Research Informing the Practice of Museum Educators

Diverse Audiences, Challenging Topics, and Reflective Praxis

David Anderson, Alex de Cosson
and Lisa McIntosh (Eds.)

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Edited by

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DAVID ANDERSON, ALEX DE COSSON AND LISA MCINTOSH

FOREWORD

Research Informing the Practice of Museum Educators: Diverse Audiences, Challenging Topics, and Reflective Praxis

Museums are institutions of both education and learning in service of society, that is, they are sites where educational experiences are designed and facilitated, and also places where visitors learn in broad and diverse ways. As such, the role of public education in museums today is highly important, if not at the centre of museum activity (G. Hein, 2005, 2006). As museums contemplate the growing significance of their educational roles and mandate within a changing society, so too they are increasingly in need of information about the audiences they serve and their own professional practice as they strive to achieve their educational missions in service to the communities in which they are embedded. Accordingly, this edited book focuses on informing, broadening and enhancing the pedagogy of museum education and the practices of museum educators. The chapters in this book report independent research studies conducted by the authors who have explored and investigated a variety of issues affecting museum education practice, contextualized across a range of institutions, including art galleries, natural and social history museums, anthropology museums, science centres, and gardens. These studies address a cross-section of contemporary issues confronting the field of museum education including studies of diverse audience and their needs, the mediation of challenging topics, professional training, teaching and learning in informal settings, and reflective practice and praxis.

WHY RESEARCH MUSEUM EDUCATION AND MUSEUM PEDAGOGY?

Museums, unlike schools and universities, serve a very broad set of demographics that constitute the citizenry of communities in which they are embedded. Because most museums are public institutions, many claim a mandate or mission of educational service that is embracing of all peoples, and very often claim a non-exclusionary charter, embracing all ages (Kotlet & Kotler, 2000). Whether implicitly or explicitly stated, the audiences todays' museums serve include a diverse range of groups such as families, children, students, teenagers, young adults, middle-aged explorers, and senior citizens. Each of these cultural demographic groupings has different and diverse sub-groups who hold different interests, levels of knowledge,

preferred modes of learning, visiting motivations, and needs as learners (Jensen, 1994). These differences raise significant and complex issues about how museum educators communicate, interpret, and ultimately educate visitors in effective ways, and challenges the adage that one kind of communicative or interpretive approach suits all. At the heart of the issue is the "pedagogy of the museum" – how the museum approaches the educational design of experiences for effective and diverse learning and, with that, the need to think critically about the pedagogical approaches required for the diverse audiences museums serve (Anderson, Piscitelli, Weier, Everett, & Tayler, 2002). Indeed, the museum does have control over the pedagogy it deploys through the way it designs the educational experience of its programs and exhibitions. Certainly, it is true that certain types of museums employ or are biased toward particular kinds of pedagogy. There is not a single pedagogical method that museums can employ for successfully facilitating visitors' museum experiences and their learning. Different types of museums will strive for different balances (Kotler & Kotler, 2000). For instance, interactive science centres encourage active hands-on and social engagement, whereas art galleries typically encourage thoughtful, often solitary, reflexive engagement with their collections. A great deal has been learned over the last few decades about visitor learning and educational practice in museum settings that can meaningfully inform pedagogy regardless of museum type or their traditions of visitor engagement (Hooper-Greenhill, 2007). Thinking critically about how museums serve a diverse citizenry, with a diversity of learning modes, interests, prior knowledge and visiting motivations, is challenging. Nonetheless, very important if they are to be effective in their educational missions and mandates, and hence reflection on the practices of museum educators is both vital and necessary.

Museum education often reflects its roots; teaching approaches that would look familiar in many school classrooms. While school groups are an important audience for museums and a museum's relationship with schools is critical to supporting its mandate, the context, desired outcomes and relationships between learners and educators are substantially different in a museum. Are there other approaches that would better serve museums and the diversity of learners found in museums? This question is critical to the future of museum education and can best be explored through the integration of practice, theory and research.

For many museum educators the impact of research and theory on their daily practice may seem inconsequential. Research outcomes may be seen as predictable by practitioners and conversations about theoretical perspectives are largely limited, due perhaps to the realities of a busy work place, a lack of familiarity with different theoretical perspectives, limited opportunity to discuss theory, and/or a general acceptance of the dominant paradigm and therefore no apparent need to question it. Museum scholar and philosopher Hilde Hein (2007) describes the important role of theory in practice, with theory as "a stabilizer that advances investigation into new territories and sustains inquirers through moments of doubt. In the absence of theory anything goes; there are no rational grounds for either adopting or rejecting any position" (p. 30). It is imperative for museum professionals to examine more

deeply their practice through a theoretical and research lens in order to advance our understanding of teaching and learning in museums.

MUSING DIVERSE AUDIENCES, CHALLENGING TOPICS & REFLEXIVE PRAXIS

Diverse Audiences

Museums and museum educators frequently cluster and collectively identify visitors to their institutions by age and group identity of the visitors themselves – for example, young children, school groups, teenagers, family groups, and seniors. For many museum educators these demographics seem to be known qualities and familiar territory in terms of who they are, what they do, and their needs. Much is known about these groups from the literature over the past three or more decades of visitor studies research. Notwithstanding, museums and their educational practices are facing a dynamic landscape of changing social behaviours and norms which brings with it new challenges and for which new knowledge is needed to support the educational needs of audiences. For instance, from the literature over the past 30 years it is easy to find a plethora of studies about how families behave in museums. Yet family behaviour in museums is changing in many ways. For example, there have been changes in how traditional structures might be conceived; rapid changes in technology such as smartphones which bring with it behavioural changes in how families access information in museums; and changing family values about education and how it is accessed in society. As such, we know, but don't know, these audiences. Indeed, the same might said of other visiting demographics that seem to be known qualities and familiar territory. Hence**,** while much is known, there is still much that is unknown. Thus, investigation of diverse demographics that come to museums is most worthwhile if we are to effectively mediate the museum curriculum for learning in diverse ways.

Challenging Topics

In addition to describing museums as places for enjoyable and social learning (Kelly, 2007), the rhetoric in contemporary museum literature suggests the purpose of museums includes objectives such as promoting life-long learning, moral development, and thoughtful debate in support of civic engagement (Falk & Dierking, 2000; Hooper-Greenfield, 2000; Gurian, 2006). Layered into these objectives is a need to re-conceptualize museums. Hilde Hein (2007) examines museums through a feminist theoretical lens and conceptualizes museums as open-ended and pluralist, receptive to new ideas and open to looking at old ideas in new ways. She suggests that museums embodying this perspective, "can, by shifting to a fresh vantage point, think of the world in some of the myriad ways that others have found, to unfold and fold it differently and help visitors and supporters to do the same" (p. 34). As museums become more inclusive and reflective of the diverse communities of which

we are a part, it will become a challenge for contemporary museums to help their learners (and staff) think about the world in different ways. This will create more opportunities for museum educators to have conversations about challenging topics with visitors.

Challenging topics in museums may reflect contemporary societal issues such as human rights, complex scientific questions such as genetically modified organisms, and even sometimes taboo subjects, like death, that affect us all. A topic becomes challenging for a number of reasons: ideas may include diverse moral and ethical perspectives; the conversation may be unexpected, taking an educator off guard and unprepared for the conversation; or the content might be contentious. Cameron (2005) frames contentious ideas as ideas that "engage an individual's or group's values, beliefs, ideologies or moral position and conflict with empiricist modes of knowledge" (p. 216). She sees that in addition to the more traditional roles of providing information and social experiences, museums are well positioned to provide experiences that foster debate, challenge thinking, and ultimately transform society.

How museum educators navigate these conversations about challenging topics is becoming an increasingly important part of their practice. It is imperative that practitioners and researchers come together to better understand the nuances of this part of a museum educator's practice. Greater understanding of this will better support educators in developing the skills and knowledge to successfully facilitate these conversations as well as expand our understanding of teaching and learning in museums through reflective praxis.

Reflective Praxis

Museum educators are well served by being reflexive practitioners. Autobiographical and arts based research such as a/r/tography (Irwin, 2013) or autoethnography (Ellis & Bocner, 2010) are areas of social science research that encourage self-reflexivity as a way to grow in self-understanding. As museum educators work with diverse audiences, such enhanced self-understanding can be of great benefit to them. Personal reflexive praxis, or the art of taking practice into theory and theory into practice in a continual hermeneutic circle (Gadamer, 1986), not only helps museum educators understand the why, the what, and the how of what they are doing in a much deeper way, but this knowledge also allows them to better serve their diverse cliental. Research that foregrounds the personal allows museum educators to have a greater understanding of the complex nature of their interpersonal roles in a museum setting. This is because a museum setting is often in a state of constant flux through changing exhibitions and changing contexts that museum educators continually interpret in relationship with the public.

Museum educators are the intermediaries, in-between the public and the curatorial and other management departments of a museum. By introducing concepts such as phenomenology into reflexive research, museum educators can delve *behind the*

scenes of the processes and practices of a museum, and by doing so ask meaningful questions about the museum educator's relationship with the complex workings of their institution. Furthermore, this uncovering, of the multiple layers of hidden or informal workings of an institution can create a deep and meaningful personal understanding that can be understood in terms of Bourriaud's, (2002) notion of *relational aesthetics* – "the types of relationships the artist creates between the artwork and visitors" (p. 54) that exist in spaces where museum educators live and work (Choi, 2013). For example, museum educators often act as a cushion between the hidden and unseen authority of the curatorial department and the public. By way of their relational connection with the visitors, museum educators help explain an exhibition. In doing so, they help create meaning for themselves and the clientele they serve, be it children, adults, teenagers, middle-aged or older patrons. Translating an exhibition of any kind to the public is always a dance of meaning-making, and whenever they do so, museum educators enact an ongoing hermeneutic circle of relational esthetics. Reflexive research by museum educators, which enhances personal understanding of themselves, can help render an institution more adaptable and thus open to the vagaries of an always changing public by allowing for a more flexible and open-ended interpretive structure that embraces the relational spaces that are present, but not always accessible, to the museum educators who work within them.

SCOPE OF THIS BOOK

Museum education as a field of study is relatively young in comparison to related disciplines such as museum studies, museology, and visitor studies. Indeed there are but a handful of universities in North America that provide graduate level programs with a focus on museum education. The contributing authors of this book were all graduates from the University of British Columbia's museum education program in Vancouver, Canada. These small independent studies represent the dissertation works from a variety of magistral degrees programs under the umberella of museum education, including the *Master of Museum Education* (MMEd), *Master of Education (Focus on Museum Education)* (MEd), and *Master of Arts* (MA) programs. The studies embraced and applied appropriately a particular research methodology, including interpretive case study, phenomenography, phenomenology, ethnography and auto-ethnography, a/r/tography, and quantitiative survey, each as a function of the research questions which drove the authors' independent investigations. As such, the studies are diverse by their audience focus, insitutional focus, methodology, and by the research problems and questions which drove the authors' studies.

The chapter contribution of the book coalesce within three sections: Section 1 – *Museum Educators and Diverse Audiences: Parents, Teenagers and Family Groups*; Section 2 – *Museum Educators' Practice: Challenging Topics and Unique Audiences*; and Section 3 – *Museum Educators' Praxis: Learning Through One's Own Reflexive Research.* Together these themes represent a set of topical issues

germane to informing, broadening and enhancing educational practices in diverse museum settings, and will be of considerable interest to the museum and non-formal education fields broadly. This book will be of value and interest to practising museum educators in all varieties of museum institutions; graduate students in museum studies and informal education programs; academics who share an interest in visitors studies, museum education, museum studies and museology; and teachers and community educators who wish to extend their professional practice beyond the bounds of the classroom.

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DAVID ANDERSON

SECTION 1: INTRODUCTION

Museum Educators Supporting Diverse Audiences: Parents, Teenagers and Family Groups

This section contains four chapters representing studies of museum educators' support of parents, teenagers, and family groups. Understanding museum visitors by these groupings is familiar territory for most museum educators. Much is known about family groups as museumgoers (cf., Ellenbogen, Luke, & Dierking, 2007; Hooper-Greenhill, 2013) and this demographic has been widely studied for decades in the field of visitor studies. Notwithstanding, there is much that the field does not know about their learning, behaviour, engagement and perceptions. For instance, teenagers as a sub-group of families are a highly under-researched group, and the changing landscape of social behaviours and norms in our societies is bringing with it new challenges and a need for new knowledge to support this audience and its constituent sub-groups. Each of the studies in this chapter seeks to provide new insights about how museum educators can better support learning of these diverse audiences in diverse museum contexts. The key themes of this section include: home educators' perspectives of museum as resources; parents' facilitation of learning for their families in art galleries; parents' perceptions about their engagement and discourse mediated by exhibit labels in science museums; and teenagers and their learning outcomes from a science-based after-school program in science centres.

Stephanie Chong's chapter, "Home Educators' Views of Museums: Challenges and Opportunities of Supporting Non-Traditional Learning", considers the perceptions that home educators (parents of home learners) hold of museums in their endeavours to support the home schooling of their children (home learners). The chapter is highly topical for museum educators given the sizable demographic they currently represent in North America and elsewhere. Furthermore, the considerable growth in the number of school-aged children being home schooled today, and in the projected future, represent a sizable demographic who hold the strong potential to utilize museums and museum resources to support their home learning experience. Home educators seek a variety of rich learning experience beyond the bounds of the home learning context to support their children's learning and their learning objectives – museums are increasingly seen as important support resources for this

audience. Chong points out that because home learners are neither a school nor a family group, but somewhere in between, engaging with home learners in museums can provide a unique challenge for museum educators and informal learning institutions. Chong further asserts that despite these challenges, understanding how home educators (parents of home learners) use museums to support their home learners and understanding what they are looking for can help museum educators to develop relevant learning options, potentially resulting in long-term and loyal visitors. Few studies have tackled the investigation of the perceptions of home educators' view of museums, and as such the contribution of this study is significant towards how home educators are currently using museums, their prior experiences at museums, and what they are looking for in future educational programming.

Pilar Wong's chapter, "On Our Own: Family Experiences in Art Museums Outside of Facilitated Programming", considers the very much under-researched demographic of parents as facilitators of learning experiences for their children in art galleries. In particular, Wong's study focuses on the experiences, needs, and perceptions of parents who visited the Vancouver Art Gallery with their families with respect of their facilitation of learning experiences for their family group outside the bounds of institutionally-structured in-gallery programming. Such parents take on an additional role as teacher and are desirous to enrich their children, but in many cases are not expert in pedagogy of mediating gallery experience. Wong aimed to determine the specific ways in which the Vancouver Art Gallery, and by extension other art museums, can better support family visitors outside of facilitated programming for this demographic. Specifically, the study determined how parents experience art galleries, and their perceptions of resources they were looking for to support their family's learning experience in art museums. Wong identifies a gap between what such families need and what art museums are currently offering, and her study takes an active step towards closing this gap through the incorporation of family visitors' needs and preferences into examples of ideal educational resources that can be offered by art museum educators to better support this demographic. Wong's study is highly topical at a time when museums and galleries are faced with budgetary pressures to limit public programs, and increasingly visitors are left to experience the museum on their own, particularly visitors in family groups.

Jennifer Hall's chapter, "Parents' Perspectives about Exhibit Label Content in a Science Museum", in like manner to Wong's study, reports an investigation into ways to better support family learning in science museums through engagement and discourse mediated by exhibit labels. Hall correctly asserts that little is known about what parents think about when they choose to read, paraphrase and/or integrate phrases from exhibit labels into their actions and conversations with their children. Hall's study investigates the role of exhibit label text in the family learning context from the perspective of parents, and in particular what label content

is important to parents and why? Employing Crowley et al.'s (2001) explanatory label categories (*causal, analogical* and *principled*), Hall interrogated the personal thoughts, priorities and attitudes of parents concerning different label text in support of their children's learning associated with an exhibit. The study demonstrated that a hybridized combination of explanatory exhibit label text best serves to support the learning requirements of a wide range of parents. Furthermore, Hall's findings suggest that parents use exhibit labels to transform a largely child-led activity into a collaborative learning experience. Parents appear to use specific label content, including instructive statements, open-ended questions and explanatory references, to extend conversations with their children, to understand their children's actions, and to find ways to participate in the child-centred exhibit experience and learning. Hall's study is significant because it powerfully illustrates that the content of an exhibit label can be a significant catalyst in promoting family learning and it is worthwhile for both museum educators and researchers alike to consider (and re-consider) its functionality within, and relevance to, the family's social learning context.

Finally, Marina Mehai's chapter, "Sparks of Learning: Insights from an After-School Science Museum Program for Teenagers", like Chong and Wong's studies, reports an investigation of an under-researched demographic in museum – that of teenagers and their learning outcomes from a science-based after-school program in science centres. This qualitative interpretive case study examined the learning experiences of teenage participants in an after-school science and technology program. The outcomes revealed that the teenagers learned over time and that their own learning was not just content-based, but rather, manifested in many different domains, including the social, affective, metacognitive, personal and cognitive. Detailed analysis of the case yielded a list of indicators of learning that could then be employed in future program evaluation of this and other similar museum-based programs. Mehai asserts that the use of learning activities, especially those involving play and highlighting participants' interests, would inevitably promote learning within youth programs. Engaging learning activities along with expert facilitators can work hand-in-hand to provide youth with unique opportunities to learn beyond the classroom. Mehai's study provides valuable insights and testimony that can inform science learning in science centres, and the future design and implementation of science programs for youth audiences.

Collectively, these four studies provide new insights and springboards for further detailed investigations of how museum educators might support the learning and educational needs of parents, teenagers, and family groups in a diversity of museum settings. Museum educators know much about family groups, yet there is still a great deal more to know and understand.

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1. HOME EDUCATORS' VIEWS OF MUSEUMS

Challenges and Opportunities of Supporting Non-Traditional Learning

INTRODUCTION

It is widely acknowledged that home learning[1] and museum education as separate entities are growing movements (e.g., Adams, 2005; Isenberg, 2007; Fraser Institute, 2001). However, there is almost no information in the published literature on evaluating and optimizing the experiences of home learners within museums. One exception is a study completed by Adams (2005) which addresses trends within the home school movement in the United States, existing museum practices, and the relationship between home schoolers and learning within a museum setting. A thorough literature review reveals almost no equivalent research in a Canadian, and specifically, a British Columbian context.

The purpose of this research study was to gain insight into how home educators are currently using museums to support their home learners' education, and how museums can better support the learning and personal goals of home learners and home educators in British Columbia (B.C.). Specifically:

1. How are home learners and home educators using resources offered at museums?
2. Given the highly individualized nature of home learning, what are these home educators looking for from museums?
3. Do home educators believe that their personal and learning goals for their home learners are being fulfilled?

This research is relevant in a field in which there is growing interest in the role of museums in learning. According to the British Columbia Ministry of Education (2013), the number of individuals engaging in home learning has been steadily rising in British Columbia, particularly since 2001. This increase results in a potentially new market for museums. However, programming needs to be appropriately developed and administered in order for them to be monetarily and pedagogically beneficial. Understanding how home educators and home learners are currently using museums and what they want from future programming is an opportunity to help develop relevant programming and learning options for these underserved communities in British Columbia.

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 5–21.

Home Learners and Learning in Out-of-School Settings

Home learning has been a growing movement in British Columbia and the rest of North America (Martin-Chang, Gould, & Meuse, 2011). Home educators (usually the parents) take responsibility for teaching their children at home or outside the formal education system (Musco, 2011; Basham, Herrifield, & Hepburn, 2007). Learning can exist within the home, at museums, outside, while traveling, and at other venues (Adams, 2005). In the 2012/2013 school year, there were over 31,000 individuals enrolled either in distributed learning or home schooling in British Columbia[2] (British Columbia Ministry of Education, 2013).

Parents wishing to pursue learning outside of a traditional K-12 school setting in British Columbia have two options. The Distributed Learning program is administered by the British Columbia Ministry of Education. These students are enrolled in a public or private distributed learning school and meet the B.C. curriculum Prescribed Learning Outcomes (PLOs) from home or abroad. Learning is supervised by a certified B.C. teacher and students are expected to complete the same examinations as students learning in school (SelfDesign Learning Community, n.d.; British Columbia Ministry of Education, n.d.). Alternatively, parents take full responsibility for their child's education. They are not required to meet provincial standards but students do have the option to complete provincial exams (British Columbia Ministry of Education, n.d.).

Home schoolers come from a variety of ethnic, religious, cultural, educational, and economic backgrounds (Arai, 2000; Adams, 2005). The reasons for parents deciding to home school their children are diverse (Angelis, 2008). For example, parents may look for a more spiritual focus to their child's education, want to support their child's special needs, or feel dissatisfied with the formal K-12 education system (van Galen, 1988; Arai, 2000). Others believe that education should consider a child's innate interest in learning as well as their individual learning style (van Galen, 1988). Regardless of the motivation to engage in home learning, opportunities are often developed for student-led, intrinsically motivated and more in-depth inquiry that builds on their personal and previous knowledge. Characteristically, learning is flexible, multidisciplinary and interdisciplinary; subjects are often presented and explored in context, rather than as separate subjects (Adams, 2005).

There are many provincial and regional groups that support home learning in British Columbia. Some of these groups provide a physical space or field trips for home learners to learn in a social setting. There are also networks of home learners that span across the globe, facilitated by the development of the internet, handheld devices, and other technological innovations (Basham, Herrifield, & Hepburn, 2007). Students and parents can contact professionals to gain technical expertise, as well as other home learning families to share experiences, tips, and resources.

Museums can be well adapted to home learner audiences because they often share similar values and perspectives on education such as nurturing an individual's intrinsic desire to learn and providing a free choice and non-evaluative environment

(Tran, 2007). Both also place importance on building on one's prior knowledge (Adams, 2005; Falk & Dierking, 2000; Anderson, Storksdieck, & Spock, 2007); scaffolding (supporting a student's learning through guided steps that are gradually removed until the student becomes self-sufficient); and the social interactions that occur in the learning process (Adams, 2005).

