequate space in the pictured environment and that a doorway was wide enough for a wheelchair to pass through. More specific definitions or explanations may be necessary for future coders.

The context of the picture also influenced which elements may or may not be present. For example, a bed of an appropriate height could only be accounted for if a room with a bed was pictured. If the story occurred only outside, this element could not be present. This immediately decreases the number of elements that could portray that principle. Sidewalks and curb cuts could only be observed in an outdoor environment, therefore certain principles may have had less of an opportunity to be counted relative to the story presented in the book.

Conclusions

Illustrations used as a teaching tool can lead to a broader discussion and understanding of topics regarding accessibility of spaces (Beaumont, Mudd, Turner, & Barnes, 2016). When illustrations provide mirrors and windows, acceptance of those characters, regardless of ability is increased. While principles of universal design were present in this study, the elements identified were not ones most commonly seen in built environments in Canada. This finding suggests picture books may not reflect what environments actually look like, minimizing the way books act as a mirror or window for children relative to built environments.

Descriptive data observed did provide information on what environments look like in picture books. From this, information for adults reading with children on how to discuss

principles of universal design in picture book illustrations was generated. Additionally, strategies are available for educators on how to practically demonstrate universal design to children in their physical environment to further develop positive attitudes toward inclusion. *The Resource for ECE's using Picture Books to Support Discussion of Universal* produced following the analysis of the data can be shared with educators and author/illustrators to enhance attention to the importance of universal design. Further studies could assess the impact of using these strategies to inform educators and author/illustrators to raise the profile of the inclusion and discussion of universal design in children's picture books.

References

Adomat, D. (2014). Exploring issues of disability in children's literature discussions. *Disability Studies Quarterly, 34*(3). Retrieved from http://dsq-sds.org/article/view/3865/3644.

Altman, A. (2008). *Waiting for Benjamin: A story about autism.* Park Ridge, IL: Albert Whitman.

Andrews, S. (1998). Using inclusion literature to promote positive attitudes toward disabilities. *Journal of Adolescent & Adult Literacy, 41*(6), 420-426.

Aronson, K., Callahan, B., & O'Brien, A. (2018). Messages matter: Investigating the thematic content of picture books portraying underrepresented racial and cultural groups. *Sociological Forum, 33*(1), 165-185.

Arruda-Colli, M., Weaver, M. & Wiener, L. (2017). Communication about dying, death, and bereavement. *Journal of Palliative Medicine, 20*(5), 548-559.

Azano, A., Tackett, M., & Sigmon, M. (2017). Understanding the puzzle behind the pictures: A content analysis of children's picture books about autism. *American Educational Research Association Open, 3*(2), 1-12.

Azore, B. & Graham, G. (2012). *Wanda and the wild hair*. Toronto, ON: Tundra Books.

Bader, B. (1976). *American picture books from Noah's Ark to The Beast Within*. New York: Macmillan.

Baker, D. & Leng, Q. (2016). *Kamik joins the pack*. Iqaluit, Nunavut: Inhabit Media Incorporated.

Barnes, C. (1992). *Disabling imagery and the media.* Halifax, NS: Ryburn.

Barrow, R. & Woods, R. (2006). *An introduction to philosophy of education* (4th ed). Routledge, London, UK: New York.

Bartuska, T. & McClure, W. (2007). *The built environment: A collaborative inquiry into design and planning*. Retrieved from https://pdfs.semanticscholar.org/ebad/e2fc6bae8ca5c8e825fbbd34e0fef7f27192.pdf

Beaumont, E., Mudd, P., Turner, I., & Barnes, K. (2016). Cetacean frustration: The representation of whales and dolphins in picture books for young children. *Journal of Early Childhood Education,* 45(4), 545-551.

Becker, H. & Hoffmann, M. (2017). *You can read*. Victoria, BC: Orca Book Publishers.

Beckett, A., Ellison, S. Barrett, & Shah, S. (2010). Away with the fairies? Disability within primary-age children's literature. *Disability and Society, 25*(3), 373– 386.

Barkhouse, J. & Cilia, T. (2016). *Keeper of the light*. Halifax, NS: Formac Publishing Company Limited.

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *Nursing Plus Open, 2*(1), 8-14.

Best, C. & Brooker, K. (2013). *When we go walking*. Las Vegas, NV: Amazon Children's Publishing.

Biklen, D. & Bogdan, R. . (1977). Media portrayal of disabled people: A study of stereotypes. *Interracial Children's Book Bulletin, 8*(6-7), 4–9.

Bishop, R. (1990). Mirrors, windows, and sliding glass doors. *Perspectives, 6(3),* ix–xi.

Bishop. R. (1997). Selecting literature for a multicultural curriculum. In Violet J. Harris (Ed.), *Using multiethnic literature in the K-8 classroom.* Norwood. MA: Christopher-Gordon.

Braid, C. & Finch, B. (2015). "Ah, I know why…": Children developing understandings through engaging with a picture book. *Literacy, 49*(3), 115-122.

Bruins, D. & Leung, H. (2011). *Ninja cowboy presents the call of the cowboy*. Toronto, ON: Kids Can Press.

Canadian Children's Book Centre. (2018). *About the Canadian Children's Book Centre*. Retrieved from http://bookcentre.ca/about.

Cavanagh S. (1997). Content analysis: concepts, methods and applications. *Nurse Researcher, 4*(3), 5–16.

Centre for Excellence in Universal Design. (2012). *What is universal design, definition and overview*. Retrieved from http://universaldesign.ie/What-is-Universal-Design/Definition-and-Overview/.

Chinn P. & Kramer M. (1999). *Theory and Nursing a Systematic Approach* (8th ed). St. Louis, MO: Mosby.