Despite this, preliminary research from this study suggests a disconnect between home educators and museums. Perhaps this is why the kinds of programming that Adams (2005) identified as being popular for the home learners that she surveyed (classes allied to special exhibitions – 30%, docent led tours – 26%, home school days – 25%) were not in line with the types of programs that were being offered by the institutions in her study (docent led tours – 48%, classes allied to State Curriculum – 19%, classes allied to special exhibitions – 16%). There appears to be very little evidence that museums connect with home educators to understand what their preferences and needs are from a museum programming perspective. However, it seems reasonable that improved communication can result in museums more effectively meeting the needs of home educators; thus, the motivation for this study.

Availability of Programs for Home Learning Families at British Columbia Museums

A review of twenty museum websites in British Columbia revealed that K-12 programming was available at all the organizations. However, only five specifically make reference to home learners on their websites. Interestingly, at least three of the organizations consider curricular connections when designing home learner programs, although it is uncertain as to whether this is a time or cost-saving effort (it is easier to convert already existing programs) or if it was intended to be able to meet the curriculum requirements of distributed learning students.

There are a few possible reasons why home learner programming can pose a challenge for museums and museum educators. For example, these programs can be difficult to administer. With K-12 schools, one teacher or school administrator registers a class of thirty students. However, with dedicated home learner programs, there are multiple people registering for the same workshop. The increased time handling logistical details reduces the profitability of the program. There is also no guarantee that the minimum required number of students for the workshop is met. Institutions that rely on group and general admissions for funding may not be financially secure enough to provide programs that are not guaranteed to be profitable.

For museum educators, they may have little or no understanding of what experiences and abilities students come with (Adams, 2005). Home learners are often used to individualized attention (Farris & Woodruff, 2000) and may not be as familiar with learning in a group setting. Grouping home learners by age becomes no longer relevant; however, if students are grouped by ability, then differences in maturity may present a challenge for educators. Within K-12 school groups, parents

act as chaperones and may have students in their groups who are not their children. Chaperones may be involved in the workshop, but the museum educator is in charge of the program. By comparison, home educators are more involved and may insert themselves into programming, changing the group dynamics. Balancing the needs and goals of parents with the needs and goals of children may be unfamiliar for museum educators. Also affecting the dynamic of the class are siblings, including babies and toddlers, who accompany participants (Adams, 2005).

Despite all of these challenges, providing resources and programs for home learners can be rewarding, as it allows opportunities for new ways of learning and teaching and can create long-term and loyal visitors. The first step in narrowing the gap between what home educators are looking for and what museums are offering is to create a venue for communication between museums and home educators. This study begins this process by looking at how home educators currently use museums and how learning and personal goals can be enhanced through museum visits. Future research should examine how to strengthen the relationship and communication between home learners, home educators, museum educators, and museums.

METHODOLOGY

An online survey methodology was employed to answer the research questions and gain an understanding of the perceptions of museums as a resource for home educators and home learners. The survey relied heavily on open-ended responses from home educators and permitted qualitative description about the beliefs, attitudes, and values of museums as a resource for home learners.

Survey data were analyzed qualitatively for emerging themes. In this way, the study could be characterized as a variety of phenomenography (Marton, 1986, 1981) that investigated the qualitatively different ways in which parents experience or think about museums as resources for home education. Results were also described quantitatively. A full quantitative analysis was not conducted. As the aim of home learning is to provide individualized learning opportunities, thus trying to create generalizations through quantitative research was meaningless for this situation.

Research Design

Data for this research was collected using an online survey platform, *FluidSurveys*. Surveys were chosen because they are able to obtain information from a larger sample size and are economical in both time and resources as compared to other data collection methods such as face-to-face interviews (MECHanisms, n.d.).

The survey in this study used a combination of multiple choice, Likert scale, semi open-ended, and fully open-ended questions. In some cases, participants were asked to answer a close-ended question followed by an open-ended rationale to triangulate and/or provide more explanation for an answer. Participants were recruited through

snowball sampling. Snowball sampling is "when the researcher accesses informants through contact information that is provided by other informants" (Noy, 2008, p. 330). Noy (2008) also suggests that snowball sampling is an effective method for obtaining information from "hidden" or less accessible populations. This is applicable to home educators because they are often well connected within their own networks. However, these networks are dynamic and fluid, making it potentially difficult for an 'outsider' to get in contact with large numbers of home educators. Organizers of over 100 home learner networks were sent the survey link and asked to distribute it to their communities. Going through networks respected the confidentiality and anonymity of respondents.

While surveys are appropriate for the bounds of this study, there are some inherent biases and disadvantages that are associated with them. These can be delineated into three categories: 1) sample biases, 2) design biases, and 3) interpretation biases. Sample biases may occur when the individuals being surveyed are not representative of the entire population (Stat Trek, n.d.). For example, people who are more likely to answer an online survey are those who have easy access to computers and the internet. Because online surveys are voluntary, this may lend itself to individuals who have strong opinions and perhaps less to those whose opinions fall in the middle ground. Design biases include leading questions (implying that a certain answer is right or wrong), double-barrelled questions (two questions in one query), and uncommon or confusing language (Choi & Pak, 2005). Care needs to be taken to ensure that wording is clear and consistent. For Likert scales, the same number of categories should be presented for each question and the name of the categories should appear in the same position (e.g., 'strongly agree' should stay on the right or left for all questions). Interpretation biases include subconscious or conscious lenses through which the researcher views the subject area. The survey used in this study was reviewed by six external sources including two museum educators, two university professors, one home learner, and one home educator to ensure that the questions were clear and to minimize biases that could affect responses.

Data Analysis

Conventional content analysis and emergent theme analysis is appropriate when describing phenomena in a field where there is limited literature or existing knowledge, which is the case with home learning in British Columbia (Hsieh & Shannon, 2005; Strauss & Corbin, 1998). Themes and codes were identified and subdivided as necessary, and networks and connections between these themes and subdivisions were identified among participants' survey responses. Although the author was aware of her pre-conceived ideas working with home learning families based on her previous experiences, not using a pre-conceived coding scheme allowed more flexibility in identifying unexpected results (Hsieh & Shannon, 2005).

RESULTS

Demographics of Participants

The online survey used in this study was open from April 20, 2013 until May 22, 2013. During this time, 112 home educator respondents recorded answers in the online survey. While 53% of the respondents lived in the Metro Vancouver area, there were also respondents who represented the Vancouver Island/ Southwest Islands, Kootenay, Thompson/Okanagan, and Cariboo regions of British Columbia. 98% of respondents self-identified as parents of home learners and 69% of respondents had two or more students involved in home learning. Students were a variety of ages (Figure 1). Additionally, 67% of respondents claimed to follow the guidelines and curriculum set out by the BC Ministry of Education.

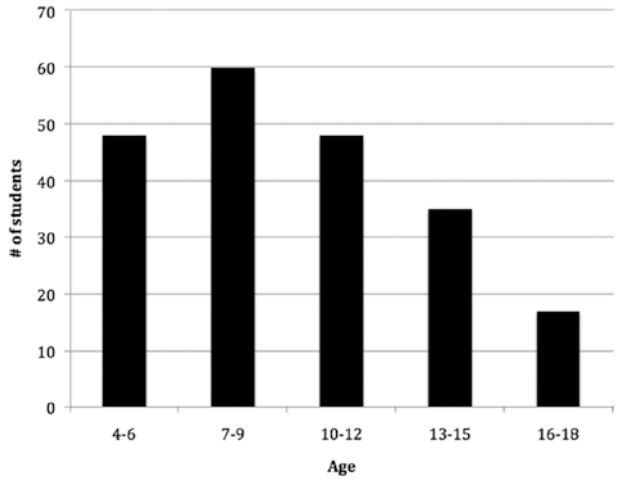

Figure 1. Ages of home learners; n=108. Note that multiple answers were permitted

Museums Were Relevant to Home Educators and Home Learners

The majority of respondents took advantage of going to museums (92%). Inaccessibility and perceived lack of usefulness or lack of appropriateness of programming appeared to be barriers to those who did not use museums. In this study, 76% of families visited a museum more than three times a year, spending an average of one to three hours (77%) per visit. The top four reasons that respondents identified as being important motivations for going to museums included having their home learners: learn/see something new (83%); learn/see something that supplemented their learning objectives (66%); gain access to materials and concepts

that were otherwise inaccessible (54%); and attend programming with other students (47%) (Figure 2). In this survey, 95% of respondents' families took advantage of educational programming. These learning-centred motivations are supported by respondents' belief that museums were generally seen to be good places for students to learn.

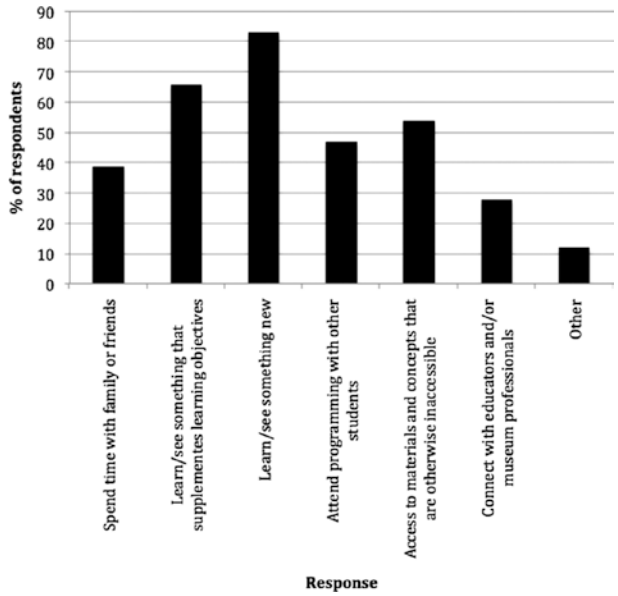

Figure 2. Motivations for going to museums as identified by home educators; n=94. Note that multiple responses were permitted

For many home learning families, their trip to the museum was integrated into discussions and learning both prior and following their visit. This allowed them to explore concepts in detail and integrate them into their personal lives. In this survey, 65% of respondents engaged in pre-visit activities and 85% of respondents engaged in post-visit activities. One respondent stated that:

> Post-visit conversations and reflections are extremely important for us. We do this as a family, and with friends we may have done the visit or workshop with. We research questions that (hopefully) came up as a result of the visit.

As it appears that these activities are important to home educators, this could be a potential area of growth for museums. One opportunity could be to improve museum websites and online resources, as 52% of respondents mentioned their use of these resources when asked about how they engage in pre- and post-visit activities.

Improvements Could Be Made in the Attitudes and Understanding That Museum Educators and Institutions Had Towards Home

One of the challenges of being part of the home learning community is that non-home learners often do not have a good understanding of their unique learning interests and needs. One parent stated that, "most people who talk about home schooling have no idea what it really means. They think about school. It's not a school – home learning is an individually directed process / experience based learning." In some cases, home educators reported that their children were made to feel unwelcome, even being chastised by museum staff before doing anything wrong. One home educator commented:

> One of my sons feels strongly that museum staff often discriminate against young people in their facilities… sometimes security people or staff will rudely ask a young person to step away from something, or will tell them "not to touch" when they weren't touching, nor were they making any move to do so.

Home Educators Were Looking for Appropriate Educators and Programming

Home educators in this survey were looking for hands-on, experiential, in-depth, interactive, and diverse opportunities. They wanted their children to create meaningful connections with others and with concepts that were relevant to their lives. They were most interested in special interest workshops not related to the B.C. curriculum or special exhibits (79%), classes related to special exhibits in the museum (73%), and guided tours (58%) (Figure 3). Classes aligned with the B.C. curriculum were less popular (37%), which was not surprising given that many of the respondents felt that current home learner programs were too tied to mainstream curriculum.

Some respondents were frustrated with the stagnant nature of offered programming; they were looking for new ways to keep their home learner(s) engaged, rather than repeating the same program every year. Providing programming that is not appropriate can actually hurt an organization, as "word of mouth is very important" and a bad experience can have a ripple effect. As one parent stated about one organization's program, "they [a B.C. organization] have a reputation of being dumbed down and a waste of money so I've never sent my kids."

Museum educators were also believed to be an integral part of good programming. Home educators felt that museum educators therefore need to acknowledge the diversity and individuality of the home learners in the group. In addition, they need to be flexible, knowledgeable, responsive, engaging, and willing to allow a conversation to go in a direction that was not originally intended. As one respondent noted, museums need to "work at finding a good fit of program leader. Someone who isn't just about classroom management… Find someone who is ok with kids who ask questions and wants to engage."

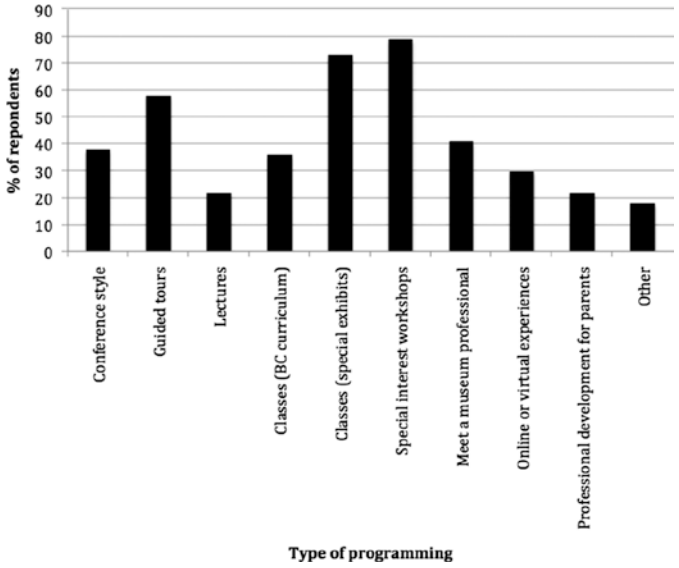

Figure 3. Preferred educational programming; n=96.
Note that multiple responses were permitted

Home Educators Value Community Building Efforts

There is a common misconception that home learning families live and learn in isolation. However, as one parent articulated:

> We are not isolated and we "review" what's offered to us all the time on our private email lists. So it [*sic*] word of mouth is very important in these situations an[d] if a museum wants to create more daytime traffic then its [*sic*] important that we are listened to and our opinions are sought rather than ignored.

This home educator goes on to say that "they [a Vancouver museum] have created home school programming but not worked with the community at all and are not interested in feedback about how boring and below level their programming is." In contrast, another home educator suggested that an organization adapt a regular K-12 program for a multi-age home learner audience, and felt that her input was well received. She stated:

> They did an amazing job of organizing that and my kids have attended those programs for the past few years. These programs are very popular with home schoolers and myself as there's "no group to organize!" and the kids still get to hang out with their peers instead of strangers or be inserted into a group of classroom kids.

Organization Logistics Had an Impact on the Experience

Logistical issues were commonly identified as having an impact on if and how home educators used museums and museum resources to support their home learners' education. These included:

a. *Time of day*: Many home learners participate in activities such as dance or music lessons. These programs tend to be offered in the afternoons and on weekends. Consequently, in order to attend these activities, home educators felt that museum programming needed to be during 'regular' school day hours. One parent stated, "home schoolers will travel to get to you, but need to be able to return to their "home turf" in time for after school activities, which typically start at 3:30pm."
b. *Number of students:* Individualized learning is a priority for many home educators. They were looking for low instructor to student ratios and class sizes of less than 20 students.
c. *Multiple ages allowed in programs:* In this study, 69% of home educators had two or more home learners. Because many home learners function as cohesive units, there was a demand for either multi-age workshops, or multiple workshops for different age levels running concurrently. As one home educator described, "Program's *[sic]* need to be geared for multiple age groups attending at one time. The whole concept of home schooling is to have your family together. Sometimes younger siblings are not welcome to attend." Some parents also expressed that there were not enough programs geared for the tween to teen crowd. However, too big of an age spread was considered detrimental for older home learners.
d. *Cost:* Cost was a limiting factor as to whether home learners were able to participate in organized educational programming at museums, as some families were single income households.
e. *Accessing educational programs:* Some home educators experienced challenges with accessing educational programs at museums. In order to book a school program, home learners have to pretend to be a school group (e.g. organize enough students to meet minimum numbers requirements); a potentially challenging task for home educators given their loose networks. However, some museums were applauded for having 'home learner only' days, where individuals could sign up for programming that would normally only be available to school students. Families who lived far from museums looked for online or virtual experiences that related to in-house and external exhibits.

DISCUSSION & RECOMMENDATIONS

As is evident from the results of this study, museums are generally seen as a good opportunity for learning; however, there are many obstacles that home educators face. This section provides recommendations for future practices for both museum educators and institutions, with the goal of being able to better support the learning and personal goals of home learning families in British Columbia. These

suggestions attempt to address five major themes that arose from this survey on instructor and museum understandings of home learning, communication and community building, teaching style, logistics, and program content. Some of the suggestions are intentionally open-ended since there is no 'one size fits all' solution or 'best practices'[3] to providing educational programming for home learners. The challenge is to find what works for each educator and each museum in their specific situation.

For Museum Educators

Get to know your audience. For any program, it is always useful to understand who the audience is. What is their experience with the topic? What are they most interested in? Students may be different ages and at different ability levels. It is important to take advantage of the time prior to the workshop while students are coming in to ask their names, ages, and the one thing that interests them the most about that day's topic. This enables the educator to make a quick assessment of the level and needs of the group and adapt accordingly.

From the survey responses from this study, many home learning families appreciate the effort that museum educators and museums make in maintaining a positive relationship with both home learners and home educators. A strong relationship is beneficial for museum educators as it allows them to adapt more appropriately to the audience and can help with classroom management.

Allow room for student-directed learning. Numerous academics and practitioners have explored the benefits and challenges of student-directed learning (e.g., McIntosh, n.d.; May, 2013; Wright, 2013; Barron, 1998). Students take responsibility and become aware of their own learning process (Barron, 1998). As a result, they are more engaged, empowered, and self-motivated to explore specific ideas or topics that interest them. Museum educators need to be receptive, flexible, and creative, listening to both verbal and non-verbal feedback. They also need to be willing to follow the natural progression of conversations, while ensuring that it links back to the original topic (McIntosh, n.d.).

Because home educators mentioned that they are looking for non-standardized, flexible programming, this opens up the possibility of more experimental and interdisciplinary options. For example, one interesting project from London had a group of twelve students aged 9–11 work with the Wallace Collection to develop a family-focused exhibit. They were responsible for selecting the exhibit theme, choosing artefacts to be showcased, designing the exhibit space and interpretative tours, and promoting their work (Simon, 2010). Although this was a large project, there are components that could be used in short-term museum programming. For example, home learners could be offered a few activities from which they choose to pursue or chances for home learners to become the 'experts'. Museum educators should also consider multi-disciplinary approaches, such as how arts-based

approaches could be incorporated into science workshops and how science could be used to pursue issues of social justice.

Find ways to connect programming to everyday life. Information that relates to a child's lived experience is more likely to be remembered. Home learners love being able to share their experiences and can be more willing to be engaged and excited if they can find a way to relate the concepts to their own lives. Museum educators should also provide suggestions of ways that knowledge can be applied after they leave the workshop.

For Museums

Seek and incorporate feedback. Being open to feedback and changes provides better programming for home learners and shows that the organization is interested in meeting the needs of their visitors. For example, museums can seek feedback through surveys or questionnaires at the end of each workshop or session. What works? What needs improvement? How are they hearing about the program(s)? Museum can also look at trends in their attendance and demographics. Are home educators and home learners returning year after year? If not, why? How far are they willing to travel to come to the program? How does this reflect on the perceived quality of the program and advertising?

Based on the results of this survey, museums should consider factors such as the time of day (Monday to Friday, during the day), the cost (low or group rate), the number and ages of students (under 20), program topics (varied, not stagnant), and advertising (easy to use website with options clearly laid out). Many parents also wanted multi-age programming; however, there is an apparent contradiction between the request for multi-age groups and the teens and tweens who do not want to be 'stuck' with little kids. One recommendation is to offer more than one program at the same time for different age groups. This allows parents to make one visit while allowing multiple children to have similar experiences. Other interesting ideas from the survey included: conference style home learner days, where students get to choose from a variety of workshops based on their interest level; Coursera-style online workshops; programs using or about emerging technologies; and 'meet and greets' for parents to get to know museum professionals.

Find ways to extend the museum experience past the visit. Many home educators expressed that visits to museums were often coupled with further investigation either before or after the visit. Numerous studies have corroborated this idea, noting that both pre- and post-visit activities enhance the experiences that learners have at museums (e.g., Falk & Dierking, 2000; Anderson et al., 2006; Coughlin, 2010). Anderson et al. (2006) notes that pre-visit activities can help provide context for on-site activities, and that post-visit activities "strengthen new connections and give context for future experiences" (p. 366). Providing pre- and post-visit resources can

also extend the contact and relationship that home learning families have with the museum.

Take advantage of modes of communication that already exist. A simple Internet search of 'home learner networks in British Columbia' revealed over a hundred online groups using social media platforms such as Yahoo Groups and Facebook. If this is how home educators are currently communicating, then contacting these online communities could be an efficient means for promoting educational programming including pre- and post-visit activities and other resources. One parent supports this idea, stating:

> One thing that may be helpful is to inform/promote with the support group (via email). The message can be 'forwarded' to the group membership, and the families are then informed of what is available and make their own choices.

Encourage understanding of home learning within institutions. How can museums develop programs for an audience that they don't understand very well? Understanding and embracing diversity within the home learning community will hopefully create a more welcoming learning environment for home educators and home learners. In the long run, this can prevent situations where they feel unwelcome in museums, as previously described.

Develop a structure that rewards long-term relationships. Having a longer-term and positive relationship with home educators can be highly beneficial. However, creating long-term relationships can be challenging if programs are one-time events. One recommendation is to develop a model that keeps home educators and learners coming back. For example, museums could have a series of workshops that happen at the same time each month. Museums could also provide monetary incentives such as discounts for home educators who sign up for all the workshops at the start, for signing up more than one student, or for recommending the program to other participants. Having a longer-term structure is mutually beneficial as it provides more stability for the home learner (e.g., a guarantee that the program will not be cancelled and a better relationship with the museum educator leads to more fluid learning) and for the museum (e.g., less administrative time since repeat attendees can be handled in one transaction and a confirmation that minimum numbers are met from month to month).