City of Calgary (2010). *Universal Design Checklist. Universal Design Handbook: Building Accessible and Inclusive Environments.* Retrieved from https://www.calgary.ca/CSPS/CNS/Documents/universal_design_handbook.pdf?noredirect=1.

Clogston, J. (1990). *Disability coverage in 16 newspapers.* Louisville, KY. Advocado Press.

Cole, F. (1988) Content analysis: process and application. *Clinical Nurse Specialist, 2*(1), 53–57.

Computing Services and Systems Development. (2014). *Microsoft Excel 2013 Fundamentals Workshop*. Retrieved from https://www.technology.pitt.edu/sites/default/files/documents/migrated/Training/Microsoft%20Excel%202013%20Fundamentals%20Manual.pdf.

Connell, B., Jones, M., Mace, R., Mueller, J., Mullick, A., Ostroff, E., Sanford, J., Steinfeld, E., Story, M., & Vanderheiden, G. (1997). *Principles of Universal Design.* Raleigh, NC: North Carolina State University.

Crabtree, M. (2013). *Meet my neighbor, the doctor*. New York, New York: Crabtree Publishing Company.

Dyches, T., Prater, M., & Jenson, J. (2006). Portrayal of Disabilities in Caldecott Books. *TEACHING Exceptional Children Plus, 2*(5), article 2. Retrieved from http://escholarship.bc.edueducationtecplus/vol2/iss5/art2.

Elleman, B. (1992). The nonfiction scene: What's happening? In E. B. Freeman & D. G. Person (Eds.), *Using nonfiction trade books in the elementary classroom: From ants to zeppelins* (pp. 26-33). Urbana, IL: National Council of Teachers of English.

Fang, Z. (1996). Illustrations, Text, and the Child Reader: What are pictures in children's storybooks for? *Reading Horizons, 37*(2), 130-142.

Fullerton, A. (2013). *Community soup*. United States: Pajama Press.

Gamache, S., Vincent, C., McFadyen, B., Routhier, F., Beauregard, L., & Fiset, D. (2012). *Measure of accessibility to urban infrastructures for adults with physical disabilities.* Université Laval, Quebec, Canada. Retrieved from http://www.cirris.ulaval.ca/sites/default/files/documents/mauap_version_anglaise_1.pdf

Ganea, P., Ma, L., & DeLoache, J. (2011). Young children's learning and transfer of biological information from picture books to real animals. *Child Development, 82*(5), 1421-1433.

Getting the Most Out of Picture Books. (n.d.). Retrieved from http://www.rif/org/us/literacy-resources/articles/getting-the-most-out-of-picture-books.htm.

Golos, D. & Moses, A. (2011). Representation of deaf characters in children's picture books. *American Annals of the Deaf, 156*(3), 270-282.

Grant, S. & Tooke, S. (2010). *The city speaks in drums*. Halifax, NS: Nimbus Publishing.

Harrington, J. (2016). "We're All Kids!" Picture books and cultural awareness. *The Social Studies, 107*(6), 244-256.

Harwood T.G. & Garry T. (2003). An overview of content analysis. *The Marketing Review, 3*(4), 479–498.

Heidbreder, R. & Martz, J. (2013). *Black and bittern was night.* Toronto: ON. Kids Can Press.

Home Modification Canada. (2018). *Home Modification*. Retrieved from https://www.homemods.ca/home-modifications/.

House, C. & Rule, A. (2005). Preschoolers' ideas of what makes a picture book illustration beautiful. *Early Childhood Education Journal, 32*(5), 283-290.

Houston-Price, C., Burton, E., Hickinson, R., Inett, J., Moore, E. Katherine Salmon, & Paula Shiba. (2009). Picture Book Exposure Elicits Positive Visual Preferences in Toddlers. *Journal of Experimental Child Psychology, 104*(1), 89-104.

Hsieh, H. & Shannon, S. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288.

Joines, S. (2009). Enhancing quality of life through Universal Design. *NeuroRehabilitation, 25*(4), 313-326.

Justice (2017). *Accessibility Act to Make Province More Accessible*. Government of Nova Scotia. Retrieved from https://novascotia.ca/news/release/?id=20170427007.

Kama A. (2004). Supercrips versus the pitiful handicapped: reception of disabling Images by disabled audience members. *Communications, 29*(4), 447–466.

Klems, B. (2009). Defining picture books, middle grade and young adult. *Writer's Digest.* Retrieved from http://www.writersdigest.com/editor-blogs/questions-and-quandaries/writing-for-kids/defining-picture-books-middle-grade-and-young-adult.

Koenig, M & Zorn, C. (2002). Using storytelling as an approach to teaching and learning with diverse students. *The Journal of nursing education, 41*(9), 393-399.

Krippendorf, K. (2004). *Content analysis: An introduction to its methodology* (2nd ed). Thousand Oaks, CA: SAGE Publications.

Kulling, M. & Slavin, B. (2016). *Zap! Nikola Tesla Takes Charge*. Toronto: Tundra Books.

Larsen, A. & Endle, K. (2007). *Bella and the bunny*. Toronto: Kids Can Press.

Leedy, P. D., & Ormrod, J. E. (2005). *Practical research: Planning and design* (8th ed). Upper Saddle River, N.J: Prentice Hall.

Leininger, M., Dyches, T., Prater, M., & Health, M. (2010). Newbery award winning books 1975-2009: How do they portray disabilities? *Education and Training in Autism and Developmental Disabilities, 45*(4), 583-596.

Leonetti, M. & Thompson, S. (2010). *The greatest goal*. Toronto, ON: Scholastic Canada.