Create meaningful relationships with home learning communities and other museums. One way to bridge the gap between home educators and museums would be to create a forum for sharing ideas. When asked if they would like to be involved with designing programming for home learners at their local museum, 63% of respondents answered 'yes' or 'maybe'. From this survey, community building is incredibly important for home educators. Home educators work through word of

mouth and make recommendations on how they feel that they have been treated. It is important to build relationships with the students and with the parents; however, this is not a fast process! Like all relationships, they need to be nurtured over time.

Museums should also consider collaborating with other organizations; find out what successes and challenges that they have encountered and learn from them. Collaborations could also include ensuring that home learner programming does not occur at the same time at different museums and cross promoting other museums' opportunities for home learners. For example, three museums in Ashville, North Carolina, collaborated and coordinated their home school programs to avoid overlap so students could attend all of them if they wanted (Adams, 2005). One parent enthusiastically suggested, "programming that involves multiple museums (this would be SO GREAT!)."

CONCLUSION

Home learning is a growing movement in British Columbia. This provides a new opportunity for museums to reach individuals and communities that have not been effectively served by museums in the past. Home learning families are highly diverse who engage in home learning for various reasons. Home learners are often self-motivated and used to individualized attention. For many families, using museums is an integral part of their learning process. Museums are seen as resources (both in-house and online) that help to supplement their learning goals and to initiate further discovery.

From the available literature, a search of available programs in B.C. museums, and the results of this study, it appears that there is a gap between what is being offered and what home educators are looking for. While some institutions do provide educational programming specifically for home learners, it is not necessarily well suited to the needs and interests of the intended audience. Perhaps one of the biggest challenges for home educators is that the reasons why and how they engage in home learning are not well understood by those outside of their communities. In many ways, this individualized, self-motivated, and often inquiry-based learning style is so different from the more regimented, learning outcome-based model of traditional K-12 schools that museums are used to accommodating. The challenge, therefore, is for museums to step away from the traditional school model towards something that is more flexible, innovative, and responsive to both the learners and parents. Research done by Kreps (2009) and the results of this study suggest that museums should look towards partnerships with communities and other stakeholders in an effort to engage in new models of practice.

This study is the first step in actively incorporating home educators' perspectives and feedback into educational programming offered by museums. Future research should consider a more in-depth look into the motivations for using museums as places for learning by home learner families, how to encourage inquiry and new forms of engagement in museums, how to more effectively build relationships with

home learner communities, and how to incorporate collaborative teaching between museum and home educators. Despite the challenges that this flexible model can pose, providing resources and programs for home learners can be a highly rewarding process that creates meaningful and long-term relationships with home learning families.

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NOTES

[1] In British Columbia, there is a distinction between the term 'home learners' (individuals who engage in the Distributed Learning model which follows the B.C. curriculum) and 'home schoolers' (individuals who do not follow any aspect of the B.C. curriculum). The majority of individuals who engage in non-traditional learning follow Distributed Learning in B.C., so the term 'home learners' was chosen for the purposes of this chapter. However, much literature still uses the term 'home schoolers', and therefore this paper keeps this terminology where it is used to maintain the original writers' integrity.

[2] Operationally, museums do not make a distinction for programs designed for distributed learners and traditional home schoolers; consequently, for this paper, all students participating in out of school learning are collectively referred to as 'home learners'.

[3] Arguably, there is no 'best practices' in education because, using the lens of social constructivism, each individual learns and creates meaning differently based of their unique set of prior experiences.

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2. ON OUR OWN

Family Experiences in Art Museums Outside of Facilitated Programming

INTRODUCTION

Art museums, in support of their various educational missions, attempt to guide the choices their visitors make (Carliner, 2001; Peponis, Dalton, Wineman, & Dalton, 2004; Vallance, 2003). Ultimately, however, visitors "make their own choices of where to go, what to ignore, how long to stay in any given exhibit, and what to do when exploring the objects and installations" (Vallance, 2003, p. 9). Past research suggests that up to 90% of art museum visitors choose not to participate in available, structured educational programming including, but not limited to, docent tours, lectures and studio workshops (Eisner & Dobbs, 1988; Vallance, 2003). Outside of visitor choice, it is very difficult for art museums to make programming available for all visitors at all times (Vallance, 2003, p. 10). It is therefore evident that a gap exists, both between "what visitors need and what museums provide", and in the literature surrounding the support of such "wanderers" who do not participate in structured programming (Eisner & Dobbs, 1988, p. 14).

This research study works to expand upon previous research conducted by Jennifer Hall at the Vancouver Art Gallery. Commissioned by the Vancouver Art Gallery, this previous study succeeded in identifying critical issues and parental opinions surrounding facilitated family programming. Hall's (2013) study, which focused on the art museum experience of twenty-four parent visitors, confirmed the need for additional institutional support for family learning outside of structured programming.

Therefore, in continuation of previous work, the purpose of this research study is to develop an understanding of how art museums can better support parents in the facilitation of their children's learning outside of structured, institutional programming. Through the use of in-person surveys, this study addressed the following questions:

1. Outside of structured programming, how do families experience the Vancouver Art Gallery?
2. What resources are families looking for to support their unfacilitated visits to the Vancouver Art Gallery and art museums in general?

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 23–42.

A thorough review of relevant literature has revealed a surprising lack of academic understanding regarding family learning in art museums, especially outside of structured programming. Therefore, this study is uniquely poised to both contribute to the academic discourse and support a specific community by working to provide art museums with practical and statistically relevant data regarding educational resources.

LITERATURE REVIEW

Facilitated Programming

Art museums often provide organized and facilitated programming for visitors. Vallance (2003) referred to such offerings, in addition to their creators, as "visible teachers" (p. 11). These visible teachers include tours, workshops, lectures, curators, docents, educational professionals, and visitor service employees. As experts in the content, pedagogical practices, museums' offerings, or all of the above, these visible teachers provide valuable resources to museum visitors. Art museum educators, in particular, have an understanding of the displayed artworks and the pedagogical practices involved in helping others to develop a similar understanding (Bevan & Xanthoudaki, 2008; Castle, 2006; Grenier, 2011; Tran & King, 2007). As such, they "serve as a kind of bridge or translator between the art and the public" (Vallance, 1994, p. 237).

Past research indicates that approximately 90% of art museum visitors do not participate in pre-organized, structured, or facilitated programming (Eisner & Dobbs, 1988; Vallance, 2003). In examining visitor trends, Eisner and Dobbs (1988) determined that "over ninety percent of [visitors] come on their own and visit galleries unaccompanied by docents, lecturers, or by group leaders" (p. 7). This statistic is extremely important to appreciate given museums' educative missions. Indeed, the authors expanded:

> They not only come on their own, they tour on their own, and the extent to which they are able to experience the works on display depends on the particular works they encounter, the backgrounds they possess, and what the museum does to provide assistance. (Eisner & Dobbs, 1988, p. 7)

Contributing to Eisner and Dobbs' (1988) astounding 90% statistic are visitors who choose against participating, as well as those who happen to visit at a time when programming is not offered. Acknowledging that "there simply cannot be programs available at every minute of every day, no audio tour covers every object, and few if any art museums provide extended labels on every object", Vallance (2003, p. 10) looked instead to unfacilitated educational resources.

Vallance (2003) coined the term "invisible teachers", defined as "written interpretive materials provided with the art – on labels, gallery sheets, wall texts, family games, and other materials", in addition to audio tours, videos, and

interactive displays (p. 11). Similarly, Eisner and Dobbs' (1988) research led them to place extreme importance on educational opportunities provided outside of structured programming. These resources were referred to by Eisner and Dobbs (1988) as the silent pedagogy: "The use of non-spoken information that provides museum visitors with cues for perceiving, thinking about, and appreciating works of art" (p. 7).

Labels in Art Museums

Considering the aforementioned "invisible teachers" and "silent pedagogy", a great deal of importance is placed on the most prevalent art museum resource – labels. So prevalent are they that Vallance (2003) stated, "Art museums tend to display two types of objects: artworks and labels" (p. 12). Compared to other types of museums, art museums, in particular, rely heavily on wall text and extended labels to create contextual settings for objects (Vallance, 2003, p. 13).

Eisner and Dobbs (1988) surveyed twenty-seven art museums for the purpose of observing how learning is supported outside of structured programming. The majority of their more negative findings surrounded the museums' use of labels: "The most telling comment we can make about signage in the art museums we studied is its scarcity" (Eisner & Dobbs, 1988, p. 13). Of the investigated museums, the majority rarely provided more than what are called "tombstone" labels – labels with minimal information including the artist's name, the title and medium of the work, and when it was created (Eisner & Dobbs, 1988, p. 13). Unfortunately, even when museums did provide extended labels, they were "factually dense" and utilized technical language and artistic terminology unlikely to be recognized by the average visitor (Eisner & Dobbs, 1988, p. 14).

Eisner and Dobbs (1988) painted a picture of art museums that is not unfamiliar to most visitors. Indeed, Bitgood (1990) goes as far as to say, "It could be argued that since the beginning of museums, exhibit labels have been used as instruments for torture on helpless visitors" (p. 115).

Challenges in Supporting Wanderers

Art museum visitors are indirectly or expressly expected to facilitate their own learning experience through the use of labels and other "invisible teachers" (Ash, 2004; Eisner & Dobbs, 1988; Knutson & Crowley, 2009; Sanford, 2010). However, museum educators, when creating such "invisible teachers", face the obstacle of knowing very little about their "students" on any given day (Vallance, 2003, p. 10). Without any background information about visitors' past learning experiences or comfort levels in museums, educators are challenged with creating engaging, educational resources that are meant to be self-facilitated, and are therefore impossible to customize for each visitor or group (Ash, 2004; Burnham & Kai-Kee, 2005; Vallance, 1994).

Whether or not a visitor is successful in achieving an aesthetic or educational experience, outside of facilitated programming, depends on many factors over which an educator has little control (Anderson, Piscitelli, Weier, Everett, & Taylor, 2002; Grenier, 2011; Vallance 2003). These elements include: "Visitors' prior knowledge, subject or stylistic preferences, emotional connections, available time, distractions, and the setting in which the museum has placed the object" (Vallance, 2003, p. 8). Without obvious direction, museum visitors create their own "individualized curricular paths" which are ultimately supported exclusively by the previously mentioned "invisible teachers" or "silent pedagogy" in addition to a variety of uncontrollable personal factors (Vallance, 2003, p. 14; Eisner & Dobbs, 1988).

Lack of Existing Research

Numerous studies have been conducted regarding the unfacilitated museum visits of adults – alone or in groups (Briseño-Garzón, Anderson, & Anderson, 2007a; Burnham & Kai-Kee, 2005; Falk & Dierking, 2000; Krulick & Ritchie, 1990) – in addition to facilitated programming for school-aged children (Anderson et al., 2002; Grenier, 2011; Piscitelli & Weier, 2002; Tran, 2007; Vallance, 2004, 1988). However, there is a significant lack of research surrounding the topic of unfacilitated family visits to art museums. In comparison, as Knutson and Crowley (2009) pointed out, there currently exists considerable literature surrounding family learning in science (Ash, 2004; Briseño-Garzón & Anderson, 2002; Briseño-Garzón et al., 2007a; Dierking & Falk, 1994) and children's museums (Din, 1998; Sanford, 2010; Wolf & Wood, 2012).

To help support the development, implementation, and findings of the current study, prior research in science and children's museums has been taken into consideration, in addition to those concerning school programming in art museums.

A Unique Demographic

Family visitors, unlike other groups, share "a unique culture, knowledge, values, and experiences" (Briseño-Garzón et al., 2007a, p. 301). Indeed, as a broader group, families "behave consistently different when compared with other museum visitors such as school groups and peer groups" (Briseño-Garzón et al., 2007a, p. 301).

Within peer group visits, individuals equally contribute to social conversations that lead to individual and group meaning-making (Falk & Dierking, 2000; McManus, 1987; Packer & Ballantyne, 2005). Various perspectives, experiences, and understandings with regards to the artworks fuel this process (Burnham & Kai-Kee, 2005). The main difference between peer and family groups is that families are intergenerational groups with extremely varied levels of life experience, knowledge, and cognitive/language abilities (Ash, 2004; Briseño-Garzón et al., 2007a; Dierking & Falk, 1994; Piscitelli & Weier, 2002; Renaissance North West & NAICE, 2009; Sanford, 2010).

Within the context of a school group visit, children benefit from the expertise of their teachers or trained museum volunteers or staff members. Classroom teachers, docents, and staff have likely been trained in or possess pedagogical knowledge (Anderson, Lawson, & Mayer-Smith, 2006). Likewise, docents and staff offer extensive content knowledge regarding museum collections (Baxter & Lederman, 1999; Burnham & Kai-Kee, 2005; Castle, 2006; Gess-Newsom, 1999; Grenier, 2011; Shulman, 1987; Tran, 2007). Along these lines, if parents take on the role of teacher when visiting art museums with their families, they are likely to do so without such a background.

Parents as Teachers

Wolf and Wood (2012), in a research study surrounding parental scaffolding for children's learning within a children's museum, established that in a museum setting, "parents are inherently predisposed to focus on children" (p. 34). A study considering families' uses of dioramas as learning tools in a natural history museum reached similar conclusions (Ash, 2004). Ash (2004) referred to parents as "natural and life-long teachers of their children" (p. 97). Similarly, Lakota (1975) observed that adults often assumed a leadership role when visiting a natural history museum with their family. In researching adult learning experiences during family visits to an aquarium, Briseño-Garzón et al., (2007a) explained that parents "play a crucial role as decision makers and stakeholders, and define their family's dynamics and activities" (p. 302). Likewise, in post-visit interviews, parents' responses showed that family visits "centered solely on the learning experiences of the child(ren)" (Briseño-Garzón et al., 2007a, p. 307).

Knutson and Crowley (2009) determined from their research on family interactions that parents were unsure of how to enrich their art museum experiences with their families (p. 20). In interviews, parents reported that their knowledge about art was just below average (Knutson & Crowley, 2009, p. 10). Similarly, in Hall's (2013) study, parents ranked themselves as "art novices" (p. 5). Hall (2013) also explained that the majority of interviewed parents did not have any professional connections to artistic disciplines. Vallance (1988) expanded on parental comfort stating, "Art is intimidating, and it is especially intimidating to adult citizens who have grown up knowing that they don't know much about art and that they are mystified by much of it" (p. 78).

Institutional Guidance for Parents

Piscitelli and Weier (2002) suggested that in a positive learning environment for children, the accompanying adult "knows when to stand back and listen, when to offer encouragement or guidance, and when to suggest an idea or strategy in order to facilitate children's engagement and reflection" (p. 126). Considering the precise and narrow nature of these guidelines, it is easy to understand the need for institutional

support for parents with regards to family art museum visits. Knutson and Crowley (2009) determined that parents do indeed need help teaching their children when in an art museum setting. Parents who were interviewed and observed on their family visits expressed that they felt "ill equipped to help with [their children's] learning without explicit support from the museum" (Knutson & Crowley, 2009, p. 10). In considering past research and interview results, Hall (2013) stated:

> This data sternly suggests that there are parents and children who are interested in learning about the historical, sociocultural and technical aspects of art. However they require family-friendly resources that support their children's transition from the more familiar experiential practices to the less familiar cognitive aspects of art interpretation. (p. 9)

Art museum visitors often facilitate their own interactions with artworks outside of structured programming, supported only by limited "invisible teachers." When visiting with their children, parents have been found to take a leadership role, but are often unprepared to fully support their children's learning without assistance from the museum.

METHODS

The Vancouver Art Gallery does not feature a consistent permanent collection, instead showcasing approximately four temporary exhibitions at any given time. Typical of many art galleries, the VAG features tombstone labels for the majority of displayed works, supplemented by occasional extended labels and wall charts. The researcher observed many examples of high-level vocabulary in the text labels (for example: juxtaposition). The gallery space is generally quiet and subdued – an environment that is more welcoming to adults than children. Family programming is limited to Sundays, when children under 12 receive free admission. On Sundays, the gallery offers two types of structured, family-oriented programming: in-gallery exploration, and an art-making workshop.

Paper and pencil questionnaire administered *in situ* were chosen as the best way to survey the extremely diverse family group demographic. While other demographics of museum visitors may have extensive similarities, the one linking factor amongst family groups is that they include both adults and children. Beyond that point, families may differ in religion, size, political affiliation, parenting practices, value systems, and in many other areas. While the use of interviews might have procured a more in-depth view of family visitors' needs, questionnaires allowed for an efficient gathering of general information and trends from such a diverse group.

In keeping with the research questions that drove the investigation, a specially designed questionnaire was developed in order gain an understanding about parent visitors' experiences at art galleries, and also to understand their aspirational needs and preferences in support of the quality of their family groups' museum

experiences. Questionnaire items were clustered around two major themes: (a) the art gallery experience of a parent, including issues of comfort and family roles; and (b) preference of learning materials (educational resources) to support their families' gallery experiences, including delivery method, content, and goals. During development, each survey question was edited for readability in order to avoid confusing or leading information. The questionnaire as a whole received input and editorial advice from university researchers, museum educators, non-museum educators, and colleagues with surveying experience.

The participants selected for surveys in this study were included based on their familial status: at least one adult and one child under the perceived age of 12 visiting the Vancouver Art Gallery together. The primary participants were the adult member(s) of each family.

Survey Distribution Process

The researcher approached family visitors of the Vancouver Art Gallery throughout the gallery space, with the majority of surveys conducted in "The Making Place" gallery. This location, which is only open on Sundays, hosts hands-on artistic workshops aimed at families with children under the age of 12. Parents were able to complete the surveys at tables while their children were occupied with art making activities.

A total of 69 surveys were completed over a period of five weeks in the summer of 2014. The surveying of parental visitors took place exclusively on Saturdays and Sundays due to the observations and recommendations of Vancouver Art Gallery staff with regards to family visitor attendance.

Parents were asked if they would like to participate in a quick survey that would help the Vancouver Art Gallery better meet family visitors' needs. The researcher then guided parents through the consent page as well as the specific intent of the survey. Parents were also assured that they could take as much time as necessary and were encouraged to fill out the survey intermittently as they worked with their children. Surveys took approximately 15 minutes on average for parents to complete.

Data Analysis

Given that the surveys were in paper form, the data was first transcribed into spreadsheet form. Secondly, the researcher manually cleaned the data – filtering out results that were considered invalid responses for various reasons. The most common cause for the removal of an invalid response was participant error in completing questions, especially with regards to questions where only one response was permitted but respondents made multiple selections. Lastly, using a coding system based on emerging themes, the researcher manually sorted the answers to free-response questions.

FINDINGS

Demographics

Of parents who completed the survey, 33% reported that they visit biannually, 30% visit monthly, and 22% visit yearly. Only 8% were weekly visitors and 7% visit less than once a year. Surveyed families included an average of 1.8 children of an average age of 6.7 (see Figure 1 and Figure 2).

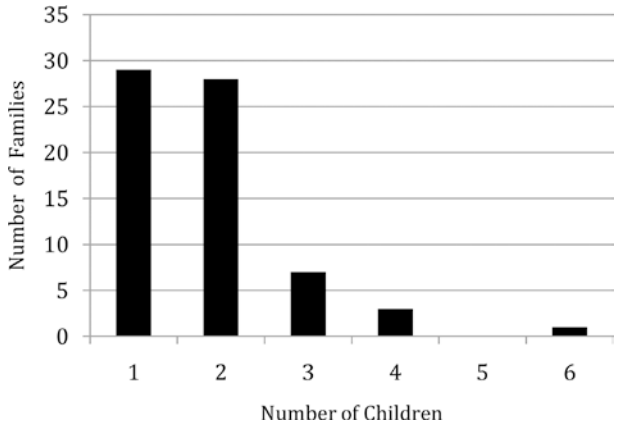

Figure 1. Number of children per family; n=68

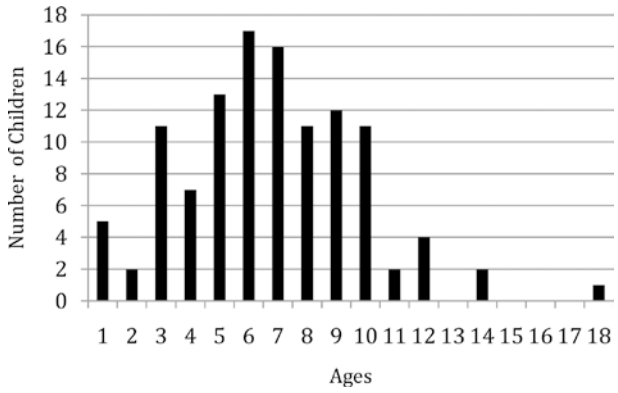

Figure 2. Ages of survey participants' children; n=66

Comfort

When asked about their role as "teachers" for their children when visiting museums, the majority of parents (59%) reported that they were comfortable with the

responsibilities of such a role. When asked what experiences contribute to their comfort level when visiting art museums, parents credited previous museum visits, past experience with art (including general exposure, taking art classes, and teaching experience), efforts of the museums to increase parental comfort, spaces for children, and past experience as a teacher in some capacity as the key defining factors.

However, in times when parents were not comfortable, their discomfort was often (45% of responses) attributed to the difficulty of keeping their children entertained. With regards to one particular uncomfortable situation – not knowing an answer to a child's question – the majority of parents encouraged their children to think about possible answers or to ask staff (81% and 54% of responses respectively).

Educational Resources

With regards to the logistics and content of educational resources, parents were, for the most part, very much in agreement. The majority of parents surveyed (63%) expressed a preference for a combination of paper and digital educational aids and resources for family learning. In comparison, 27% preferred only paper materials, while 10% of parents preferred only digital. Regarding procurement of resources, 73% of parents said they were either likely or extremely likely to "check out" a family learning supplement or game from the front desk of an art museum. This process was likened to that of checking out a book from the library, where families would give a membership card or collateral in exchange for a fully stocked educational kit to use throughout their visit.

Parents were asked to indicate how likely they are to use certain types of educational resources to supplement their family's visit to an art museum. A remarkable 92% of parents reported that they are likely or extremely likely to use family-specific areas, with 67% in the "extremely likely" category. Even the least popular option, a self-guided tour in app format, received support from 51% of parents – still a majority. This indicates a prevailing need amongst parents for educational resources to supplement their family visits. All seven options of educational resources and their popularity with families are represented in the graph below (Figure 3).

The majority of parents (77%) preferred educational resources that are specific to an exhibition over reusable resources that are applicable to various exhibitions. The majority of parents (73%) also reported that they consider it important or extremely important that learning materials are provided in multiple mediums (e.g. games, maps, self-guided tours, writing prompts, etc.) to help families engage with artworks. Similarly, 42% of parents said it is important or extremely important that educational materials consider various learning perspectives (e.g. musical, bodily, spatial, etc.).

Parents were asked to indicate the types of questions their children ask when regarding artworks. These questions, and the percentage of children who asked

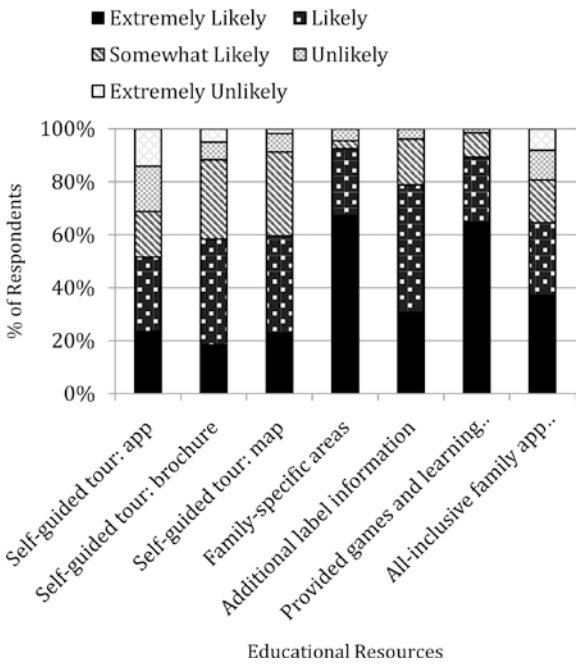

Figure 3. Likelihood that parents will utilize specific educational resources; n=52–67, varied by response

them, are reflected in the graph below (Figure 4). Surprisingly, with one exception (details depicted in/on an artwork), the majority of parents indicated that their children tended not to ask about these subjects.

Prompted with the statement: "When I'm visiting an art museum with my family, I wish I knew more about…", parents responded with: available museum programming, how to engage children with art, and background information on the exhibition (artist, techniques, historical/social context, curators' choices, media of art). In addition, an astounding 97% of parents said that they would be interested in materials that, while directed at engaging children, also provide examples of teaching ideas and styles for parents.

Family Visits

The majority of parents identified their main objectives when visiting the Vancouver Art Gallery as fostering an appreciation of art and sharing an experience as a family (72% and 54% respectively). In comparison, 39% of parents prioritized participating in engaging activities, while only 20% focused on learning about art history.

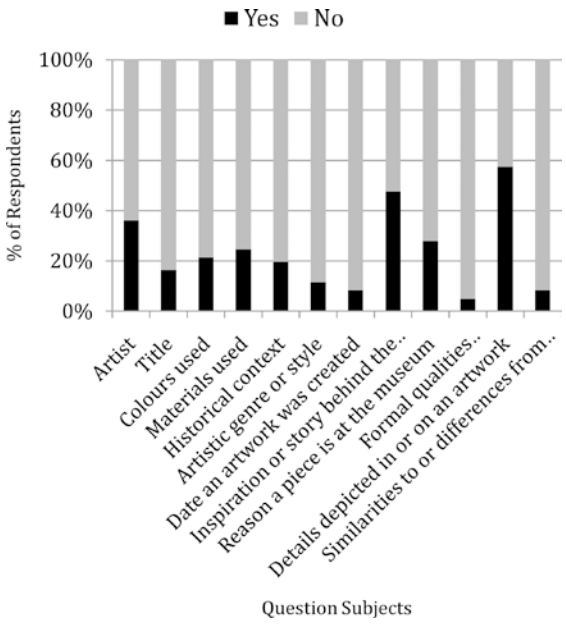

Figure 4. Subjects about which children ask their parents; n=61

Once at the museum, 67% of parents said it was important or extremely important that their children had an opportunity to make art during their visits. When asked what additional resources would better aid future family visits, parents' responses included: information positioned at a lower height level, family areas, family tours, interactive elements (technology, costumes, books/videos), at-home activities (pre- and post-activities), and better publicity for available resources, programming, exhibitions, and other gallery offerings.

Similarly, when asked to give examples of successful learning experiences with children, parents identified at-home connections (pre- or post-visit), in-museum activities, unstructured museum time, interactive time/spaces, art-making activities, time spent comparing among artworks, technology-enhanced activities, and structured programs.

Lastly, parents were invited to share any additional thoughts or comments with the research team. Their suggestions were grouped into the following categories: the addition of engaging content for adults and children, increased assistance guiding children through museums, a separate Children's Art Museum, and physical changes to make museum spaces more accessible to children (stools, spaces for food, height of labels).

ELABORATION OF THE DATA

Parental Comfort

One area of surprise was regarding parental comfort in art museums. In her study *Visitor Study: Vancouver Art Gallery's Family Programming*, Hall (2013) explained that five out of the 24 parents interviewed stated "they would not go into the gallery with their children. although they see the benefit of exposing their children to an art gallery environment, they do not know how to engage their children when they are on their own" (p. 13).

Given Hall's findings that 20% of parents avoided all gallery visits outside of structured programming, it was surprising that parents in this study did not respond in a similar manner. Surveyed parents were asked the following question: When you visit the Vancouver Art Gallery with your children, what is your comfort level regarding your role as "teacher"? The majority of parents in this study identified as being comfortable (59%), with only 1% claiming that they were uncomfortable at the Vancouver Art Gallery (Figure 5).

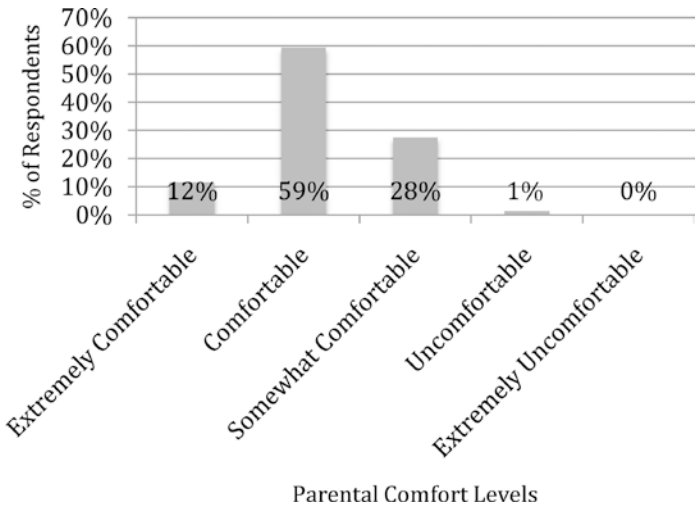

Figure 5. Parental comfort level when teaching their children in an art museum setting; n=69

These results are, however, supported by those of Knutson and Crowley (2009). While parents reported being comfortable looking at and talking about art during family visits, "the problem appeared to be that they didn't have the knowledge or tools to make their talk richer with respect to the disciplines of art and art history" (p. 20). These results would therefore still support Hall's (2013) call for additional institutional support for family visitors (p. 1).

Encountering the Unknown

Another area where the data deviated from the expected results was the way parents approached questions to which they did not know the answer (Figure 6).

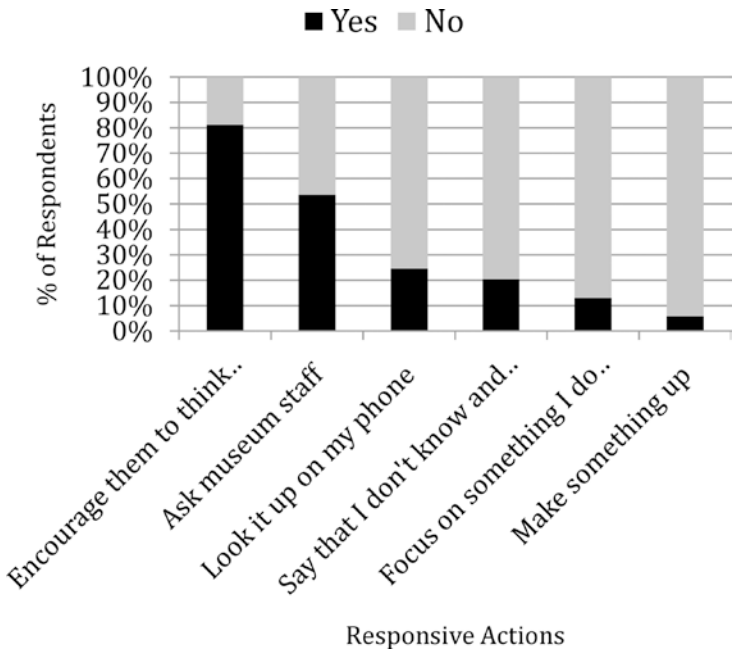

Figure 6. Actions parents take if they do not know the answer to their child's questions; n=69

The fact that only 13% of parents changed the focus to something they do know was unexpected. Previous research suggested that parents would prefer to remain within their own comfort level when interacting with their children (Briseño-Garzón, Anderson, & Anderson, 2007b). However, parents who participated in the study did not reflect this assumption.

Surprisingly, only 25% of parents said that they look up the answers to questions posed by their children on their phone or digital device. In an age where Wikipedia and Google have eliminated the need to say "I don't know", it seemed surprising that more parents do not utilize the internet when engaging with their children at art museums. A potential follow-up study could further explore whether this data point reflects a discomfort with or ignorance of the use of "smart phones", inapplicability of search engines to art-related questions from children, or even a reluctance to provide children with a "final" or "real" answer to questions in a museum context.

Children Do Not Ask Questions

Under the survey section of "Preference of Learning Materials: Content," parents were presented with the following prompt and chart (Figure 7).

Q13. My child generally asks me questions about the: (Check all that apply)

Similarities to or differences from another artwork	Artistic genre or style	Date an artwork was created
Artist	Title	Colors used
Materials used	Historical context	Inspiration or story behind the artwork
Reason a piece is at the museum	Formal qualities (line, brushwork, proportion, construction, composition, perspective, etc)	Details depicted in or on an artwork

Figure 7. Survey Question – Questions Generally Asked by Children

Unexpectedly, the majority of parents indicated that their children did not generally ask most of the included questions represented in the above questionnaire item. The most popular questions asked by children were regarding the details depicted in/on an artwork (57%), the inspiration or story behind the artwork (48%), or about the artist (36%). Considering that the listed questions are commonly included in facilitated programming in art museums, it is interesting and perhaps disconcerting to note that the children tended not to ask them of their own volition. Indeed, questions are tools that promote discussion and encourage observation, specifically within the context of group visitors, as they support the social nature of museum visits (Bitgood, 1990, p. 119). As such, parents can contribute to their family learning experiences by involving their children in conversations through questions. Therefore, it is vitally important for art museums to support parents in encouraging questions when visiting with their children.

Disconnect between Interests of Parents and Children

It is interesting to note that the survey data presented a disconnect between the expressed learning desires of parents and the types of questions their children ask. While few children posed questions related to art historical elements (the artist (36%), historical context (20%), title (16%), or formal qualities of the artwork (5%), parents expressed a strong desire to learn artist and artwork-specific information in the open-ended prompt, "When I'm visiting an art museum with my family, I wish I knew more about…".

Indeed, parents' request for background information, including information related to the artist, techniques, historical/social context, curators' choices, and media, was evident throughout the survey. Seventy-seven percent of parents said they prefer education resources specific to an exhibition over reusable educational resources that are applicable to various exhibitions. This data indicates that parents are more interested in specific information about artists, content, and technique rather than broader thematic categories such as framing, artistic choice, scale, etc.

However, learning such specific information is not the parents' main objective for visits. When asked about their primary reason for visiting the Vancouver Art Gallery, only 20% of parents responded that they prioritize learning about art history. Indeed, the majority of parents (72%) indicated that their main objective when visiting with their family is to foster an appreciation of art, a goal that aligns more with utilizing the aforementioned broader thematic categories to introduce children to artworks and ideas.

Tying these data points together, it appears that while parents are interested in factual data, learning such information is not the principal objective of their visit, but is ancillary to it. Therefore, a museum educator seeking to reach out to families should bear in mind that parents do not want to learn facts for their own sake, but only to the extent that such knowledge adds value to their family's experience, and, if unprompted, children are not likely to ask about factual background information.

DISCUSSION AND RECOMMENDATIONS

Ideal Educational Resource

The main focus of this study was to determine specific ways in which the Vancouver Art Gallery, and by extension other art museums, can better support family visitors outside of facilitated programming. Based on questions concerning comfort levels and various aspects of learning materials – delivery method, content, and goals – a proposed ideal educational resource, hereafter referred to as the Toolbox, will be described.

First, it is important to note that 90% of parents indicated that they are likely or extremely likely to use provided games and learning activities. This statistic supports the findings of Hall (2013) that "parents who are familiar and unfamiliar with gallery settings are interested in resources, materials and tools to use when in the gallery with their children" (p. 1). Therefore, if such an educational resource were provided, there would likely be a willing group of parents ready to use it.

Format and Included Elements

The Toolbox would feature a combination of digital and paper resources. Such a choice is a reflection of the 63% of parents who reported this preference, in addition to the many parents who mentioned technology as an element that has supported

successful learning experiences in the past. In meeting the needs of 73% of parents, the Toolbox would also incorporate multiple mediums including games, maps, self-guided tours, stories, writing prompts, etc., in order to help families engage with art. The incorporation of interactive elements is crucial, especially "when one considers that for young children in nearly every culture, the hands-on activities of play provide the process by which they interpret and make sense of their experiences" (Piscitelli & Weier, 2002, p. 124).

One medium in particular that should definitely be included is a self-guided tour in map format. Piscitelli and Weier (2002) stated that brief games, especially those like an interactive map, which incorporate "search and identify" strategies, allow children to "focus on visual understanding and artistic concepts" (p. 126). This specific item was also viewed as a resource that 60% of parents were likely or extremely likely to use on family visits.

Making Connections

Piscitelli and Weier (2002) heavily emphasized the importance of drawing personal connections in support of children's meaning-making in art museums (p. 125). The Toolbox would therefore encourage families to make connections between artworks and to their own personal lives – a teaching methodology parents identified as having been successful in the past. Additionally, parents viewed at-home activities (which could be completed before or after a visit) as valued resources and enablers of successful at-home connections. Within a school visit context, several studies have shown that "students who have done work on a topic before visiting a museum, and who have prepared for their visit, learn most from their experience (Griffin & Symington, 1997, p. 765).

Facilitating Parental Learning

Notably, the Toolbox would also work to support the learning of parents. Ninety-seven percent of survey participants said that they would be interested in learning materials that, while directed at engaging children, also provided examples of teaching ideas and styles for parents. One such example might be to help parents encourage their children to engage with the types of questions included in the survey. Ash (2004) stated, "The questioning process serves as a meditational strategy for family members to facilitate understanding" (p. 95). For instance, a resource might suggest the following: "If your child shows interest in an artwork, you can encourage them to create and engage with their own questions by asking them to write a list of things that they would like to ask the artist." By both incorporating the use of pedagogical resources as well as outlining instructions for parents, the Toolbox would support an understanding of instructional tools for future family visits.

The Family App

When questioned about various educational resources, 64% of parents reported that they are likely or extremely likely to use an all-inclusive family app. As so many parents identified a preference for this type of conglomeration, it would be in the best interests of the Vancouver Art Gallery and other art museums to explore such a resource.

An all-inclusive smart phone application could work to support multiple needs expressed by family visitors. For example, many parents said that they wish they knew more about available museum programming and also identified better publicity as an additional resource that would aid family visits. By notifying parents of upcoming events, an application could allow busy parents to add museum programming directly to their phones' calendars. Since an application's resources extend outside museum walls, parents' desires for at-home connections and at-home activities would be met through the requested inclusion of technology. Within the museum, an application would also help provide additional resources such as videos, e-books, interactive games, mess-free art making, background information on artworks and artists, and examples of teaching ideas and styles for parents. Such an application could also be featured on a loanable device as part of the previously discussed Toolbox.

CONCLUSIONS

In consideration of available academic literature, personal experiences, and data resulting from the research study, it is clear that there is indeed a gap, as Eisner and Dobbs (1988) asserted, between what museum visitors – especially families – need and what art museums are currently offering. This study shows that while parents are comfortable with their role as teachers when visiting art museums, and are capable of engaging their children in conversations or activities about art, they still require additional information and resources from museums to aid and enrich facilitation of their family visits. Indeed, this study takes an active step towards closing this gap through the incorporation of family visitors' needs and preferences into examples of ideal educational resources, such as the aforementioned Toolbox, that can be offered by art museums.

Perhaps one of the biggest challenges for family visitors is that they are viewed as school tours with built-in chaperones, instead of the unique demographic that they are (Briseño-Garzón et al., 2007a). Not quite peer groups visiting outside of programming, nor school groups visiting with museum or teacher facilitation; family groups stand alone as a unique demographic. Consequently, parents take on responsibilities that are generally held by museum representatives (Ash, 2004; Briseño-Garzón et al., 2007a; Lakota, 1975; Wolf & Wood, 2012). The required response, therefore, is for art museums to change the way they think about family visitors. In accordance with their congruent responsibilities, art museums ought to

make an effort to support parents through methods not dissimilar to those used when training and supporting museum docents.

To explore this under-researched topic further, art museums are encouraged to involve parent visitors in the brainstorming of implementable resources for family visitors. Less structured than a questionnaire, this activity would also be instrumental in answering any unanswered questions that have arisen from this and previous studies. By continuing to engage the community with enhancing their art museum experience, this, and other research studies, can work to close the knowledge gap surrounding family learning outside of structured programming.

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3. PARENTS' PERSPECTIVES ABOUT EXHIBIT LABEL CONTENT IN A SCIENCE MUSEUM

INTRODUCTION

Exhibit labels are a significant medium of communication and a powerful mediator of learning within museum contexts. Their style and substance can significantly impact the behaviour, attitudes and cognition of museum visitors; and they are unique in that they are perfectly positioned to bridge theory and practice of visitor studies. Yet, surprisingly, exhibit labels have only received modest attention in visitor studies research.

Label Design and Content Are Powerful Mediators of the Visitor Experience

Design features create a first impression and can attract or detract a visitor's interest in a label. Stephen Bitgood (e.g., Bitgood & Patterson, 1993) has studied exhibit labels extensively through the lens of environmental psychology; specifically, the ways in which a label's design and placement can impact the attention of a visitor. Likewise, Wolf and Smith (1993) investigated the affective responses of visitors to font size and type. They asked elderly visitors to rate different labels based on four criteria. Visitors reported that type-size and contrast impacted legibility, more so than type-face and spacing. Kanel and Tamir (1991) also studied the effects of exhibit label design; but in this case, additional changes were made to the labels' content. These general editorial and aesthetic changes were linked to increased behavioural (time spent at and correct use of the exhibit) and cognitive learning indicators.

As well as its design, a label's content can also influence what visitors think about and how they behave at an exhibit. Borun and Miller (1980) studied the cognitive and affective responses of visitors to four exhibit labels – each one included different explanatory content. Although visitors preferred the 'scientific' and 'how it works' versions, the study found that visitors learned more from the 'historical' and 'everyday' label content. At the Exploratorium, Gutwill (2006) investigated the behavioural and affective responses of mostly adult visitors to three labels with questions and/or suggestions. He found that although visitors preferred a combination of questions and suggestions, similar behaviours were observed in all three scenarios. Hohenstein and Tran (2007) conducted a unique study that investigated visitor conversation when an open-ended question was added to a label. Set at a science museum, the study found

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 43–56.

that at two of the three exhibits the added question did prompt discussion of further open-ended questions and additional shared explanations.

Exhibit Design and Label Content Support Parent-Child Interactions

Current trends within family learning research stress the importance of investigating shared interactions, including conversations between parents and children (Ellenbogen, Luke, & Dierking, 2004). Exhibit design can impact shared interactions and the social learning experiences of parents and children. As part of a larger study, Borun and Dritsas (1997) identified seven exhibit design features that can enhance family learning, such as designing an exhibit so that more than one person can gather around it as a way to promote social engagement. Crowley and Callanan (1998) documented important design adjustments to an exhibit (including instructions in an audio format) that allow parents and children to be involved in an exhibit's interactivity at the same time and in the same way. More recently, an evaluation study (Bertschi, Benne, & Elkins, 2008) outlined the design and exhibit label features of a successful natural history exhibition that were notably inclusive of parents.

Parents as Primary Consumers of Exhibit Labels

Whether it involves the investigation of design or content, the purpose of studying exhibit labels is to better understand and improve the visitor experience. Families are a significant component of the museum audience profile (McManus, 1994) and as a result the study of family learning has received increased attention in the literature. Some studies and publications have commented on the importance of label text to the shared learning experiences of families, especially parents. Borun and Miller (1980) observed that adults read labels much more often than children. Diamond (1986) observed that exhibit label text was read aloud to children or paraphrased by parents and that it has the potential to "significantly influence learning at exhibits" (p. 53) in a family learning context. Moreover, Borun, Chambers, and Cleghorn (1996) identified label reading to be an observable learning behaviour among family groups. Further, Serrell (1996) observed that short, succinct labels are easy for parents to read aloud to their children. In the same vein, Crowley and Jacobs (2002) reported label reading to be a frequent and effective teaching strategy used by parents. Therefore, it is widely accepted that exhibit labels can be useful tools for parents who engage in exhibit experiences with their children.

Investigating the Perspective of Parents

Although experience indicates that parents read and use exhibit label text in conversations with their children during exhibit experiences (Diamond, 1986), there is still a scarcity of empirical research on this topic. This brief literature review and synthesis demonstrates the continued need to investigate exhibit labels as a component

of family learning, considering their relevance to conversations between parents and children, as well as the perspective of the parent as the reader of the label. Hence, this chapter reports some of the outcomes of a unique exploratory study (Hall, 2009) that was undertaken to investigate the responses of parents to four versions of label content in the support of family learning. In short, labels might appear to be used by parents to support family learning, but what label content is important to parents and why?