Leung, W. (2012, February 23). Nature disappearing from children's books, study. *The Globe and Mail*, Retrieved from https://www.theglobeandmail.com/life/the-hot-button/nature-disappearing-from-childrens-books-study/article548359/.

Maich, K. & Belcher, C. (2012). Using picture books to create peer awareness about autism Spectrum Disorders in the Inclusive Classroom. *Intervention in School and Clinic, 47*(4), 206-213.

Markusson, T. & Hearne, J. (2016). *Good morning sunshine!* Regina, SK: Your Nickle's Worth Publishing.

Marriott, S. (2002). Red in tooth and claw? Images of nature in modern picture books. *Children's Literature in Education, 33*(3), 175-183.

Martinez, M., Koss, M., & Johnson, N. (2016). Meeting characters in Caldecotts: What does this mean for today's readers? *Reading Teacher, 70*(1), 19-28.

Matthews, N. (2009). Teaching the 'invisible' disabled students in the classroom: disclosure, inclusion and the social model of disability. *Teaching in Higher Education, 14*(3), 229-239.

McGee, B. & Marshall-Baker, A. (2015). Loving Nature from the Inside Out: A biophilia batrix identification strategy for designers. *HERD: Health Environments Research & Design Journal, 8*(4), 115-130.

Mendoza, J. & Reese, D. (2001). Examining multicultural picture books for the early childhood classroom: Possibilities and pitfalls. *Early Childhood Research & Practice, 3*(2), 155-169.

Mount Saint Vincent University Library. (2018). *About the Canadian Children's Book Centre Collection (CCBC).* Retrieved from http://libguides.msvu.ca/CanKidLit#s-lg-box-2213032.

Munsch, R. & Odjick, J. (2017). *Blackflies*. Toronto, ON: Scholastic Canada.

Munsch, R. & Martchenko, M. (2016). *So much snow*. Toronto, ON: Scholastic Canada.

Neuendorf, K. (2002). *The content analysis guidebook*. Thousand Oaks, CA: Sage.

Newton, D. (1995). The role of pictures in learning to read. *Educational Studies*, *21*(1), 119-130.

North, R. & Keating, L. (2017). *Elliott and the impossible fish*. St. John's: NL: Tuckamore.

Northey, M., Tepperman, L., & Albanese, P. (2018). *Making sense: A student's guide to research and writing: social sciences* (5th ed). Toronto, ON: Oxford University Press.

Oliver, L. & McGilp, T. (2017). *I'd rather be me*. Brantford, ON: Cavern of Dreams Publishing.

Oliver, M. (1990). *The politics of disablement*. Basingstoke, UK: Macmillan.

Orlansky, M.D. (1979). Active learning and student attitudes toward exceptional children. *Exceptional Children, 46,* 49-52.

Pattison, D. (2008). Picture Book Pages. *Picture Books.* Retrieved from http://www.darcypattison.com/writing/picture-books/picture-book-standards-32-pages/.

Pennell, A., Wollak, B., & Koopenhaver, D. (2018). Respectful representations of disability in picture books. *The Reading Teacher, 71*(4), 411-419.

Polit, D. & Beck, C. (2004). *Nursing Research Principles and Methods*. Philadelphia, PA : Lippincott Williams & Wilkins.

Rack, M. & Ross, G. (2016). *Edward built a rocketship*. London, UK: Hutton Grove.

Reich, C. & Lindgren-Streicher, A. (2005). *Universal Design: Literature Review*. Museum of Science, Boston. Retrieved from http://www.informalscience.org/sites/default/files/2005_Universal_Design_Literature_Review.pdf.

Reynolds, P. (2016). *Playing from the heart*. Somerville, MA: Candlewick Press.

Rick Hansen Foundation (2017). Universal Design 101. Retrieved from https://www.rickhansen.com/news-stories/blog/universal-design-101.

Rick Hansen Foundation. (2018). Retrieved from https://www.rickhansen.com/.

Rick Hansen Foundation. (2019). A guide to creating accessible play spaces. Retrieved from https://www.rickhansen.com/sites/default/files/downloads/sch-35913-guide-creating-accessible-play-spaceswebaccessible.pdf.

Ritchie, S. (2015). *Look where we live!* Toronto, ON; Tonawanda, NY: Kids Can Press.

Roper, E & Clifton, A. (2013). The representation of physically active girls in children's picture books. *Research Quarterly for Exercise and Sport, 84*(2), 147-156.

Saracho, O. & Spodek, B. (2009). Parents and children engaging in storybook reading. *Early Child Development and Care, 180*(10), 1379-1389.

Shakespeare, T. (2006). The social model of disability. In Lennard J. Davis (ed.), *The Disability Studies Reader* (2-197). Retrieved from https://books.google.ca/books?hl=en&lr=&id=Oor7avo2iDkC&oi=fnd&pg=PA214&ots=o-cBR6cAlV&sig=opPFQ9GSGRa6JrIc1TnJm82lNts&redir_esc=y#v=onepage&q&f=false .

Sigmon, M., Tackett, M., Azano, M., & Price, A. (2016). Using children's picture books about autism as resources in inclusive classrooms. *Reading Teacher, 70*(11), 111-117.

Spitz, E. (1999). *Inside picture books*. New Haven, CT: Yale University Press.

Statistics Canada. (2017). A profile of persons with disabilities among Canadians aged 15 years or older, 2012. *Canadian Survey on Disability*, *2012*. Retrieved from https://www150.statcan.gc.ca/n1/pub/89-654-x/89-654-x2015001-eng.htm.

Sulzenko, J. & Moore, M. (2007). *Boot crazy.* Ottawa, ON: Blue Poodle Books.