THEORETICAL AND METHODOLOGICAL FRAMEWORKS

The study employed sociocultural theory (Lantolf, 2006) as a framework to examine the social nature of a family's museum visit, especially the critical nature of the relationships between parents and children when they engage in shared learning experiences. The family was considered a group of learners, with the parent and child influencing each other's learning (Lave & Wenger, 1991). This framework considers learning to be influenced by social interactions (Lantolf, 2006; Vygotskty, 1986) that can include discourse between parents and children as well as the language of an exhibit label's written text.

An interpretive multiple case study approach was used in the data gathering process, with each family considered as a case study (Merriam, 1998). The research study focused on the family's social learning experiences at an interactive science exhibit. Subsequently, a hermeneutic, multi-stage approach was used to explore the participants' reactions concerning their experience with particular label content (Anderson, 2012). Hermeneutic interpretation of the data was conducted across two phases, in which Phase One influenced the synthesis and development of label testing in Phase Two.

The drafting of labels was a significant component of the study's research design and played an essential role in data collection. The main assumption in the study was that exhibit label text should be informed by the conversational themes between visitors. This assumption was understood from a sociocultural perspective as described in Crowley et al. (2001). Crowley et al. investigated the conversations that took place between parents and children at an interactive science exhibit. Their findings identified three types of explanations (*Causal*, *Analogical* and *Principled*) discussed by parents during an exhibit experience. Eberbach and Crowley (2005) also found evidence of these same explanatory categories in a study about family learning at a botanical garden. Crowley et al.'s explanatory categories (*Causal*, *Analogical* and *Principled*) were used in this study to segment and differentiate the label content into the label types.

METHODS

Drafting of Exhibit Label Content and the Development of Four Label Types

Studies about exhibit label text usually incorporate several labels (types or versions) into the research design (Borun & Miller 1980; Gutwill, 2006; Kanel & Tamir, 1993;

Wolf & Smith, 1993). This methodological approach invites comparison and allows for a rich interpretation of visitor responses (be they affective, cognitive and/or behavioural).

For this study, four exhibit labels provided a vehicle to probe for parents' perspectives and attitudes across label types and in multiple phases. Questions and instructions were drafted based on a variety of recommendations in the literature (Borun et al., 1997; Gutwill, 2006; Serrell, 1996).

All labels in this study incorporated questions and instructions; additional explanatory detail provided a distinguishing feature for each label. Three of the labels reflected Crowley et al.'s (2001) explanatory categories (*Causal, Analogical* and *Principled*). A fourth label incorporated all three explanatory categories.

Table 1 outlines the definitions that were used as a reference for the drafting of content for each label type used in Phase One.

Table 1. Exhibit Label Text Used in Phase One

*Label Type**	*Definitions#*	*Examples of Label Text*
Causal	"X causes Y, or X needs Y to do Z"	The purple ball is caught in a spinning water vortex! As it moves down the drain, the water spins faster. Change the speed of the water as it spins around the tank. What is happening to the ball?
Analogical	"One thing is like something else"	The purple ball is caught in a spinning vortex – like a bath toy! As it moves toward the drain of the bath, the water spins faster. Change the speed of the water as is spins around the tank. What is happening to the ball?
Principled	"Literally or conceptually refer(s) to an organizing scientific principle"	The purple ball is caught in a water vortex! As the water spins down the drain, it moves faster and has less pressure. Change the speed of the water to change the water pressure. What is happening to the ball?

** Explanatory categories described in Crowley et al. (2001) were used to categorize the label text. # The definition of each explanatory category was used as a reference in the drafting of the three exhibit label types used in Phase One. Definitions are from: Eberbach, C., & Crowley, K. (2005) as adapted from Crowley et al. (2001).*

After the interpretation of Phase One data, the research design expanded to a second phase. In Phase Two, a single label was drafted to integrate all the preferences cited by parents in the first phase. Hence, in the second phase (Phase Two) of the study, the *Combination Label* was on view during the exhibit experiences of eight

families, and only this label type was discussed with parents in the post-exhibit experience interview. The following table outlines the content of the *Combination Label* used in Phase Two.

Table 2. Exhibit label text from Phase Two

Label Type	*Label text*
Combination	Like a toilet, the water in this tank is flushing in a circular motion. It is flushing down the drain but is it not going to the sewer! Instead, the water is being pumped back into the tank at different speeds. As the speed of the water increases in the centre, its pressure decreases and it is pushed in a downward vortex. Change the speed of the flush. What is happening to the ball? What else does this exhibit remind you of? How is it the same or different?

Context and Participants

This study was conducted in the *Eureka!* Gallery of *Telus World of Science*, in Vancouver, Canada, in the spring of 2008, using the Water Vortex exhibit (see Figure 1) as a case content for the investigation. This exhibit was chosen because families are regularly seen experimenting together at the exhibit. In addition, several features of the exhibit's design match Borun and Dritsas' (1997) characteristics of successful exhibits for family learning.

Figure 1. Photo of the Water Vortex exhibit (Source: Katie McMahon)

A total of 27 parent-child groups voluntarily participated in the study. Parents who were observed to be interested in their children's exhibit experiences were invited to read introductory material on the study. Willing participants (one parent per family) provided written consent for his/her participation and his/her child(ren)'s participation.

Nineteen of the 27 families were configured in parent-child dyads and the remaining eight families were comprised as one parent with two children. The average age of the children was 7.9 years and the median was 7.5 years. Sixteen mothers and 11 fathers were identified as the participating parent. The families were either from Canada (20), USA (5) or Australia (2).

An identification code was assigned to each family. WV is short for *Water Vortex* and the corresponding number represents the order in which the families participated. In Phase One, the first families who participated viewed the *Causal Label* and were coded WV1 through to WV6. A second set of families (WV7 to WV13) viewed the *Analogical Label,* and a third set of families (WV14 to WV19) viewed the *Principled Label*. A final set of participating families in Phase Two (WV20 to WV27) viewed the *Combination Label*. Hence, there were 19 parent-child groups in Phase One of the study and eight parent-child groups in Phase Two.

Data Collection

After completing a consent form, the parent was asked to participate in a pre-exhibit experience interview, during which they were asked about their family configuration, city of residence, reason for their visit, as well as their interest in learning in a science centre setting.

An exhibit experience followed the first interview. The parent and child were shown where the Water Vortex exhibit was located and were told to "play with the exhibit as you would normally." The parent held the voice recorder at chest level during the exhibit experience and the resulting conversation between the parent and child(ren) was recorded. In Phase One, one of three labels was on view. In Phase Two, the fourth (*Combination Label*) was on view.

When the parent and child agreed that they were ready to move on, the parent joined the researcher for the post-exhibit experience interview, which was conducted in a semi-structured interview format and lasted approximately ten minutes. In this interview, each parent was asked to describe the conversation held during the exhibit experience, his/her role, and what was memorable.

Although during their exhibit experience only one label version was shown, Phase One parents were asked to discuss the three label types in the interview. They were asked to state a preference for one of the three labels and to specifically comment on the content of the label that they considered most relevant to the family (parent and child) learning context and why. Phase Two parents were asked to discuss the *Combination Label* (the one that had been on view during the exhibit experience),

again referring to the context of family learning. All conversations and interviews were recorded and transcribed verbatim.

ANALYSIS

The collection of both conversational data (during the family's exhibit experience) and interview data (pre- and post-exhibit experience interviews) was required in order for the study's research objective to be adequately addressed.

Conversational Data

The conversational data was analyzed first. With recursive analysis, each conversation was coded for types of dialogue identified as: Actions, Observations and Explanations. The interpretation of the data investigated the interactions and interplay between different types of dialogue. Analysis suggested that discussions between parents and children about their shared actions and observations provide a foundation for extended discussions and higher-level explanations. This method of data collection allowed the researcher to capture direct quotes and accurate dialogue made by parents and children.

Interview Data

Close examination of the interview data revealed an important and interesting aspect of the parents' profiles and self-reported levels of scientific expertise (see Table 3). Several parents reported low levels of confidence or interest in their attempts to understand science in general. Another small group of parents reported high levels of expertise in physics because of their professional status (scientists and engineers). These groups could be considered to have 'novice' and 'expert' levels

Table 3. Summary of phase one – parent responses to label text according to their levels of scientific expertise

Levels of expertise	*Number of parents*	*Preferences for Exhibit Label Text**
Novice	3	3 Analogical
Moderate	12	8 Principled 3 Analogical 1 Causal
Expert	4	2 Analogical/Principled 1 Analogical 1 Principled

** Terms used to identify label text were adapted from Crowley et al. (2001).*

of scientific expertise respectively, while the remaining parents were considered to have ‘moderate’ levels.

Table 3 illustrates the range of label preferences stated by parents according to their self-reported level of scientific expertise.

The data in this table suggests that *Analogical Label* content was preferred by parents with levels of scientific expertise ranging from novice to expert. A large portion of parents with ‘moderate’ and ‘expert’ levels of scientific expertise were drawn to the content of the *Principled Label*. In addition, two of the ‘experts’ stated that they could not choose between the labels but preferred to see the two explanations incorporated into the same label and on view at the same time.

RESULTS AND DISCUSSION

The analysis revealed that exhibit label text played a part in the strategies parents used to initiate, secure and extend shared learning experiences. Four critical themes emerged from the qualitative data analysis. Exhibit label content can: 1) support a parent’s engagement in a child-led exhibit experience; 2) provide a conversational tool to facilitate collaborative, exhibit-related discussions; 3) extend learning experiences by referencing explanations; and 4) with a combination of label content, be an effective mediator of learning for all. These results are enhanced by the categorization of parents’ levels of scientific expertise: novice, moderate and expert. This framework provided a way in which to interpret and understand parent responses to label text. Moreover, it enabled a deeper level of interpretation as to how the content of an exhibit label mediates parent-child learning discourse. In addition to the reported analysis of data in the previous section, the following four sections begin to shed light on these research questions: what exhibit label content is important to parents and why?

Support a Parent’s Engagement in an Exhibit Experience

In this study, it was the child, rather than the parent, who readily and initially engaged with the hands-on exhibit. This dynamic is noted in other studies such as McManus (1994). As the exhibit experience commenced, many parents read the exhibit label text or asked the children to read the label aloud. The reading of the label content appeared to be a way in which parents attempted to enter into the child-centred activity and participate in their child’s exploration of the exhibit. The following examples review the reflections of two parents with vastly different scientific backgrounds to the commencement of the exhibit experience and the relevant exhibit label content.

A father (WV19: expert, *Principled Label*) commented on the importance of engaging in and understanding the practical function of the exhibit.

> Father: We started with the empirical stuff. For example: What does this lever do? It makes the vortex go faster and slower. But that is changing the flow of the water. I am not sure if we got that part sorted out. The ball goes down more if you push the lever to 'fast'.

Then, at the conclusion of the interview and as part of discussion about his assessment of the different exhibit labels, he added an additional comment.

> Father: What is useful for me? [Pause]. To start with something empirical. To start with a foundation. And then referencing something familiar, such as a bathtub metaphor.

This father reported that the label helped him and his son collect empirical data about the cause and effect of the exhibit the label. The father's comments also suggest that the label's instructive statement gave him (the parent) a place "to start" and helped him to ease into the exhibit experience.

Another parent, a mother (WV4: novice, *Causal Label*), specifically stated that the brief instructive statement assisted her attempts to understand her daughter's interactions with the exhibit.

> Interviewer: Did anything draw you into a conversation together?
>
> Mother: We read the instructions. For most of this stuff, you read the instructions to get what the museum is trying to show you. You have to or else you have no clue what they children are trying to do.
>
> Interviewer: So you did read the label. It helped your exhibit experience?
>
> Mother: Definitely!

Even with a range of expertise, the 'novice' and the 'expert' reported the value of being able to jointly investigate the workings of the exhibit. They engaged with their child's learning by first understanding and confirming what their child was doing and then engaged in a discussion. These findings suggest that brief, instructive statements not only introduce parents to the interactivity of the exhibit, they can also provide an entry strategy for parents to intellectually participate in an activity that their child finds physically engaging. When a parent claims a role in an interactive exhibit experience, the activity becomes shared, collaborative and social.

Provide a Conversational Tool to Facilitate Exhibit-related Discussions

Many parents in this study paraphrased the labels' open-ended questions in their conversations. The open-ended question ("What is happening to the ball?") was included in all the labels of Phase One and Two. This question was quoted or

Table 4. Examples of dialogue when parents paraphrase an open-ended question

Parent	*Code*	*Phrase*
Mother	WV2	"Look what happens!"
Father	WV5	"What do you think will happen when I put the ball to slow?"
Father	WV11	After quoting the open-ended question five times, he then says to his son, "You explain to (your sister) what is happening."
Mother	WV14	"Can you describe what is happening to it?"
Father	WV19	"Do you see anything else that is happening to the ball?"
Mother	WV21	"What happens to the ball when you put the lever to slow?"
Mother	WV25	"Why do you think that happens?"

paraphrased by 13 of 19 parents in Phase One and five of seven parents in Phase Two. Table 4 lists examples of the diverse ways in which parents paraphrased the question.

These phrases that paraphrased the open-ended question helped to launch many conversations about the movement of the ball, the water and the vortex. Some parents reported in the post-exhibit experience interview that by paraphrasing the label's question they had an opportunity to listen to their children and hear what their children had to say about the exhibit experience. For example, a mother (WV2: moderate prior knowledge, *Causal Label*) stated:

> Mother: The label asked an open-ended question, which I kind of liked. I think it said: 'What happens when you move the lever up or down?' … [As opposed to] anything that says, 'This is what happens.' The children got to put it in their own words.

These findings concur with Bertschi et al. (2008) who also noted that parents considered open-ended questions helpful for the purpose of supporting their children's learning without dominating the experience.

A second open-ended question ("What else does this exhibit remind you of?") was not as successful in initiating broader conversations. This question was included in the *Combination Label*. All eight Phase Two parents paraphrased this question and the children gave a range of answers (e.g., drains, tornado, whirlpools); however, six of eight parents repeatedly rephrased the question until their child had given an answer that referenced the label's analogy, the flushing action of a toilet.

Therefore, it is very important to note that if open-ended question are included in labels for the purpose of supporting conversations between parents and children, the additional label content must be carefully considered with a special focus on the responses of children. Although the intention of the question was to prompt the

discussion of personal stories, the proximity of an obvious answer made this open-ended question, a closed one.

Extend Learning Experiences by Referencing Explanations

All but one parent (WV2: moderate prior knowledge, *Causal Label*) in Phase One reported that the inclusion of a scientific explanation (analogical and/or principled) in the exhibit label text was relevant to their collaborative learning experience with their child. Nine of 19 parents in Phase One (all with 'moderate' to 'expert' levels of scientific expertise) reported that additional scientific vocabulary and content would contribute to their family learning experience.

Novice parents considered the references to scientific principles inaccessible and reported that the analogical references were more relevant to their exhibit experiences. One mother (WV9: novice, *Analogical Label*) commented that although she thought her 8-year-old daughter would have been able to understand the *Principled Label*, she (the parent) would not have found that particular content helpful. She said, "I am not scientifically minded so it was good that [the *Analogical Label*] gave such a clear explanation of what was going on." She also reported that she preferred to focus on the aesthetic nature of the exhibit experience. This mother reported that the inclusion of the analogy in the label content was compatible with her artistic nature and claimed preferences for experiential learning and 'novice' levels of expertise. In contrast, a father (WV11: expert, *Analogical Label*), his six-year-old son, commented that the *Analogical Label* was too simple.

Interviewer: How did the label contribute to your experience?

Father: It was good but I would have liked more information about the forces of the ball.

Interviewer: Is that something you would have liked to explain to your son?

Father: Yes, I think if there was a picture there he would have interpreted it quite easily. I think a diagram of the forces up and down and how the flow rate contributes. You could have had three diagrams with flow rates of slow, medium and fast.

Therefore, this father considered the inclusion of a scientific principle in the label content a viable and important component of a conversation with his son and consistent with his (the father's) learning agenda for their visit. Throughout his post-exhibit experience interview this father emphasized the importance of additional scientific information in the label; however, at the end of the interview he reported that it would be the analogical reference that his son would remember after their museum visit and that they would discuss at a later date.

These comments hint at the complex nature of family learning experiences in museums and the complex role of exhibit label content. For an adequate exhibit

experience with his son, this father required detailed scientific diagrams and vocabulary yet he considered the label's simple analogy to be the label content that would be the most relevant to their conversations beyond their museum visit.

A Combination Label as an Effective Mediator of Learning Discourse for All

The findings in Phase One suggest that parents desire a range of label text content that is accessible and relevant to themselves as well as their children. Instructive statements and open-ended questions (the content of the *Causal Label*) were useful and valued by a wide range of parents yet the *Causal Label* was considered preferential by only one of 19 parents. The remaining 18 parents in Phase One considered the *Analogical* and/or *Principled* label text more applicable to their learning experiences with their children. These findings led to the development and subsequent exploration of the *Combination Label* in Phase Two.

Phase Two parents responded to the *Combination Label* with very positive comments and stated that the label content presented relevant information for both parents and children. Two parents (WV20 and WV27) reported that they only read the first portion of the label (the analogical reference and the questions). They said that this label content was all they required, yet they did not suggest that the label was too long. Five parents considered the analogical reference useful because it was considered something which children could understand and relates to family life. Four parents (WV21, WV23, WV24 and WV25) strongly considered the references to scientific vocabulary and principles to be an important, but not an exclusive component of their shared learning experiences around the exhibit label content.

One father (WV24, moderate) concluded that exhibit label text "provides information to parents to use as a guide" and that "there are a hundred ways to talk about science and this [exhibit experience] is an entry" point for parents and children to engage in discussions about science. In general, it appeared that by providing parents with questions and instructions, as well as contextual information (analogies or examples) and canonically correct science, the *Combination Label* was applicable and satisfactory to the learning experiences of a wide range of families.

CONCLUSIONS AND APPLICATIONS

The findings of this study suggest that parents use exhibit labels to transform a largely child-led activity into a collaborative learning experience. Parents appear to use specific label content (instructive statements, open-ended questions and explanatory references) to extend conversations with their children, to understand their children's actions, and to find ways to participate in the child-centred exhibit experience.

This study's findings indicate that specific explanatory label content is preferred by, or is relevant to, a parent's individual learning experience with his/her child. In both phases of the study, parents ('novices' and 'experts' alike) reported that their

responses to analogical and principled references related to a broad, complex set of experiences and learning agendas that are co-mediated by their perceived levels of scientific expertise. Therefore, these findings suggest that, in addition to questions and instructions, the inclusion of a combination of explanatory references make the label content more relevant to a wide range of visitors.

These findings converge with other studies (Borun & Dritsas, 1997; Crowley & Callanan, 1998) which discuss the importance of adjusting exhibit design to accommodate parents as well as children. It appears that the same can be said for exhibit label text. As a result, the findings prompt further investigations relating to the intersection of label content and family learning, such as: the use of open-ended questions; the use of analogies verses examples; the inclusion of scientific vocabulary; the placement of different label content in relation to the exhibit; and the responses and learning agendas of children.

The inclusion of specific explanatory label content (and the inclusion of an exhibit label in general) was in keeping with the nature and design of the specific exhibit used in this study. Similar studies set at different types of science exhibits would provide much needed breadth to the field of research where family learning and exhibit design intersect. Such research would be perfectly positioned to bridge the development of theories about museum learning with the practice of exhibit design and the development of any necessary label content.

The findings of this study suggest that using exhibit label text as a research tool can reveal rich data about family learning, as well as visitor learning experiences in general. The analysis of responses to label content appears to be a fruitful way in which to access the perspectives of parents for the purpose of understanding some of the strategies used by parents when they are learning with their children, as well as assessing the ways in which museums can support these strategies. In addition, this methodology captured parents' capacities to be deeply reflective of their overall self-assessment of the utility of different label content as it relates to family learning, and can retrospectively assess preferences for other types of label text that may have better assisted or enhanced the learning experience with their child.

Since, very little research currently exists on the topic, the purpose of this research study was to gather more information about the relevancy of label content from parents' perspectives. In summary, the findings of this study indicate that the content of an exhibit label can be a significant catalyst in promoting family learning and it is worthwhile for both museum practitioners and researchers alike to consider its functionality within and relevance to the family's social learning context.

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4. SPARKS OF LEARNING

Insights from an After-School Science Museum Program for Teenagers

INTRODUCTION

Program Evaluation in the Context of Informal Learning Environments

Since the 1980s, museums have experienced pressure to provide evidence for their impact on the communities with which they engage (Scott, 2003). While many informal learning environments have developed and are currently implementing evaluations to capture evidence illuminating the efficacy of their programming, various literature reviews on the topic recognize that there is a need for the development of common frameworks for data collection and the sharing of evaluation results among science centres (Association of Science and Discovery Centres [ASDC], 2010; Bell, Lewenstein, Shouse, & Fedler, 2009). There is also a call for the use of shared definitions and for research to be grounded in learning theory as a means of helping others conceptualize the cognitive processes and gains that result from museum-based programs (Anderson, Storksdieck, & Spock, 2007).

With the pressure on science centres to provide evidence of the impact of their programs, the *Future Science Leaders* program at TELUS World of Science, Vancouver, B.C., is a promising source of evidence of a program's impact on students' science learning. This is because this program aims to provide high school students with the space and time to connect with experts from the fields of science and technology (Anderson, 2011). It also aims to create the potential for "beyond-the-session" learning because students may likely take their learning away with them and connect it both to their classroom-based learning and with their social networks. Additionally, by focusing on this program, this study will address aims outlined by the US-based National Research Council [NRC]. Specifically, research on the impact of after-school science programs has great potential to provide insights into learning that occurs in after school science centre-based programs, and to inform best practice (Bell et al., 2009).

Museums and Learning

Museums, including science centres, are places and spaces where visitors can participate in a range of experiences, including those of an educational nature

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 57–75.

(Hein, 1998). Specifically, science centres are sites where visitors engage in science learning, and develop interests and enthusiasm for science and technology (Canadian Association of Science Centres [CASC], 2008; Hein, 1998). Through their programming and outreach initiatives, science centres support the development of critical thinking skills that promote both the lifelong learning of science (CASC, 2008) and produce personal impacts on science learning.