Symeonidou, S. (2014). New policies, old ideas: the question of disability assessment systems and social policy. *Disability & Society*, *29*(8), 1260-1274.

Taherdoost, H. (2016). Sampling Methods in Research Methodology: How to Choose a Sampling Technique for Research. *International Journal of Academic Research in*

Management, 5(2), 18-27. Retrieved from https://www.researchgate.net/profile/Hamed_Taherdoost/publication/319998246_Sampling_Methods_in_Research_Methodology_How_to_Choose_a_Sampling_Technique_for_Research/links/59c5f866a6fdccc719162651/Sampling-Methods-in-Research-Methodology-How-to-Choose-a-Sampling-Technique-for-Research.pdf?origin=publication_detail.

Tare, M., Chiong, C., Ganea, P., DeLoache, J. (2010). Less is more: How manipulative features affect children's learning from picture books. *Journal of Applied Developmental Psychology, 31*(5), 395-400.

Thompson, S. (2012). *Sampling* 3rd edition. USA: John Wiley & Sons

Turner, J. (2006). Representations of Illness, Injury, and Health in Children's Picture Books. *Children's Health Care, 34*(2), 179-189.

Uluadluak, D. & Motz, M. (2017). *The people of the sea*. Iqaluit: Nunavut. Inhabit Media Incorporated.

Vision Council (2016). US Optical Overview and Outlook. https://www.thevisioncouncil.org/sites/default/files/Q415-Topline-Overview-Presentation-Stats-with-Notes-FINAL.PDF.

Weber, L. & Liska, E. (2014). *My granny loves hockey*. Vancouver, BC: Simply Read Books.

Williams, J. A., Podeschi, C., Palmer, N., Schwadel, P., & Meyler, D. (2011). The human-environment dialog in award-winning children's picture books. *Sociological Inquiry, 82*(1), 145-159.

Winters, K. & Thisdale, F. (2017). *French toast*. Toronto, ON: Pajama Press.

Winters, K. & Flook, H. (2016). *Let's play a hockey game*. Toronto, ON: Scholastic Canada.

Woodward, S. (2017). Universal Design 101. *Access & Inclusion*. Retrieved from http://www.rickhansen.com/Blog/ArtMID/13094/ArticleID/149/Universal-Design-101.

World Bank. (2018). Disability Inclusion. *Understanding Poverty.* Retrieved from https://www.worldbank.org/en/topic/disability.

World Health Organization (2018). Disability and Health. Retrieved from http://www.who.int/en/news-room/fact-sheets/detail/disability-and-health.

Zhang, L. & Haller, B. (2013). Consuming image: How mass media impact the identity of people with disabilities. *Communication Quarterly, 61*(3), 319-334.

APPENDIX A

Principles of Universal Design with categorized possible Elements in Picture Books

Indoor space	Principle 1: Equitable Use. The design is useful and marketable to people with diverse abilities. 1.1 Automatic doors present - Doors does not need to be physically manipulated to open or close 1.2 Seating has back support - The seating option has a firm back to provide support to allow individuals to sit regardless of ability 1.3 Seating has arm supports - The seating option has arm rest support available for individuals to rest arms and also use as an aid to lift out of chair Principle 2: Flexibility in Use. The design accommodates a wide range of individual preferences and abilities. 2.1 Seating is present - A seating option is present (chair, bench, etc.) 2.2 Ramp present at entrance - Ramp is present as an alternative to stairs Principle 3: Simple and Intuitive Use. Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. 3 Clear symbols present – Clear symbols are used to easily identify contents and areas Principle 4: Perceptible Information. The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. 4 Stair treads - Horizontal stair trends are present on stairs

	Principle 5: Tolerance for Error. The design minimizes hazards and the adverse consequences of accidental or unintended actions. 5.1 Clear pathway- Path of travel is free of obstacles (ie. items on floors, large rocks on walkway, etc.) 5.2 Smooth floor surfaces- Ground is made of a firm smooth substance and of a smooth nature (no carpet, rocks, etc.) 5.3 Lever handles - Lever handles are present as opposed to knobs 5.4 Railing present - Railing on one or both sides of the staircase Principle 6: Low Physical Effort. The design can be used efficiently and comfortably and with a minimum of fatigue. 6 Easy to operate controls - Can operate features with one hand and closed fist (ie. Toilet tap, BBQ, etc.) Principle 7: Size and Space for Approach and Use. Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility. 7.1 Door entrance is wide enough for a wheelchair - A wheelchair can fit in the illustrated door frame 7.2 Bed height appears of correct height - Bed is accessible (ie. not too close ground or too high to reach) 7.3 Space for maneuvering a wheelchair- Space for operating and turning a wheelchair is illustrated

Outdoor space	Principle 1: Equitable Use. The design is useful and marketable to people with diverse abilities. 1.1 Automatic doors present - Doors does not need to be physically manipulated to open or close 1.2 Seating has back support - The seating option has a firm back to provide support to allow individuals to sit regardless of ability 1.3 Seating has arm supports - The seating option has arm rest support available for individuals to rest arms and also use as an aid to lift out of chair Principle 2: Flexibility in Use. The design accommodates a wide range of individual preferences and abilities. 2.1 Seating is present - A seating option is present (chair, bench, etc.) 2.2 Ramp present at entrance - Ramp is present as an alternative to stairs Principle 3: Simple and Intuitive Use. Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. 3 Clear symbols present – Clear symbols are used to easily identify contents and areas Principle 4: Perceptible Information. The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. 4.1 Sidewalk edge protection - Edges of the sidewalk are raised 4.2 Braille or other signs/symbols present - Braille is visible on signs or universal symbols are used 4.3Textured ground surface - Small deviations raised from a flat surface to aid in space perception and ground changes 4.4 Stair treads - Horizontal stair trends are present on stairs 4.5 Fencing is pictured that is not a single chain, cable or rope – this acts as a hazard rather than a protective enclosure