It has been well established that learning involves change of knowledge over time (Rennie & Johnston, 2004), as it is not just a product but also a process. Therefore, both aspects need to be investigated to determine if learning has occurred (Rennie, Feher, Dierking, & Falk, 2003; Falk & Dierking, 2000). Moreover, individuals construct meaning through the lens of their prior knowledge and experience (Driver & Bell, 1986 in Rennie & Johnston, 2004; Falk & Storksdiek, 2005), as well as through their interactions with others over time (Anderson, Lucas, Ginns, & Dierking, 2000; National Science Board, 2006). The knowledge they gain ranges in complexity, and each person's meaning-making depends on his or her background, how he or she connects new conceptions with existing conceptions (Yürük, Ozdemir, & Beeth, 2003), his or her experiences and knowledge, as well as the sociocultural and physical contexts of the learning environment itself (Anderson et al., 2007; Hein, 1998).

Clearly, personal, contextual, and temporal aspects are key attributes of learning (Rennie & Johnston, 2004; Falk & Dierking, 2000; Falk & Storksdiek, 2005), and all should be considered in the design and analysis of a study that aims to gain insight into students' science learning. Additionally, such a study will need to focus on the participants' own voices, because learning is best conceptualized from their perspective (Anderson et al., 2007; Rennie & Johnston, 2004).

After-School Science Programs and Their Impact

Literature outlining the impact of science programs on high school students' attitudes and understanding of science can offer insight into the programs offered by science centres. Specifically, studies on outreach programs held in university research facilities revealed that these types of programs promote students' interest in future careers and courses in the sciences (Knox, Moynihan, & Markowitz, 2003). While these programs promote positive attitudes towards science and reveal insight into students' understanding of the nature of science and perceived ability to do science (Bell, Blair, Crawford, & Lederman, 2003; Knox et al., 2003), they do not necessarily balance these activities with opportunities for participants to reflect on what they are learning in order to construct personal science knowledge (Bell et al., 2003).

Similarly, there is limited literature available on the impact of museum-based programs on teenagers and learning. However, the available literature does indicate that teenagers who participate in these programs are likely to develop an interest in science as well as attain a better understanding of science beyond that which is

learned in the classroom (Kisiel, 2006). While many of these studies reveal positive impacts of these programs, they tend to focus on programs that are short-term (Kisiel, 2006). It is clear that a study which aims to focus on longer-term science learning is needed within this field.

Much funding has been provided to after-school programs as a means to address issues such as childcare (Apsler, 2009; Neuman, 2010), as well as to offer youth exposure to new opportunities (McLeod & Kilpatrick, 2001; Neuman, 2010). As a result, the priority to focus on learning is not often at the forefront in many of these after-school programs (Apsler, 2009). However, from the group of those that do focus on learning, those that are science-based aim to promote enthusiasm for science (Morton & Stimmer, 2009), science literacy and inquiry-based learning experiences for their participants (McLeod & Kilpatrick, 2001).

Evaluations of both museum-based science programs and after-school science programs indicate that many do support academic gains for their participants (Bell et al., 2009; McLeod & Kilpatrick, 2001). However, reviews of these studies reveal unsound research design and the need for thorough program evaluation (Apsler, 2009). Therefore, it is clear that as various iterations of after-school science programs continue to develop and create opportunities or cultures for learning to occur (Neuman, 2010), so does the need for informal learning settings to critically evaluate the impact of their programs (Apsler, 2009; Scott-Little, Hamann, & Jurs, 2002). An in-depth investigation of such a program grounded in a social constructivist learning theory has the potential to enrich the literature in this field.

Problem Statement and Research Questions

There is a burgeoning field of literature that provides evidence for the positive influence of science centres in regard to their educational impacts on visitors (Association for Science and Discovery Centres [ASDC], 2010; Bell et al., 2009; Falk & Dierking, 2010; Falk & Needham, 2011). However, there is limited evidence for indicators of the impacts on learning as a result of the participation in science centre programming (Falk & Needham, 2011). Insight gained from a study designed to determine indicators of high school students' science learning as they participate in an after-school science program would inform the process of science learning in science centres and would be useful for the future design and implementation of science centre-based programs.

With a movement for science centres and other informal learning settings to provide evidence for learning that occurs within their programs, and in response to our limited understanding of after-school science programs, the following overarching question frames the research: *What are the indicators of impact on students' learning as the result of their participation in a five-week unit of the year-long Future Science Leaders program?* Two sub-questions stem from this main question:

a. What are high school students' perceptions of their own learning as they participate in one unit of the year long program?
b. How does the program influence the participants' learning, as evidenced in their group work, discussions, and reflective writing?

RESEARCH METHODOLOGY

Research Design and Theoretical Framework

This research study took the form of an inquiry-based (Morse, 1993), phenomenological case study design (van Manen, 1990; Stake 1997; Tellis, 1997) that focused on the learning experiences of seven students and was conducted over a period of five weeks in the spring of 2012. The research design lent itself to capturing change (Bryman, Teevan, & Bell, 2009) in the students' learning and aligned with the goal to elucidate indicators of impact on students' learning over time. Furthermore, it allowed the participants to indirectly contribute their feedback about the program and their learning as it developed over time.

The research study sought to gain understanding and to gain insight into participants' learning through obtaining participants' own meanings (Maxwell, 2004) and understandings of their learning. It also aimed to highlight participants' learning (Maxwell, 2004), and to better understand this process as it occurred within the context (Golafshani, 2003; Patton, 2002) of the program itself, as well as how it was influenced by external contexts beyond the program.

In order to collect data on students' learning, phenomenological methods were employed to obtain understandings of each student's lived experience and the learning that took place (Ajjawi & Higgs, 2007; Lester, 1999; Morton, 1981 in Ornek, 2008; van Manen, 1990). The methods employed included an introductory questionnaire, behavioural observation, the collection of written reflections and drawings as well as the implementation of a participant focus group interview, from which rich descriptive insights were collected. The research intentions aligned with the goal of the qualitative research approach which aims to highlight and describe participants' learning (Maxwell, 2004) and to better understand the learning process as it occurs within a specific context (Golafshani, 2003; Patton, 2002).

The underlying theory of learning adopted in this research study was a social constructivist (Golafshani, 2003) framework that was considered in concert with Falk and Dierking's (2000) Contextual Model of Learning. Both were considered within the lens of an interpretivist paradigm and both framed the interpretation of data.

The Future Science Leaders Program

The *Future Science Leaders* after-school science program aims to provide high school students with opportunities to engage in science learning beyond what occurs

in the classroom context. The science centre context provides students with the space and time to connect with experts from the fields of science and technology. Thus, the informal learning environment can act as a catalyst to help accomplish the main goal of the program, which is to create mentorship opportunities and learning experiences to help students to become future leaders in the fields of science and technology (Anderson, 2011).

This science program differs from many of the other learning programs offered at Science World. First, it catered for high school, versus elementary, students. Second, its longitudinal design involves weekly sessions taking place from September to June and focuses on extending learning overtime in comparison to the typical one-hour school workshops attended by most visiting students. Moreover, each week's session is structured to include an expert who introduces or extends a learning theme often in conjunction with a related learning activity. This results in a themed unit that spans both time and the subject areas of science, technology, engineering, and math (STEM). Specifically, the five-week program captured by this study focused on the topics of space, Earth science and related technology.

Research Participants

The study involved collecting data from seven of the twenty students from the *Future Science Leaders* program who agreed to participate in the research study. All seven of the participants were grade 10 and 11 high school students from various high schools based in the city of Vancouver and were given pseudonyms for this study. Each had applied to the program and was accepted to participate in this after-school program in July 2011. All seven participants, Annie, Steven, Nancy, Emily, Victor, Roger and Alyssa, comprised the bounded case (Flyvbjerg, 2011) for the research and consequent analysis.

Research Stages and Data Collection

Questionnaire. In the first stage of the research, and before the start of the Earth and space science unit, a questionnaire which consisted of several 'closed' questions with Likert scales (Bryman et al., 2009) was administered. The question statements were used to gauge students' initial content knowledge and understanding of Earth and space science. Students' responses to question items were also used to determine students' learning agendas for this unit. This was important because learning agendas integrate learning motivations and intended goals (Moussouri, 1997 in Briseño-Garzón, Anderson, & Anderson, 2007), thereby likely guiding future learning experiences.

Written reflections. The week following the questionnaire and the first week of the Earth and space science unit, each of the participants was given a short reflective writing activity. The reflection consisted of a series of three open-ended questions

that aimed to elucidate the following information: what students wondered about regarding these topics; what students wanted to know more about regarding these topics; and what they wanted to learn about regarding these topics.

During the third week of the unit and the week following the fifth and final week of the Earth and space science unit, participants were asked to reflect upon their learning by means of written reflections. These qualitative measures aimed to determine what students now knew, what they now wondered, what they had learned, and which sessions in the program had helped to expand their understanding, as well as which were the most memorable.

Samples of student work. In order to obtain data that captured students' learning, participants' drawings from one of the Earth science sessions were collected. Writing samples from one of the space science sessions were also collected as a means to capture students' learning.

Observations of learning activities. During the five-week data collection process, all of the students participated in the planned learning activities. However, the observations for the study were focused on the students who had agreed to participate in the study.

During each of the sessions, the author observed and took notes as both an observer-as-participant and a participant-as-observer (Bryman et al., 2009). The former role allowed for the interaction with and observation of students as they engaged in learning activities. The latter role was assumed with students as they were listening to and experiencing the lectures from the experts at each of the sessions.

The field notes included information about the content of the expert speaker's lesson, a description of the learning activities, notes about the participants' conversations, and a description of the participants' learning and social behaviours throughout each session. In addition to author's observations, additional observational feedback was obtained from at least one other observer, including the program manager and program facilitators, of the weekly program.

Focus group interview. In the final stage of the data collection and after the fifth and final week of the Earth and space science unit, the author conducted a naturalistic focus group interview (Bryman et al., 2009) with five of the seven students. This phenomenographic method was implemented to obtain data on the understandings that arose from the collective group (Bryman et al., 2009; Ornek, 2008), as well as to obtain phenomenological information about students' conceptions of their own learning (Ajjawi & Higgs, 2007; Lester, 1999; Morton, 1981 in Ornek, 2008; van Manen, 1990).

During the interview, the participants were asked questions in order to further understand the nature of any learning that might have resulted from the program experience. During this time, they not only responded to questions, but were also

asked to clarify their responses and had the opportunity to elaborate on each other's responses.

The focus group interview was transcribed verbatim, as a means to better understand and later analyze the information. This would later help to provide an overall picture of participants' learning as well as their own perceptions of their learning as it occurred over time.

RESEARCH FINDINGS

Data analysis involved the review of the observations, student work, and focus group interview notes, which then led to identifying emerging themes (Lester, 1999). The use of multiple forms of qualitative data sources helped improve the trustworthiness of the interpretation, and this data triangulation (Mathison, 1988) enhanced the credibility and reliability (Golafshani, 2003; Mathison, 1988) of the findings.

The data was openly coded and involved examining the data to elucidate six categories (Strauss & Corbin, 1990), which highlighted the types of learning that occurred.

Incidences of Learning

Category 1: Making connections during the after-school program. During one of the Earth science sessions, which focused on creatures that live in extreme habitats, known as extremophiles, many questions were overheard during the learning activities (Figures 1 and 2). These questions ranged from lower-level questions that aimed to restate knowledge such as "What is asexual reproduction?" to higher-level questions that probed for understanding and comprehension (Lord & Baviskar, 2007). Questions that focused on how these creatures might reproduce, and their different types of reproduction mechanisms, revealed that the students were connecting their school-based knowledge to the activity. Specifically, they were connecting their knowledge from British Columbia's *Science Nine* curriculum to the learning activity.

Similarly, during another Earth science session that focused on mining and the technology used for mining, the students connected new information to what they already knew about Earth science. According to the program manager, an additional observer of the sessions, the students "applied their knowledge of technology" to answer questions and "applied their knowledge of [extreme] environments that they learned last week". Specifically, they speculated as to how a range of environmental conditions, some even considered to be extreme, could impact the use of technology in mining applications.

Category 2: Making connections beyond the after-school program. For many of the participants, learning and reflecting continued beyond the after-school program. Specifically, for one student, Victor, the space sessions ignited his passion for

Figure 1. Using the clues to draw extremophile creatures. Photo by Marina Mehai

Figure 2. An extremophile creature in its extreme habitat. Photo by Marina Mehai

astronomy. This was evident when he stated, "I'm a big fan of passive astronomy, but I found [through this program] that active astronomy is really cool." Moreover, in one of his responses, he wrote, "The space section helped to remind me why I love science so much in the first place. Not only did this [experience] lead to a more positive outlook on life, but it also made me more curious than ever before." This was revealed by his new passion for active astronomy which, when compared to passive astronomy, enabled him to become a scientist and collect and interpret data, instead of just assuming the role of an observer in the traditional form of astronomy. Specifically, he "went back and looked at what the SETI (Search for Extraterrestrial Intelligence) Institute is doing and downloaded information at home." Moreover, he also found that "it connects to what [he] was learning in Physics too".

For most of the group, the hands-on activities helped them better connect to and understand their previous classroom-based learning. Nancy articulated this during

the interview when she said, “When you learn it in class you kind of forget it, but when you hear it again later with application, it reinforces it more. that was really nice.” She added, “As far as Earth science in school goes, you learn how volcanoes are formed, but then it stops at a very basic level.” Roger, Nancy, Steven and Annie agreed and Annie summed up their statements when she said, “What we learn in school is limited to one area and we don’t really expand on it.” Nancy also echoed this notion when she said, “When you learn it in class you kind of forget it, but when you hear it again with application, it reinforces it more…that was really nice.” This seems to suggest that the students felt a satisfaction in expanding their school-based knowledge further within the context of the after-school program.

Category 3: Social learning and metacognitive awareness of learning. Aspects of social learning were evident in many of the observed learning activities and were often connected to instances of metacognitive awareness. This included including the two binary code activities in which most students chose to work in groups. For those who worked with others, the conversations overheard revealed how each one often helped guide the others through the activity (Figure 3). For instance, students were overheard asking each other “does this make sense to you?” indicating that social interaction likely facilitated learning.

The interview also revealed that many of the participants believed that the group work helped their learning. For instance, Victor revealed, “I felt like it was easier to learn in groups.” While Nancy agreed, she added, “I think it depends on who’s in your group.” Alyssa elaborated when she explained, “If, for example, we’re doing a physics session and you have people like Emily and Victor in your group that is great.” Her statement indicated that she had an understanding of experts and how they could help improve their peers’ learning within the group context. Both she and Victor became aware of the circumstances in which they learn well.

Emily agreed with the comments on group learning, but added, “I do like time to learn by [my]self. Sometimes when you’re in a group you, or at least I, sometimes hold back my thought process just a little bit. I need time to reflect.” Nancy echoed this when she stated, “It really depends on the activity.” The range of responses from the focus group revealed that, although they believed they learned within the group context, many revealed that they needed personal time to reflect on their learning.

From the interview, it became clear that each of the participants had become aware, to differing degrees, of their own learning. For instance, during the interview, Victor stated, “I thought the extremophiles were really cool. I’ve never really tried to imagine different types of organisms, but it was really cool because we could have all these different outcomes and combinations from just small changes in the environment.” For him, it appeared that the hands-on activity and seeing the creatures his peers had created (Figures 1 and 2) helped him better understand extremophiles, which he could readily articulate.

For Emily, the sessions on the universe and space were the ones in which she felt she became more aware of her learning. She stated, “I thought I had understood [the universe] and that I previously had a good background for it. I guess I learned a lot more about where the universe comes from.”

While it was likely that many of the students gained insight into their learning, this was not always observable. However, one such incident occurred during an activity in which the students were decoding a secret message using binary code (Figure 3). In this incident, after Nancy and her group had deciphered the audio code, she exclaimed, “I never really knew how binary worked before this. Now I understand!” Her statement indicated that she did not truly understand how binary codes worked until she had actively experienced their application.

Figure 3. Decoding a coded message in groups. Photo by Marina Mehai

Category 4: Learning over time. The importance of the variable of time was revealed when the focus group was asked how they thought their learning could have improved. Nancy and many of the others agreed that “reading something beforehand or having follow-up discussions” would be helpful. Annie agreed and added, “I’ve tried taking notes and then reviewing them after the session and it really helps me remember what we did. It helps with my learning.” Both of these responses indicated that strategies to help prime learning and extend learning were important to the participants and confirmed the notion that learning occurs over time (Falk & Dierking, 2000).

Category 5: Memorable experiences. The participants’ memorable experiences varied, but centred on activities they found fun and interactive as well as sessions in which they learned information that was beyond what they could have learned in school. For instance, Alyssa noted that for her it was “Drawing the creatures. That was actually really fun.” Her peers agreed that they too enjoyed this session,

which echoed the observations of the students' excitement and interest during this activity.

In her final reflection, Emily wrote, "Learning about the outer worlds was memorable due to the fact that we don't cover that kind of thing in school." Similarly, Annie noted that she now sees how "astronomy has been transferred from a passive to active science." Specifically, she learned "how to decode messages using binary codes and to communicate with aliens (if they exist)". This experience comprised the most memorable session because it also involved "learning about SETI [Search for Extra-Terrestrial Intelligence] and discussing whether extraterrestrials exist".

Category 6: Social aspects of learning beyond the after-school program. Some participants shared their learning beyond the program's context. For instance, Emily described how she continued her astronomy learning at home. She revealed, "I actually talked my parents into going out and buying a telescope and I've had a couple of telescope parties since then like when there was the meteor shower." She also noted that she continued her own personal research at home after the mining session because she "was very skeptical about what [the speaker] was talking about when she talked about the environment, so I went home and looked it up. I also shared it at my eco-club meeting at school."

Victor too revealed that the mining session and map analysis activity (Figure 4) "opened up a different type of conversation at my school's eco-club and my theory of knowledge class. Normally we look at just one perspective like the environmentalist or the corporations and how they are always yelling at each other." For him, this session planted a seed and he felt the importance of continuing the conversation, which was evident when he exclaimed, "Why don't we have those types of conversations? So I started those types of conversations at school."

Figure 4: Exploring satellite maps in groups. Photo by Marina Mehai

DISCUSSION

Types of Learning

Learning was seen to have manifest in not only the cognitive domains, but also in the social, affective, metacognitive, and personal domains. It also appeared to continue over time as the students made connections during and after the five-week unit. As such, these outcomes appear highly consistent with Falk and Dierking's (2000) Contextual Model of Learning, and more broadly with a social constructivist characterization of learning, as outlined in the following sections.

Social learning. The social context plays a role in modulating and mediating individuals' learning experiences (Briseño-Garzón et al., 2007). The immersive experience revealed that opportunities for group work and activities that involved collaboration and discussion helped to promote the construction of meaning (DeWitt & Osborne, 2007). The students, as noted in their own words and through observations, learned from each other and helped others see information from another perspective.

Not only did the students connect to what they were learning, they also learned about their peers and the social dynamics that can occur when working with others. Their experience revealed that the social context can promote content-based understanding as well as interpersonal understanding. Many of the participants communicated this when they expressed both their awareness and appreciation of the peers.

Affective learning. Even though deep cognitive understanding was not entirely evident from the data sets, many students appeared to experience a strong emotional response to what they learned, which has been found in other museum-based learning research (Briseño-Garzón et al., 2007; DeWitt & Storksdiek, 2008). The students enjoyed the experience, which included the exposure to a variety of scientific topics they may have not had an opportunity to connect with otherwise.

The Earth and space science unit also promoted critical thought and revaluation of personal beliefs for some of the participants. This affective reaction was evident after the mining session as it catalyzed some of the participants to revisit their personal values and beliefs and motivated some participants to seek additional information and continue discussions beyond the session.

Metacognitive awareness and personal learning. Metacognition is the awareness and control of learning (Brown, 1988; Flavell, 1979), which mediates meaningful understanding (Sternberg, 1998). Learners who become cognizant of their own learning become better learners (Baird, 1986; Nielsen, Nashon, & Anderson, 2008) because metacognition can improve their personal learning processes (Thomas, Anderson, & Nashon, 2008).

Metacognitive awareness and personal learning were revealed through the observations and the written reflections. Students appeared to gain a better understanding of the learning content as found in similar research (Baird, 1986; Thomas & McRobbie, 2001) and they became more aware of what they now knew. Many were able to verbalize the effectiveness of their learning processes and the products that resulted, which is echoed from findings by Anderson and Nashon (2006).

Cognitive learning. Science learning involves both personal and social knowledge construction (Cobb, 1994). Lower order cognitive learning was evident as the participants were able to recall the facts of what they had learned. More importantly, the observations and written reflections revealed that the participants made meaningful personal connections to different parts of the unit.

The science knowledge they discussed and wrote about was not transmitted to them; rather, their science knowledge was constructed in both individual and social processes, which is echoed by pertinent learning research (Driver, Asoko, Leach, Mortimer, & Scott, 1994). Moreover, while the lectures primarily embodied knowledge transmission, the time for questions, the learning activities, the group discussions, and the writing activities allowed the participants to actively build meaning as they constructed new knowledge and made connections to their prior knowledge.

Learning over time. The research experience revealed that "learning is change and change is not instant" (Rennie & Johnston, 2004, p. S7). It was clear that the learning was more than just a product; it was also a process of meaning-making (Falk & Dierking, 2000). Most importantly in this study, the participants appeared to become privy to their new and changed understandings as they occurred over time.

The variable of time did not operate in isolation. It operated in conjunction with the physical learning context of the science centre, the sociocultural context, and the participants' personal context as outlined in Falk and Dierking's (2000) Contextual Model of Learning. The participants learned as a result of these contexts overlapping through time. They not only interacted with peers as they engaged in activities within the science centre, but their learning often became integrated within their home and school spheres.

Indicators of Learning

The analysis of the findings resulted in a contextualized set of indicators. Although many other indicators of learning do exist, the focus here is on the key indicators uncovered in the research. The intent is to employ these indicators in the future evaluation of this and other similar programs.

Indicators of social learning. Learning can be augmented by the creation of communities of practice, which are used to help negotiate meaning, improve each individual's understanding (Wenger, 1998 in Dohn, 2011), as well as promote awareness of the social group. Incidences of social learning may be indicated when the following occurs:

- Students display cooperative learning behaviours such as assigning roles, sharing information, listening to and following through on advice, sharing tasks, and discussing steps and outcomes (Gammon, 2003).
- They may also use and further develop their communication skills within the context of peer groups. This may include asking questions, listening to peers, providing others with advice, and discussing task-related actions and their possible outcomes (Gammon, 2003).
- The students may also describe their awareness and appreciation (Briseño-Garzón et al., 2007) of their peers.

Indicators of affective learning. The research and data interpretation revealed that affective learning indicators were observable behaviours and students' written or spoken words. Students may be engaging in affective learning when the following occurs:

- Students describe how their beliefs, values and attitudes have been challenged or changed (Briseño-Garzón et al., 2007; Gammon, 2003).
- They describe an emotional response to a learning topic (Briseño-Garzón et al., 2007; Gammon, 2003).
- Students state and/or describe that their awareness of others' attitudes, beliefs and values is enhanced (Gammon, 2003).
- They reveal increased respect and/or empathy towards others' beliefs, attitudes and values (Gammon, 2003).

Indicators of metacognitive awareness and personal learning. Metacognitive awareness and personal learning have an inherent connection. As students engage in metacognition they are experiencing personal learning. Therefore, metacognitive awareness along with personal learning may be identified by the following set of criteria which may be observed and/or self-reported:

- Students regulate their learning (Anderson & Nashon, 2006) and they seem to gain control over their learning process (Flavell, 1979). They also engage in metacognition or thinking about their own thinking (Gunstone, 1994 in Nashon & Anderson, 2004) and learning.
- Students may gain a deeper understanding of the learning content (Baird, 1986; Thomas & McRobbie, 2001), including information of both learning products and/or processes (Baird, 1986; Flavell, 1979; Thomas & McRobbie, 2001). They may reflect on how new conceptions connect to their prior understandings of the learning content (Yürük et al., 2003).

- They may assess the fruitfulness of the strategies they assume (Anderson & Nashon, 2006). They may also make distinctions and comparisons, as well as corrections to their knowledge (Flavell, 1979; Gunstone, 1994 in Nashon & Anderson, 2004) when their learning does not accommodate the progress they have planned for (Anderson & Nashon, 2006).
- Students may self-report that they are confident with both the effectiveness of their learning process and the products that result (Anderson & Nashon, 2006; Gammon, 2003).
- They may also report that they have an increase in their sense of identity and self-worth (Gammon, 2003) with respect to their science learning and understanding.

Indicators of cognitive learning. Cognitive science learning involves both personal and social processes (Falk & Dierking, 2000). As a result, the indicators of this type of learning involve both individual and social activities. The analysis revealed that cognitive learning may be uncovered when students display, and/or self-report the following:

- Students may indicate that they have learned something (Gammon, 2003). Their descriptions may be general, but for some the learning is specific and will reveal critical incidences of learning.
- Students describe what they learned and how it has changed after time has passed (Gammon, 2003).
- They may ask questions and may also state and describe, at times using examples, what they learned (Gammon, 2003).
- Students may also connect what they are learning to their daily lives and prior experiences (Falk & Dierking, 2000; Gammon, 2003).
- They may also connect what they are learning or have learned to science principles (Gammon, 2003) and science topics they have learned or are learning in school.

CONCLUSION AND RECOMMENDATIONS

The research experience with the *Future Science Leaders* after-school science program verified that informal learning environments, just like the classroom environment, are sites where learning occurs. What was exciting and unexpected was the variety of learning experiences observed and uncovered from the participants' own words. Although there were only seven participants in this study, their experiences were revealing and helped to uncover the impact this after-school program had, and presumably will continue to have, on their learning beyond the program's context. Specifically, this study enriched our understanding of the types of learning which can take place, and the indicators that exemplify this learning, both of which can be used in the future evaluation of this and other similar programs.

This study has revealed that meaningful learning activities presented in conjunction with an expert-facilitated session promoted learning, and these types of activities

should be used in future programming. Specifically, a session with an activity that is based on a sociocultural experience, such as play, may be easily recalled and reviewed after the initial experience (Anderson, Piscitelli, Weier, Everett, & Tayler, 2002). The planned activity should also promote conceptual agency, which means that the students should have the ability to interact productively with the subject matter instead of just receiving content from an expert (Bevan & Xanthoudaki, 2008). With these criteria intact, this type of activity would then function to facilitate the connection between the novel learning content and the students' prior knowledge (Gammon, 2003).

Moreover, learning activities that build upon students' interests may also help to facilitate their learning (Bell et al., 2009). When learning activities are built around students' choices and interests, they often become motivated to pursue making connections to otherwise challenging topics and tasks (Dohn, 2011). In addition to building upon students' prior interests, incidences of situational interest should also be created whenever possible (Dohn, 2011). This can be done through the use of props and other sources of interest that function to promote students' motivation and interest in the topics (Dohn, 2011) when presented during the sessions.

While these recommendations operate within the context of this after-school program, other similar museum-based programs can utilize them, and they present a focused area for further research. Specifically, the use of learning activities, especially those involving play and highlighting participants' interests, would inevitably promote learning within youth programs. Engaging learning activities along with expert facilitators can work hand-in-hand to provide youth with unique opportunities to learn beyond the classroom. This was evident in the context of the *Future Science Leaders* program, which aims to create unique and meaningful learning experiences for participants as a means to foster their future endeavours in science and technology.

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SECTION 2: INTRODUCTION

Museum Educators Practice: Challenging Topics and Unique Audiences

Some of the most rewarding experiences for museum educators arise from the unexpected and sometimes difficult conversations we have with visitors and our interactions with unique audiences. While these experiences may ultimately be rewarding, it takes time and reflection to better understand them and to apply those new understandings to our practice. The five chapters in this section start with common elements of museum educators' practice with challenging topics and unique audiences and demonstrate how new understandings emerge from examining the experience more deeply than an educator may have the time to do in the normal course of a workday.

This section begins with one of the most challenging topics in a museum, conversations about death with children. Two very different studies consider this theme. Lorenda Calvert's interpretive case study, "Navigating Sensitive Topics with Children: An Inquiry of Museum Educators Facilitating Conversations about Death with Children", explores educators' experiences in navigating discussions about sensitive topics with children, such as death. As Calvert explains, conversations with children about sensitive topics are often unexpected and may not necessarily be connected with either the content of the program or exhibit. The unexpected nature of the conversations adds to the museum educators' feeling of being underprepared to facilitate the conversations. The outcomes of Calvert's study illustrate a broad scope of sensitive topics museum educators encounter, ranging from reproduction, death, and war to Santa Claus. Calvert's review of literature associated with facilitating conversations with children about death helps to provide insights into why these conversations are challenging as well as insights into facilitating conversations about other sensitive topics. Calvert situates some of the difficulties educators have with having conversations about death with the lack of adequate training to facilitate such conversations successfully, as well as educators' unfamiliarity with the experiences of the children asking the questions. Based on the experiences of the educators interviewed and the supporting literature, Calvert presents recommendations for ways to successfully facilitate conversations about sensitive topics with our younger visitors.

Any educator who has used animal specimens to facilitate conversations with children in museums will be familiar with the common questions they ask, "*Is it dead?*" often followed by, '*Did you kill it?*' The answers are usually easy, but what roles do the animal specimens and museum educators' interactions with children have towards furthering a museum's conservation education mandate? Educators in natural history museums routinely use animal specimens to engage visitors in conversation about animals with the aspiration of helping visitors make connections to live animals and the ecosystems in which they inhabit, in support of conservation education. Xiaomin Zhang's study, "Children's Attitudes Toward Specimens at the Beaty Biodiversity Museum", examines children's reactions towards animal specimens in a natural history museum and explores the potential of specimens as tools for conservation education. Zhang's study begins to fill a gap in research examining young children's responses to animal specimens. Her analysis reveals children's attitudes towards specimens, the connections they make between specimens, the live animals they represent and the children's experience with animals, as well as how the characteristics of individual specimens seem to influence children's attitudes. Zhang concludes with recommendations for museum educators to consider when selecting specimens for use in educational programs.

With the increase in museum exhibitions addressing social issues (Morrissey, Petrie, Canning, Windleharth, & Montano, 2014) museum educators are more likely to have conversations that are challenging and difficult because of the complexity of the issue addressed. In Canada there may be no other issue as complex and challenging as those associated with the treatment of aboriginal peoples. Erica Gibbons' study, "Museums and Marginalized Historical Narratives: Learning the Truth about Indian Residential Schools at the UBC Museum of Anthropology", examines the impact of an exhibit about Indian residential schools on visitors. The history of Indian residential schools in Canada is a challenging issue that has been widely reported in the contemporary press. Although this topic may have more resonance with Canadian museum educators, as Gibbons describes, it is about the impact of colonization of indigenous communities, an issue shared around the world. Her study serves as an evaluation of visitor understanding of the complex history of Indian residential schools, and more specifically, how museums can provide opportunities for critical reflection on challenging and uncomfortable topics. A better understanding of how visitors make sense of issue-based exhibitions, such as the one at the centre of this study, makes a valuable contribution towards the practice of museum educators in facilitating conversations about challenging ideas.

The movement of science museums to become a forum for conversation and debate about contemporary scientific research and its impact on society has presented opportunities for museum educators to address very challenging and complex ideas. This can be difficult, as it often requires a deep level of expertise and understanding of the research to effectively communicate the concepts clearly. One approach many organizations are taking for these conversations is not to have the

museum educators facilitate them, but to provide a forum for scientists to interact directly with visitors. While the scientists' understanding of the concepts is not in question, their ability to facilitate conversations with the diverse lay audience a museum attracts may be. Scientists often need help to learn how to facilitate these conversations in a museum setting, and museum educators are stepping into the role of teaching this unique audience to become better science communicators. Wei Hu's study, "Training Scientists to Communicate Science to the Public in a Science Museum Setting", looks at one program's approach to empowering scientists to become better science communicators. Hu uses Tran and King's (2007) knowledge framework for professional development as a lens to examine the program and the data collected from surveys and interviews with the scientists who participated in it. This study reveals how different aspects of their training support the scientists' facilitation of challenging conversations related to their research with visitors and makes recommendations on how to further improve their training.

The final chapter in this section looks at museum educators' practice with another unique audience, young children with cognitive disabilities. Children with diverse learning needs, including those with cognitive disabilities, are increasingly being integrated into the public school system, and this is reflected in the typical school group visit to museums. Mary Ashley Masterson's interpretive case study, "Identification of Potential Methods of Professional Support for Museum Educators Working with Young Children with Cognitive Disabilities in Museums", begins to look at what museum educators need to better support children with cognitive disabilities during their museum visit. Masterson purposefully uses a very broad definition of cognitive disabilities to ground her study, as this broad definition was more inclusive of museum educators' experiences. In a similar vein to Calvert's study, interviews with museum educators revealed a range of experiences working with children with cognitive disabilities, as well as a general feeling of being ill prepared to support their learning. Based on her research, Masterson makes recommendations including changes to program development, improved communication between classroom and museum educators, and improved professional development specific to working with children with cognitive disabilities.

As museums become more inclusive and reflective of the diverse communities of which they are a part, the necessity for conversations about challenging ideas will increase. Woven through each chapter in this section are ways of thinking about our practice as educators facilitating challenging conversations, along with potential areas for further research to continue the growth of our practice as museum educators.

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5. NAVIGATING SENSITIVE TOPICS WITH CHILDREN

An Inquiry of Museum Educators Facilitating Conversations about Death with Children

INTRODUCTION

Death is an undeniable and unavoidable truth. It permeates all aspect of our lives, often including the museum experience. Death in museums is visible not only within the biological artefacts, but also in the subsequent discussions held between visitors and educators.

Museum educators are the front line workers at museums and engage with the public through their delivery of public and education programs (Munley & Roberts, 2006). During these exchanges children are encouraged to think critically and share their thoughts. This fosters a centre of learning and a 'safe space' for discussion that may prompt children to ask questions on topics they are interested in or concerned about regardless of its relevance to the discussion or museum content. As a consequence, museum educators are often faced with the task of navigating sensitive topics, such as reproduction, religion and death that children raise unexpectedly. Because of the unexpected and varied nature of conversations about death within a museum, current training may be too narrow or non-existent in regards to facilitating conversations about death with children.

Museum educators may feel ill-equipped to navigate and facilitate these discussions due to a professional discomfort with the topic and a fear of scaring children due to a lack of training available on navigating difficult topics, like death, with children. Studying how museum educators navigate difficult topics with children in order to learn more about facilitating a conversation about death can provide some guidance to museum educators in order to assist their future facilitation.

The purpose of this research study was to understand and analyze museum educators' past experiences navigating conversations about sensitive topics with children in order to provide guidance to museum educators on how to facilitate conversations about sensitive topics, in particular death. This research provides an in-depth inquiry into museum educator's experiences facilitating conversations about sensitive topics with children. In addition, this research offers groundwork for further studies of children's learning and understanding of sensitive topics in informal settings.

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 81–95.

LITERATURE REVIEW

The literature review for this study focuses on the specific topic of death, which the researcher determined to be one of the more uncomfortable and sensitive topics to discuss with a child, and one that would be more prevalent within museum settings. The recommendations provided by the existing literature regarding facilitating conversations about death would be applicable to facilitating conversations about other sensitive topics.

Children and Death

There is a need to talk about death with children (Koocher, 1974) as they are curious about death (Elkind, 1977) and want to talk about it (Jackson & Colwell, 2001). In fact children of all ages do understand death to a degree (Poltorak & Glazer, 2006) and actually know more about death than parents and authority figures expect (Callanan, 2014).

However, it would be acceptable to say that children understand death differently to adults. The question which arises, though, is how children understand and process death. Piaget (1951) defined four developmental stages experienced by children as they age: Sensorimotor Stage, experienced between the ages of birth and two years; Preoperational Stage, experienced between the ages of two and seven; Concrete Operational Stage, experienced between the ages of seven and eleven and the Formal Operational Stage, experienced between the ages of eleven and sixteen or onwards. Piaget's four developmental stages have become the platform for numerous academic studies surrounding children's understanding of death cited by authors such as (Poltorak & Glazer, 2006; Himebauch, Arnold, & May, 2008; Safier, 1964; Slaughter & Griffiths, 2007; Renaud, Engarhos, Schleifer, & Talwar 2013; Bluebond-Langner, 1994; Slaughter, 2005). Combining the Piagetian perspective with the generally accepted five sub-concepts of death—Irreversibility, Cessation, Inevitability, Causality and Universality (Poltorak & Glazer, 2006; Safier, 1964; Slaughter, 2005; Renaud et al., 2013) – provided a framework for how children understand death. In general, preschool-aged children view death as temporary and reversible, they view the world in a concrete and literal manner, and they may also understand death through magical thinking and explanations. School-aged children understand the finality of death and irreversibility, however they have yet to grasp its universality. School-aged children also often personify death, using characters such as the grim reaper, monsters or 'boogie men', as a way of understanding. Pre-adolescent children have a biological and adult understanding of death. They understand and are able to grasp all five sub-concepts of death including causality. However, pre-adolescent children may not have developed the ability to identify and manage the emotions that arise when dealing with or discussing death. As a consequence they will often intellectualize the subject matter (Poltorak & Glazer, 2006, Himebauch et al., 2006; Safier, 1964; Slaughter, 2005).

Museums educators may need to take into account the age of their participants and how thorough a discussion will be required and understood by the children. Having a thorough understanding of the Piagetian perspective would provide the museum educator with the knowledge to estimate what developmental stage the child is at and how they understand death at that particular stage. This will, in turn, affect how the museum educator can shape their discussion about sensitive topics such as death (Slaughter, 2005). Lazar and Torney-Purta (1991) highlights that a "child's understanding of death appears to be affected by the type of object being referred to" (p. 1322) especially within the discussion of human death or animal death. Children have a much more thorough understanding of the concepts of death when discussed in relation to animal death, which they may have previously experienced in the passing of a family pet, rather than human death (Lazar & Torney-Purta, 1991, p. 1326). Museum educators can take this into consideration by framing their discussion about death in relation to animals rather than humans.

Parental Guidance

Death may be a difficult topic for parents to discuss with their children, "[i]n general adults say more than a child wants to hear or they avoid the topic all together" (Formanek, 1974, p. 92). As a consequence, children may become confused or seek out information elsewhere. Patterson (2007) provides some advice for parents in regards to guiding discussions in museums. One way a parent can facilitate an enriching and in-depth conversation about death is to avoid confusing abstract language which children may not be able to understand. This is significant as many parents, and educators, may resort to utilizing metaphors or euphemisms. It is also "important that parents take into account their child's level of development when addressing questions and concerns about death and dying, so they are able to talk on the appropriate level" (Patterson, 2007, p. 58). A parent can address their child's level of understanding by how well they grasp the sub-concepts of death as earlier described.

Other ways in which parents may facilitate this conversation is by using personal experiences, such as the death of a pet or attending a funeral for a family member, as well as referring to movies and literature that their child is familiar with, which deal with or mention death and dying or the rituals related to death and dying (Patterson, 2007, p. 62). Comfort level is extremely important in regards to this discussion. Parents who report being more comfortable with the topic of death and dying, and comfortable discussing it, were found to have more enriching conversations with their children (Patterson, 2007, p. 63). Navigating a difficult topic from the perspective of a museum can be even more challenging.

Museum Guidance

While Patterson (2007) provides excellent advice for parents discussing human remains in a museum with their children, it leaves museum educators with very

little to navigate this difficult topic. Parents will have the advantage of knowing their child's personal history and will be able to make personal connections between their child's life and the topic of death and dying. Parents are also privy to the type of movies and literature their children are exposed to. However museum educators could still use the same guidelines but only to a lesser extent.

Museums educators may make generalizations in regards to personal experiences and exposure to popular media and literature, depending on the age of their visitors, that may assist in this discussion. By asking questions and confirming with the child, the educator will have more information to tailor their discussion or answers to meet the child's needs. It is extremely important for museum educators to be comfortable discussing the topic of death and dying and to expect this topic to arise at some point, even if the educator works at a museum that does not exhibit skeletal remains. Death and dying may enter a discussion with museum visitors at any point when discussing artefacts and children may also indiscriminately introduce death into a discussion. Lazar and Torney-Purta's (1991) longitudinal study suggested that children's changing ideas about death and dying may arise through discussions with adults other than their parents. It may be reasonable to assume that children may view museum educators as resources of information regarding their questions about death, which may also be translated into educator-led discussions. Suggestions include: assessing audience response, acknowledging a range of views, acknowledging where the information is coming from or who the 'speaker' is, and allowing visitors to offer their own views and opinions (p. 35). Translating these suggestions into educator-led discussions on the topic of death may help the educator answer questions posed by children as well as address concerns parents and volunteers may have in regards to the answers provided.

Clarity of Language

By far the most important guideline for discussing sensitive topics with children is clarity (Slaughter, 2005; Safier, 1964; Renaud et al., 2013; Bluebond-Langner, 1994). The body of literature that exists on facilitating conversations about death, whether that is parent facilitation or medical professional facilitation, is unanimous on the importance of clarity. Using clear, concrete, unambiguous language and simple straightforward explanations will result in a more successful facilitation because figurative language euphemisms, such as 'long sleep' or 'away traveling', will result in more confusion and potential anxiety for the child. Children in the pre-operational stage are very literal (Himebauch et al., 2008, p. 242) and will only become more confused when figurative language is used. As children move into the concrete operational stage and formal operational stage, clarity may occur through the use of scientific approaches and explanations. Children at this stage demonstrate a biological understanding of death, however

they may not yet have the emotional range to express and understand how they are feeling (Safier, 1964, p. 292).

In addition to clarity, it is also useful to start facilitating a conversation about death by asking what the child already knows (Slaughter, 2005). This provides the facilitator with an opportunity to gauge where the child may be on the Piagetian scale and determine to what extent the child understands death. This also provides the facilitator with an opportunity to clarify the question posed by the child and determine what the root of the question may be – whether it is biological, theological, or cause and effect. It is also very helpful to listen closely to the questions posed by the child and to take cues from the child, "[t]he issue is not 'to tell or not to tell', but rather what to tell when to tell and who should do the telling" (Bluebond-Langner, 1994, p. 256). A child may pose the same question to various individuals such as their parents or a museum educator as a means of determining the truth about the subject; and it is in the way that the child poses the question – specifically the words used that a facilitator may take their cues on determining what may be an appropriate response. Bluebond-Langner (1994) highlights the importance of answering what the child wants to know. Answering their questions and sticking closely to what the child wants to know, rather than providing them with all of the information, will result in a successful understanding and facilitation, and will also alleviate any anxiety or concerns a child may have.

Fear

As mentioned above, parents are uncomfortable discussing sensitive topics, such as death, with children (Lazar & Torney-Purta, 1991; Jackson & Colwell, 2001; Schonfeld, 1993). Many parents are concerned about the fear and anxiety a discussion about death may create in their child. However, it is important for facilitators to acknowledge that understanding death and learning about death has been demonstrated to result in the child feeling less fear and anxiety about death (Slaughter & Griffiths, 2007; Renaud et al., 2013).

Gap in the Literature

The extensive research related to facilitating conversations about death with children provides a starting point for museum educators to consider when preparing to navigate sensitive topics with children. Research specific to museums is very limited, with only a few studies related to museum exhibition development (Alberti, Drew, Bienkowski, & Chapman, 2009; Ferguson, 2006; Patterson, 2007). However, these studies provide guidance for museums as institutions to navigate sensitive topics in exhibitions, such as pre-emptively warning visitors about any potentially sensitive subject matter as well as acknowledging varied opinions on presented topics. However, research of museum educator facilitated conversation

about sensitive topics, such as death, is essentially non-existent. There are emergent needs for in-depth studies in the area of museum educator facilitated conversations about sensitive topics with children. This research provides more focused information of museum educators' experience and guidance toward facilitating conversations about sensitive topics, and is a start towards filling the gap within the literature.

METHODOLOGY

This research adopted an interpretive case study approach (Stake, 1995), employing semi-structured face-to-face interviews methods to understand current museum educators' past experiences facilitating conversations about sensitive topics with children. The philosophical approach of this research was narrative inquiry (Clandinin & Connelly, 2000). Narrative inquiry lends itself well to this study as it brings "theoretical ideas about the nature of life as lived to bear on educational experiences as lived" (Connelly & Clandinin, 1990, p. 3). Narrative inquiry allows for more open-ended, unscripted and conversational semi-structured interviews. This is especially important as participants may have gathered tools to navigate difficult topics from various sources and allowed participants the opportunity to elaborate on their experiences rather than guiding their answers through structured interviews or surveys. In addition, narrative inquiry offers participants the opportunity to apply their own meaning to the topics and to define their experiences as they see fit.