	Principle 5: Tolerance for Error. The design minimizes hazards and the adverse consequences of accidental or unintended actions. 5.1 Clear pathway- Path of travel is free of obstacles (ie. items on floors, large rocks on walkway, etc.) 5.2 Smooth ground surfaces - Ground is made of a firm smooth substance and of a smooth nature (no carpet, rocks, etc.) 5.3 Lever handles - Lever handles are present as opposed to knobs 5.4 Railing present- Railing on one or both sides of the staircase 5.5 Bus drop off connected to an accessible path - The bus stop is attached to a smooth path, free of barriers 5.6 Sidewalks present - A sidewalk is a built path beside the road Principle 6: Low Physical Effort. The design can be used efficiently and comfortably and with a minimum of fatigue. 6.1 Easy to operate controls - Can operate features with one hand and closed fist (ie. Toilet tap, BBQ, etc.) 6.2 Curb cuts - The curb cut or the sloped curb to the sidewalk is accessible 6.3 Reserved parking spaces - Parking spaces reserved for wheelchairs are clearly marked Principle 7: Size and Space for Approach and Use. Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility. 7.1 Door entrance is wide enough for a wheelchair - A wheelchair can fit in the illustrated door frame 7.2 Space for maneuvering a wheelchair- Space for operating and turning a wheelchair is illustrated

APPENDIX B

Page grid for coding record

Case ID:

Author:

Title:

Mark an X for non-codable page

Mark C for codable page

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32

Universal coding (only codable pages reviewed here)

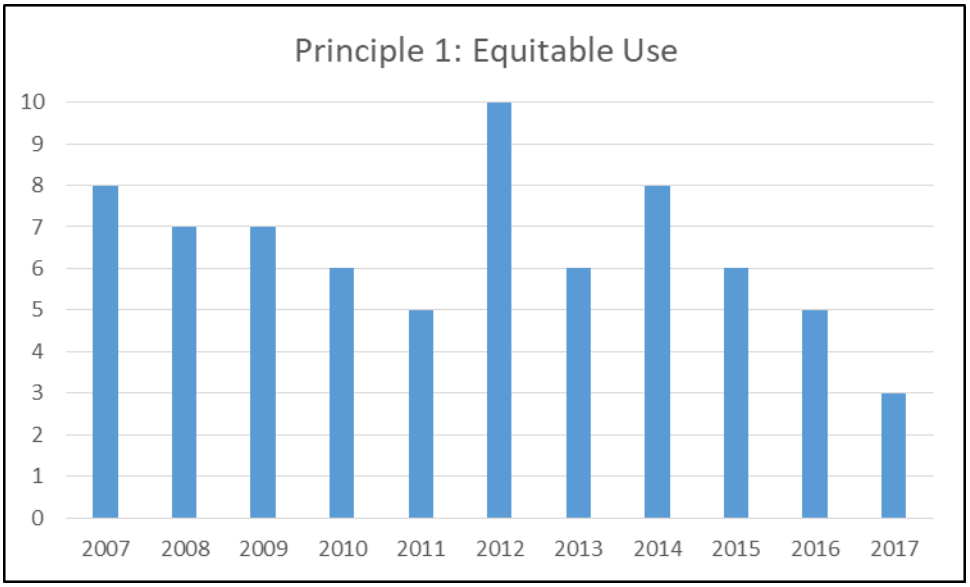
Page number(s)	Principle of universal design present	Comment / Description

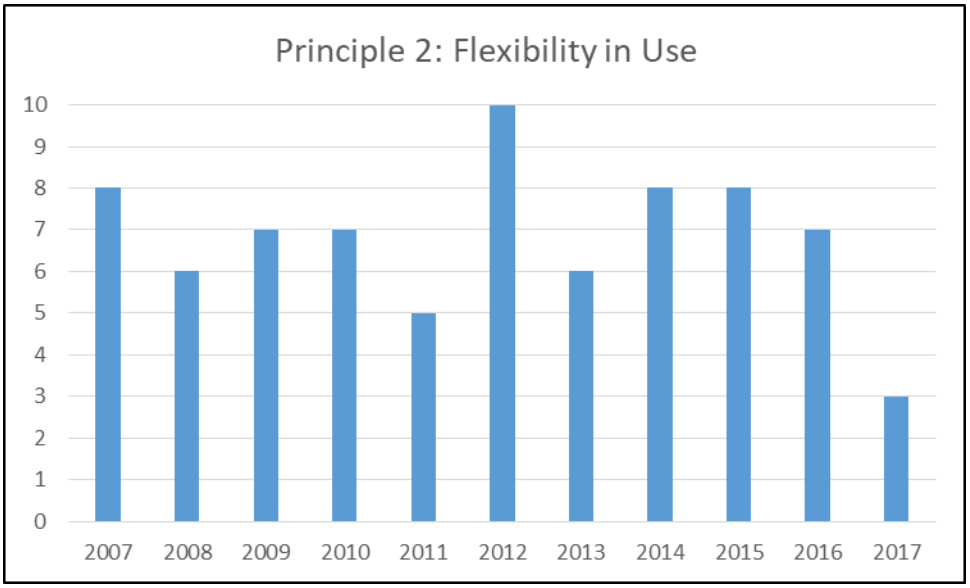
Character with disability present? Y/N If yes, please

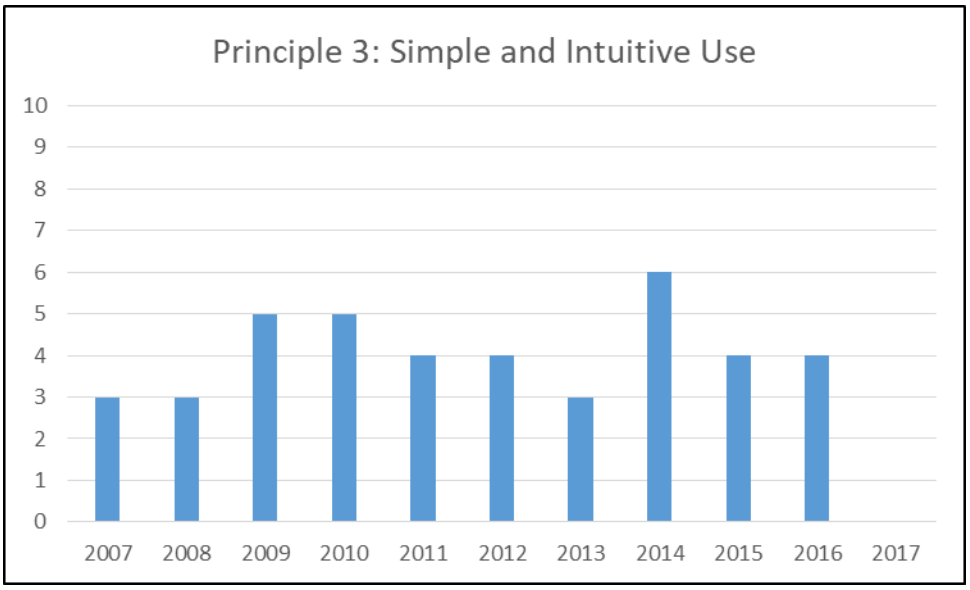
identify:_____

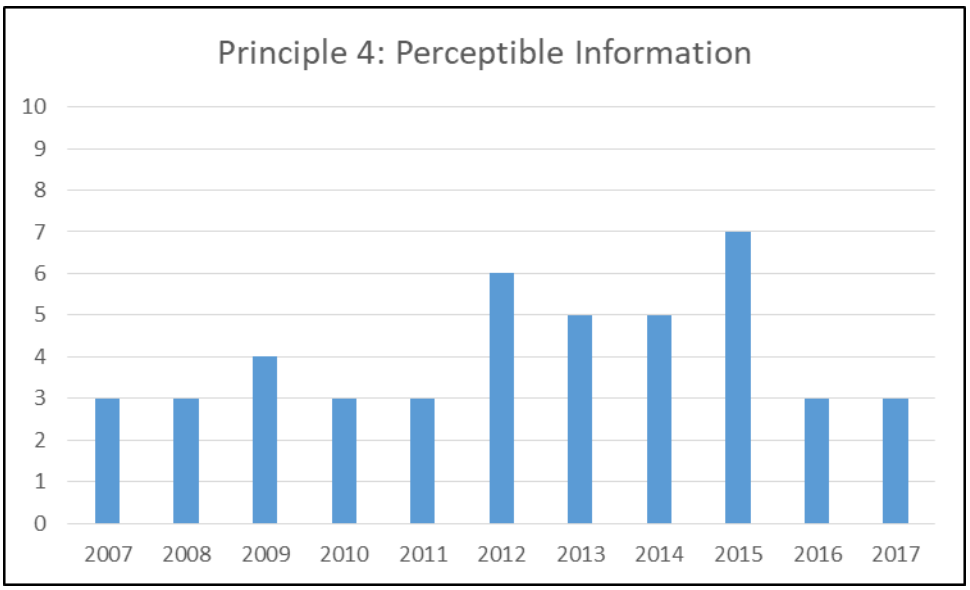
APPENDIX C

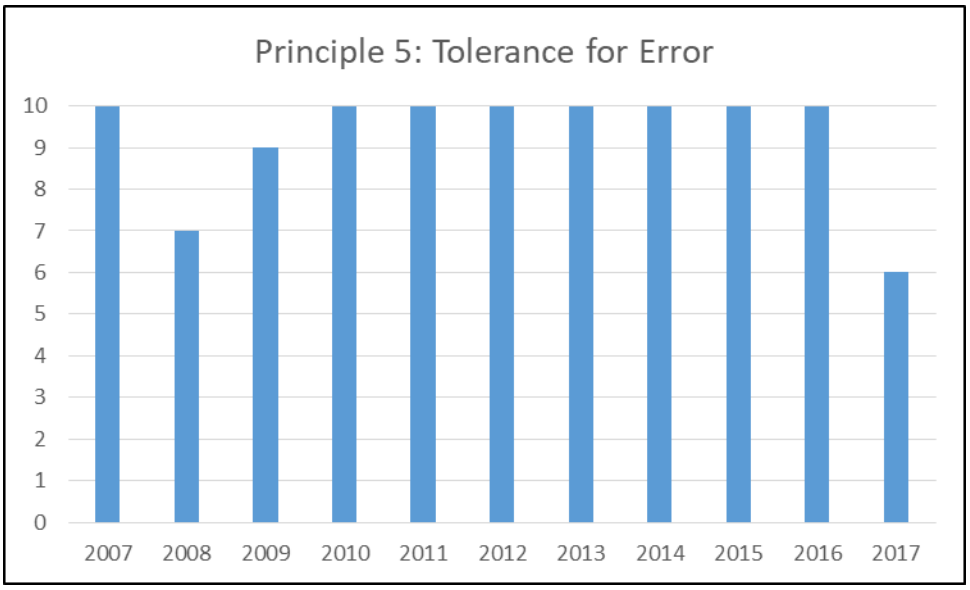
Principles of Universal Design 2007-2017

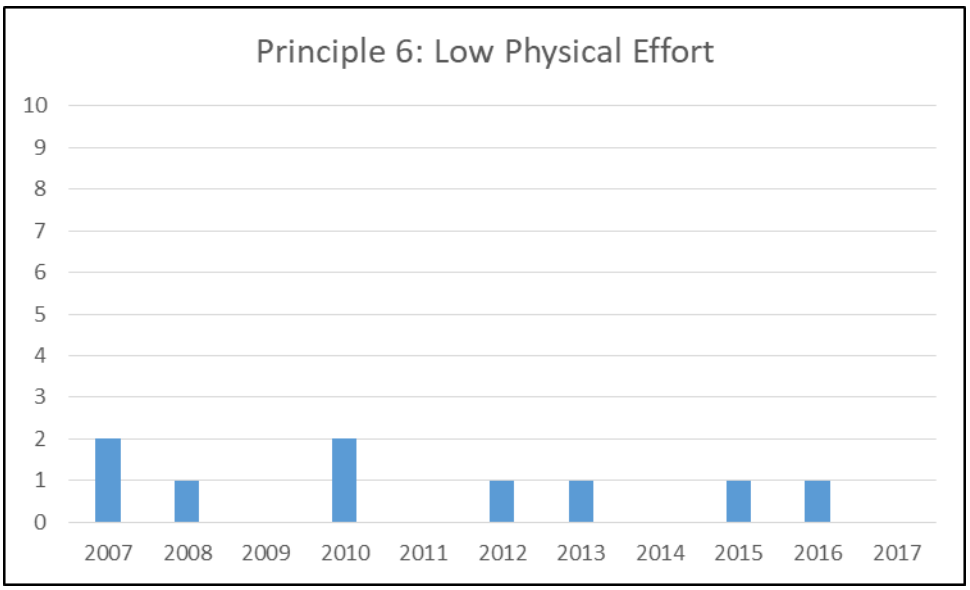


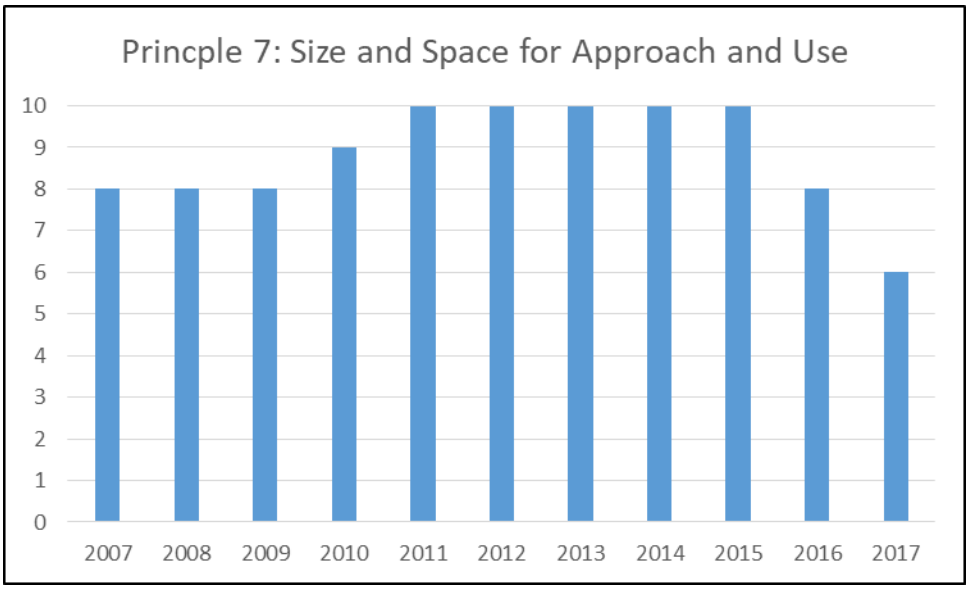



Principle 3: Simple and Intuitive Use
10
9
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017


Principle 4: Perceptible Information
10
9
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017


Principle 5: Tolerance for Error
10
9
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017


Principle 6: Low Physical Effort
10
9
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017


Princple 7: Size and Space for Approach and Use
10
9
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

APPENDIX D

A Resource for ECE's using Picture Books to Support Discussion of Universal Design

Book Title and Author	Principle of Universal Design Present and Description	Practical Strategies for Early Childhood Educators
***You Can Read*, Becker & Hoffmann (2017)**	Principle 1: Equitable Use - The design is useful and marketable to people with diverse abilities. A chair with a back is the element pictured. This element allows for increased support in a sitting position, which is useful for those limited strength for sitting upright, or those who need to sit for a period of time. Providing back support benefits people of all abilities.	Find all chairs in classroom and/or centre and comparing how size, look and feel. Identify chairs in picture books: talk about their use while comparing all chairs throughout the book.
***Let's Play A Hockey Game*, Winters & Flook (2016)**	Principle 2: Flexibility in Use - The design accommodates a wide range of individual preferences and abilities. A seat is the element pictured here. This element allows for users to rest when needed or to sit and enjoy the environment for a period of time. In this example, spectators are able to either sit or stand when watching the hockey game, promoting flexibility relative to preference and ability.	Ask children where they have seen benches before. Offer suggestions (mall, park, etc.) to continue conversation. Take a community walk and have children count how many seats they found. Ask children where seating could have been placed and why. Have children draw their community outing and the various seats they found. Ask what else can be used as a seat that they did not find (ie. tree stump, rocks, etc.).

Look Where We Live, **Ritchie (2015)**	Principle 3: Simple and Intuitive Use - Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills or current concentration level. The store sign is an example of the element pictured. Signage allows for increased comprehension of what is present in the environment. By having clear signage, individuals can navigate the environment with ease. Symbols also allow for this, without requiring the ability to read.	Ask children what signs they know. Provide concrete examples and ask them to identify if they are unable to generate. Tour the facility and/or community and ask them to point out signs or symbols. Ask about their meaning and provide information as to what they mean and why it is important.
Playing From The Heart, **Reynolds (2016)**	Principle 4: Perceptible Information - The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. The fence is the element pictured as an example. This element allows users to visibly identify boundaries, leading to an easier navigation of the environment. Those who are able to see, as well as those with visual impairments benefit from elements relating to this principle.	Find fencing in the community or on site. Compare and constrast the different types of fencing you find (height, chain-linked, etc.). Ask children about why they think fences are present and offer additional information as to their use (safety, boundaries, etc.).
Zap! Nikola Tesla Takes Charge, **Kulling & Slavin (2016)**	Principle 5: Tolerance For Error - The design minimizes hazards and the adverse consequences of accidental or unintended actions. The railing is the element pictured as an example as it decreases the risk that is present when individuals use stairs. A railing allows a person to be more sturdy, thereby also allowing people who have difficulty with balance an increased opportunity of using the stairs as well.	Have children identify where railings are present in the centre. Compare and constrast different types (rope, wood, etc.) and ask them why they think they are there. See if the children themselves can reach the railing. If they cannot, ask them what changes could be made so they they could. Ask about other people who may need to use these for going up and down the stairs. These ideas can be used when reading boks to children as well.

The Greatest Goal, **Leonetti & Thompson (2010)**	Principle 6: Low Physical Effort - The design can be used efficiently and comfortably and with a minimum of fatigue. The curb cut in the sidewalk beside the driveway is the element pictured as an example as it allows users of all abilities to use the design more efficiency while drecreasing fatigue. Individuals in wheelchairs or those who have difficulty with stepping on and off a sidewalk benefit specifically from this element.	During a community outing, point curb cits out to children. Have them use the cuts and then have them step up onto the sidewalk from the pavement. Ask them which was easier to do and who may find this step difficult. Bring a doll stroller from the centre to provide a concrete example. If there are no curb cuts present, discuss the same questions with the children.
Elliott And The Impossible Fish, **North & Keating (2017)**	Principle 7: Size and Space for Approach and Use - Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility. The bed being of an appropriate height is the element pictured as an example as it allows users to reach the bed as well as get on and off the bed easier. This is of particular importance as individuals need to access a bed that is of appropriate height to increase ease of use and mitigate harm.	Have children draw the various beds they have at home or have seen before. Once completed, ask them to explain the similarities and differences. Prompt conversation by asking more direct questions such as “who has the tallest bed in your house”? Have children attempt to identify why these differences may exisit. Identify beds in picture books and talk about the character who may be using it. Ask the children if they think the bed pictured is a good size for the character and discuss why, why not, and what could be done to make it better.

APPENDIX E

Additional books with principles of Universal Design present

Principle and Definition	Book and Author
Principle 1: Equitable Use - The design is useful and marketable to people with diverse abilities.	French Toast, Winters & Thisdale (2017) Let's Play A Hockey Game, Winters & Flook (2016) Keeper Of The Light, Barkhouse & Cilia (2016) Zap! Nikola Tesla Takes Charge, Kulling & Slavin (2016)
Principle 2: Flexibility in Use - The design accommodates a wide range of individual preferences and abilities.	*French Toast*, Winters & Thisdale (2017) *You Can Read*, Becker & Hoffmann (2017) *Zap! Nikola Tesla Takes Charge*, Kulling & Slavin (2016) *Keeper Of The Light*, Barkhouse & Cilia (2016)
Principle 3: Simple and Intuitive Use - Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills or current concentration level.	*Keeper Of The Light*, Barkhouse & Cilia (2016) *Zap! Nikola Tesla Takes Charge*, Kulling & Slavin (2016) *So Much Snow*, Munsch & Martchenko (2015) *Let's Play A Hockey Game*, Winters & Flook (2016)
Principle 4: Perceptible Information - The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.	*French Toast*, Winters & Thisdale (2017) *Edward Built A Rocketship*, Rack & Ross (2016) *Zap! Nikola Tesla Takes Charge*, Kulling & Slavin (2016) *The People Of The Sea*, Uluadluak & Motz (2017)
Principle 5: Tolerance For Error - The design minimizes hazards and the adverse consequences of accidental or unintended actions.	*Blackflies*, Munsch & Odjick (2017) *French Toast*, Winters & Thisdale (2017) *You Can Read*, Becker & Hoffmann (2017) *The People Of The Sea*, Uluadluak & Motz (2017)
Principle 6: Low Physical Effort - The design can be used efficiently and comfortably and with a minimum of fatigue.	*Black And Bittern Was Night*, Heidbreder & Martz (2013) *Wanda And The Wild Hair*, Azore & Graham (2012) *Keeper Of The Light*, Barkhouse & Cilia (2016) *The City Speaks In Drums*, Grant & Tooke (2010)
Principle 7: Size and Space for Approach and Use - Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.	*Blackflies*, Munsch & Odjick (2017) *You Can Read*, Becker & Hoffmann (2017) *French Toast*, Winters & Thisdale (2017) *I'd Rather Be Me*, Oliver & McGilp (2017)