Participants

Participants for this research were museum educators working within the lower mainland of Vancouver, British Columbia, who had previously facilitated conversations about sensitive topics with young children. Participation was voluntary and museum educators were contacted using a letter of invitation posted on local museum educator email listservs. Seven museum educators participated in semi-structured face-to-face interviews: two worked for science centres, four worked for historical museums, and one worked at a nature centre. Participants' experience as museum educators ranged from one year to over 20 years.

Data Collection

This study utilized semi-structured interviews led by several prepared open-ended questions. The questions explored three aspects: professional training within the museum field regarding sensitive topics; professional comfort discussing sensitive topics (such as death, with children); and past professional experiences discussing sensitive topics with children. The interviews were audio-recorded and the transcripts of the interview were used in the data analysis. An interview

script was used as a guideline for the conversations that included questions such as:

1. What types of training have you received that has prepared you as a museum educator?
2. Has there been any training that has prepared you to discuss sensitive topics?
3. Have you talked about sensitive topics with a child visitor?
4. Would you be comfortable talking about death with a child visitor?

Data Analysis

The audio-recorded interviews were transcribed and coded. The process of coding summarized and categorized all the collected research materials thematically. All of the codes were written into the appropriate segment of the text (Creswell, 2014).

The information about museum educators' past experiences facilitating conversations about sensitive topics was categorized as follows: Professional Experience, Training, Effective Facilitation, and Advice. The purpose of this categorization was to compare and contrast whether museum educators' professional experiences reflected that of the existing literature as well as point out successes or failures within the literature's suggestions for successful facilitation. In addition, categorizing allowed for reflection on whether generalizable ideas and concepts could emerge from the data and be applied to museum educators and museums to assist in future facilitations and training.

Ethical Considerations

Because of the content matter, sensitive issues, there was the potential that some participants may have found sharing their own stories and comfort level emotionally or psychologically difficult. However, the participants were made aware through a letter of introduction and letter of consent that the content of the questions and research project were of a professional nature rather than a personal one. Participation was entirely voluntary and participants were informed that they could withdraw at any time. Each participant was given a pseudonym to maintain his or her anonymity.

OUTCOMES

Accounts of museum educators' past successes and failures in facilitating conversations about sensitive topics with children, and what advice they had for future museum educators, arose from face-to-face interviews. Museum educators' professional experiences, training, successful facilitation and advice were coded and summarized. Information about museum educators' past experiences facilitating conversations about sensitive topics are summarized in the outcomes.

Professional Experiences

Professional experience was determined by participants' professional experiences of facilitating conversations about sensitive topics. Based on the research questions and interview questions, participants' responses are categorized below.

Sensitive topics. In this study, museum educators were asked to identify and define sensitive topics within their professional museum experience. Museum educators were encouraged to define the sensitive topics for themselves. Definitions could include literal definition of the word or, more significantly, why the museum educator viewed the topic as sensitive. Each of the museum educator's self-identified sensitive topics was coded. Figure 1 shows the 19 different sensitive topics identified and the frequency they appeared within the seven interviews. Most of the sensitive topics identified were specific to the participant and his or her experiences. There were repeated references made by participants to death, reproduction and politics as sensitive topics. As a result, human death represented 16% of the answers given for sensitive topics.

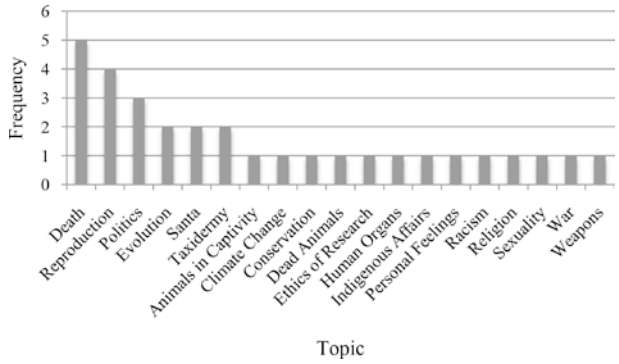

Figure 1. Sensitive topics frequency

Narrative. Museum educators were encouraged to share stories of their experiences facilitating conversations about sensitive topics. Six of the seven participants were able to give detailed narrative accounts of such experiences. Participants used narratives as a means of expressing their professional experiences, reasoning for defining a topic as sensitive, and for discussing their professional comfort or discomfort discussing sensitive topics. Below are some examples of participant's experiences encountering the topic of death at their institution.

> Participant A [science centre]: I really vividly remember when I had that first shocking experience with a kid whose mother had just passed away. He was little, I think he was a five or six year old boy, and his mother had had cancer and had been battling cancer for most of his life and he was so well adjusted

> and accepting of that and it was kinda off the cuff thing that he says, "Oh yea my mom died last month", and I seemed more affected by it than he did.
>
> Participant B [nature centre]: Death comes up on a regular basis and most often it comes about in two ways. We're either out in the park and find a dead animal or children are in here and they have questions about the taxidermy. Their most common question is "Is it real?" and they don't ask if it's alive. And we say "Yes it's real." but it's not alive. And then we go on to explain what taxidermy is and where the animal came from if we know that, and the parents are behind the children soaking it up as well.

Training. After sharing their professional experiences and narratives, the participants were asked to reflect or provide insight on any training that had prepared them for navigating and facilitating conversations about sensitive topics. All seven were unanimous in their feeling that they had not received formal training from within the museum field on how to navigate sensitive topics. However, many of the participants felt that their experiences in counselling, psychology and mourning, outside of the museum field, did assist them or prepare them to facilitate conversations about sensitive topics within a museum setting. Acknowledging the lack of formal training, a number of participants had implemented initiatives at their institution to assist and train their staff to anticipate and facilitate conversations about sensitive topics with visitors.

Effective Facilitation

Following the theoretical and philosophical framework of narrative inquiry, participants were encouraged to share stories of their past facilitation of sensitive topics that they identified as effective or successful. This required the participants to define for themselves what a successful facilitation looked like, and provided a platform to discuss whether or not they had implemented an effective or successful facilitation in the past. Only one of the seven participants was able to provide a narrative example of what was defined as a successful facilitation about death. However, participants were able to provide examples of successful facilitations of other sensitive topics.

> Participant A [science centre]: [A successful conversation is] one where the child leaves understanding what I understand. In the event of an animal passing away that animal isn't going to be here anymore, seven years from now that animal will no longer be here and will no longer influence the lives of the animals it was living with. So for me, what I hope a child takes way, and what I would deem a successful conversation, is understanding that and also understanding that that animal didn't go somewhere. It has ceased to exist and will no longer be here. Not on the farm somewhere. It's no longer here,

> and whether or not that means they totally understand death or the causality of why that animal is no longer here is less important to me, especially with kids verses just understanding the effect of what has happened and how it's going to affect their lives.
>
> Participant C [historical museum]: Conversations about residential schools or the assimilation of First Nations culture by the dominion of Canada …. I also recognize that this perhaps isn't entirely my history, and I also do that very carefully. I qualify that I am not an expert and this is my vague knowledge and interpretation and I always follow up these conversations encouraging you to do research because it is a valuable topic and it's also important to know about.

Advice

Participants were asked to share any advice they had for facilitating successful conversations about sensitive topics. Common responses received were: being honest (n=9), meeting your visitors' needs (n=6) and awareness (n=5). Other responses were: being judgment free (n=1), having a support system for staff (n=1), setting your personal emotions aside (n=3), being respectful (n=2), having empathy (n=1), and preparing yourself for sensitive topics to arise (n=4). These responses are represented below in Figure 2. The most frequent response from participants was the importance of being honest. One participant reflected that even being honest was problematic as the educator is still faced with the difficult challenge of determining the appropriate amount of information to provide the child.

> Participant A [historical museum]: The best advice I was given, or have ever given, and have sort of figured out through my own experiences, is that you have to be honest. Now there are different degrees of being honest, you don't have to bare your soul. But you have to react honestly, you have to give as much information as you have at that moment to answer that question.

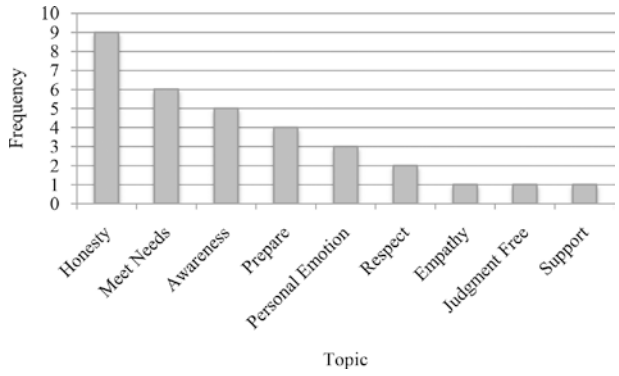

Figure 2. Advice response frequency

Another participant reflected on the importance of having the skills to 'read' the audience and the difficulty of developing those skills.

> Participant D [science centre]: Read your audience and know people. You have to really be able to quickly, know whom you're talking to, and know what information they need. That's hard to teach. You can [do it] in a lot of ways, you just have to learn that through experience. You don't need to share all of the gory details, only as much as they need to hear.

DISCUSSION

Museum educators are the front line workers at museums and engage with the public through their facilitation of public and education programs (Munley & Roberts, 2006). While children are often keen to discuss death and other sensitive topics (Lazar & Torney-Purta, 1991; Koocher, 1974; Elkind, 1977; Callanan, 2014), parents are often reluctant to engage such issues (Lazar & Torney-Purta, 1991; Colwell, 2001; Schonfeld, 1993). As a consequence, museum educators are often put in a position where they are faced with facilitating a conversation about sensitive topics with children that may or may not relate to their field, training or skill set, simply because they interact with the public and encourage thoughtful inquiry. The purpose of this research was to study how museum educators navigated sensitive topics with children in order to provide guidance to museum educators when facilitating conversations about sensitive topics, such as death. The discussion section of this chapter will look at the three categories determined significant by the data collection and the resulting recommendations.

Professional Experience

As the outcomes show, museum educators identified 19 different sensitive topics that they had either encountered at their institutions or could anticipate how the topic could be sensitive. The sensitive topic of death represented 16% of the answers given. This suggests that conversations about death may occur at various institutions. Six of the seven participants were able to provide a story of navigating a conversation about a sensitive topic with a child visitor. Of the six stories told, all but one were conversations that left the museum educator feeling ill-prepared and professionally uncomfortable. There is a demonstrable connection between the existing wealth of literature that supports discomfort among adults in discussing sensitive topics with children (Lazar & Torney-Purta, 1991; Renaud et al., 2013; Jackson & Colwell, 2001) and the discomfort felt by the study's participants. In addition, the collected data supports the literature; children are interested in discussing sensitive topics (Lazar & Torney-Purta, 1991; Koocher, 1972; Callanan, 2014) and will seek out knowledgeable adults, such as museum educators, to do so (Schonfeld, 1993, p. 269).

Training

The outcomes of this research showed that museum educators do not feel that they have received adequate training in order to successfully facilitate conversations about a sensitive topic. All the museum educators who participated in this research study agreed that they feel ill-prepared professionally to facilitate conversations about sensitive topics. This is supported by the lack of resources and literature available regarding museum educator led facilitation about sensitive topics. The lack of resources has resulted in a deficit of training initiatives targeting museum educators and informal learning sites. Some participants found their past experiences in counselling and psychology helped prepared them for conversations about sensitive topics, while others felt that the lived experience of losing an elderly family member helped prepared them. As a result of personally experiencing professional discomfort when faced with facilitating a conversation about a sensitive topic with children, some participants had created and implemented training initiatives for their staff that helped prepared them for the possibility of a sensitive topic arising and consequently facilitating a successful conversation.

Effective Facilitation

Only one of the seven participants was able to provide a narrative account of a successful facilitation. However the other six participants were able to theorize how they would define a successful and effective facilitation of a sensitive topic with a child visitor. Some of the theorized approaches of a successful and effective facilitation were: embracing neutrality, acknowledging where your institution positions itself, reaching an understanding and a broadening of ideas and beliefs.

Recommendations

An outcome of this study was to provide guidance and influence training for museum educators in order to better facilitate conversations about sensitive topics with children. Participants were asked to share their thoughts and advice for new or established museum educators who may be faced with facilitating a conversation about sensitive topics. The top three recommendations provided by participants were: be honest, meet your visitors' needs, and provide awareness to visitors of what they will be viewing and experiencing, and how the subject matter may be sensitive.

Be honest. Honesty was determined to be important because lies, falsehoods or elaborate stories were thought to be demeaning to the child's experience and seen to be more damaging than helpful. One participant defined honesty as speaking honestly and reacting honestly to the situation that prompted the sensitive topic to arise. Another participant defined honesty as not shying away from the facts of death and presenting them in an honest and straightforward manner. In some ways this

supports the existing literature which stresses the importance of clarity (Patterson, 2007; Safier, 1964; Bluebond-Langner, 1994). Clarity is viewed as one of the most important factors in facilitating conversations about death with children because figurative language or euphemisms has been proven to cause more confusion than understanding for the child. As a consequence, misunderstandings can lead to anxiety and fear (Slaughter & Griffiths, 2007; Renaud et al., 2013).

Meet the needs of your audience. The outcomes showed that meeting the needs of your audience was determined to be the second most important guidance regarding successfully facilitating a conversation about death with children. One participant defined meeting the needs of your audience as being aware of what topics might be sensitive for particular groups and to prepare accordingly. In addition, two other participants defined meeting the needs of your audience as taking cues from the child. Taking cues from the child involves listening to what language they are using and what specifically they are asking, and then to answer accordingly. An example provided was when a child asked a participant if their deceased pet was currently in heaven with their deceased grandfather. The guidance provided in this situation was that by paying attention to the wording of the question you can be informed of the recent death in the child's life as well as the child's belief in an afterlife. An appropriate and successful response would be to agree and confirm. The existing pool of literature supports the guidance of meeting the needs of your audience (Bluebond-Langer, 1994; Slaughter, 2005). However, Bluebond-Langer and Slaughter define meeting the needs of your audience as understanding what developmental stage the child is experiencing by using the Piagetian perspective in order to tailor a response that will be successful and understood. The participants who stressed the importance of knowing your audience in order the meet the needs of your audience supported this view.

Show awareness. Awareness was determined to be the third most important guideline regarding successful facilitation of a sensitive topic conversation. Awareness was defined by the participants as being professionally aware of how a sensitive topic may arise and under what circumstances. Consequently, awareness aids in preparation to facilitate a conversation regarding a sensitive topic. Awareness was also defined as informing visitors of what they may experience while at an informal learning site that may be deemed sensitive. Awareness has not been identified as an important aid in facilitating conversations about death by the existing pool of literature. Nonetheless, awareness is important for all museum educators and informal learning sites as it stresses the importance of training initiatives that inform and educate employees in order to raise their own professional awareness and preparedness.

It is recognized that there is a need for further research with a large sample size on the ways in which other museum educators have encountered sensitive topics, such as death, and what they found was efficient and effective in facilitating

conversations. It would also be beneficial to analyze how children determine a successful conversation about sensitive topics and what they find useful in growing their understanding.

CONCLUSION

Museum educator's experiences facilitating conversations about sensitive topics were diverse and complicated. They felt professionally ill-prepared to facilitate conversations about sensitive topics, and this was related to a deficiency of professional training initiatives. Consequently, many participants were reliant on supplementing their professional skillset from their own personal experiences. Children have the awareness and interest in discussing death and sensitive topics in general with adults. Unfortunately there is very little literature to aid museum educators in this facilitation. The literature that exists is largely targeted towards adults who have strong and lasting relationships with the children they are speaking to. For museum educators this is rarely the case. In aiding future facilitation, museum educators were able to identify three key guidelines: honesty, meeting the needs of your audience and awareness. Museum educators and institutions should use these three guidelines in order to create training initiatives that will result in museum educators who are prepared and equipped to facilitate successful conversations about sensitive topics, such as death, with children. Museum educators need to prepare themselves academically and within their practice for conversations about sensitive topics, as it is only a matter of time before they find themselves facilitating a conversation regarding a sensitive topic. Ultimately, this research demonstrated that there is a deficit in the literature regarding museum educator facilitated conversations about sensitive topics, prompting a call for further research.

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6. CHILDREN'S ATTITUDES TOWARD SPECIMENS AT THE BEATY BIODIVERSITY MUSEUM

INTRODUCTION

As children are key learners in family groups (Falk, Moussouri, & Coulson, 1998; Briseño-Garzón, Anderson, & Anderson, 2007; Falk, Heimlich, & Bronnenkant, 2008) and school groups, it is valuable and essential to expand the research on children's aspects of learning in museums. Children's attitudes to museum exhibitions influence their experiences of learning in museums (Anderson, Piscitelli, Weier, Everett, & Tayler, 2002). Museums with live animals such as zoos and aquariums have a strong potential to induce emotional responses among visitors (Adelman, Falk, & James, 2000; Myers, Saunders, & Birjulin, 2004). However, unlike zoos and aquariums, natural history museums, with preserved animals on display, have the potential to evoke unpleasant and disturbing emotions among visitors, because the animals displayed are dead. This is an unavoidable intrinsic characteristic of natural history museums with preserved animal specimens. Live animals and preserved animal specimens may have a similar educational function in providing cognitive knowledge about animals, but the visitors' emotional responses induced by preserved animal specimens may be distinct from the emotions triggered by live animals. As a result, they may impact visitors' affective gain, which could have deeper and longer influences on visitors' memories, and may even last for decades (Anderson & Shimizu, 2007).

Although some psychologists believe that attitudes are both inherited (McGuire, 1985) and acquired (Maio, Esses, Arnold, & Olson, 2004), more researchers have supported the concept that attitudes are learned from the living environment. Maio and Haddock (2009) believe that the attitudes are generally constructed or influenced by three components: *cognitive* – the knowledge and information concerning the object related to the attitudes; *affective* – feelings and emotions associated with the object related to the attitudes; and *behavioural* – consisting of past experiences regarding the object related to the attitudes (Maio & Haddock, 2009). These tripartite components are interrelated (Haddock & Huskinson, 2004). Visitors' knowledge associated with the object may influence their feelings and attitudes, and their emotional connection with the object will

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influence their learning as well (Anderson et al., 2002). Overall, inquiring into children's attitudes towards displayed animal specimens is crucial and warrants further study.

One particular set of attitudes relevant to this study is children's attitudes towards death. Lazar and Torney-Purta's (1991) study of children's perception of death resulted in four aspects that defined and measured concepts of death; *irreversibility* – it is unchangeable, the dead can never come back; *cessation* – all biological, sensory, emotional and cognitive functions have ceased; *causality* – the objective causes of death; and *inevitability* – death is universal and inevitable, every living organism will die. Children from different ages may partially or entirely understand these concepts, but which concept(s) may influence their attitude toward specimens needs further research. Lazar and Torney-Purta (1991) found that children's understanding of the concepts of animal death and human death are developed differently and the concept of human death was better understood than animal death. Orbach, Gross, Glaubman, and Berman's (1985) study also found that children with more cognitive awareness of death were more likely to be influenced by their own anxiety.

However, specimens on display in museums not only represent death, but also represent that the animals were once alive. Children's attitudes toward animals are indivisible from the topic of a human-nature relationship. Research into relationships between human and non-human beings resulted in a hypothesis called *biophilia*, which refers to humans' affiliation with animals and natural environments (Wilson, 1984), and it not only includes people's positive attitudes towards non-human beings, but also includes human's negative affiliations with animals and natural environments (Kellert, 1993).

Kellert (1985a) developed his typology of people's attitudes to animals, and divided the responses into nine categories: naturalistic, ecologistic, humanistic, moralistic, scientistic, aesthetic, utilitarian, dominionistic and negativistic. The definitions of Kellert's (1985b) attitudes are summarized in Table 1. Kellert and Westervelt's (1983) research shows that the most common attitude of children to live animals is humanistic, which represents their interest and emotional connection for particular animals such as their pets or large wild animals with strong anthropomorphic association.

However, research into the use of specimens as educational museum exhibits, and in particular the research into children's perspectives of displayed animal specimens, is not as comprehensive as research into the attitudes people hold towards living animals. Similarly there is a lack of research into the use of animal specimens presented in a *touch table* format. Although not focused on attitudes specifically, Tunnicliffe's (1996) research into children's conversations about live zoo animals, specimens in natural history museum dioramas, and specimens in *nature tables* provides useful insights into children's knowledge about and attitudes towards animal specimens. Tunnicliffe's research comparing children's unprompted conversations about live animals at a zoo and taxidermies of animals in dioramas

Table 1. Kellert's (1985b) attitudes towards animals

Naturalistic	Primary interest and affection for wildlife and the outdoors.
Ecologistic	Primary concern for the environment as a system, for interrelationships between wildlife species and natural habitats.
Humanistic	Primary interest and strong affection for individual animals, principally pets. Regarding wildlife, focus on large attractive animals with strong anthropomorphic associations.
Moralistic	Primary concern for the right and wrong treatment of animals, with strong opposition to exploitation of and cruelty toward animals.
Scientistic	Primary interest in the physical attributes and biological functioning of animals.
Aesthetic	Primary interest in the artistic and symbolic characteristics of animals.
Utilitarian	Primary concern for the practical and material value of animals.
Dominionistic	Primary satisfactions derived from mastery and control over animals typically in sporting situations.
Negativistic	Primary orientation is an avoidance of animals due either to indifference, dislike or fear.

in a natural history museum demonstrated no significant difference between the general content of the conversations in these two groups. She did, however, find subtle differences between the emphasis of the conversations between boys and girls, with girls making significantly more comments reflecting affective attitudes and using more emotive comments than boys.

Research into children's reactions to prepared animal specimens presented outside of the context of a diorama exhibit is minimal. Tompkins and Tunnicliffe's (2007) study of children's responses to a *nature table*, a table of objects from nature displayed in the classroom, provides insights to children's ideas about animal specimens. Their research documents how young children (ages 5–10) use science process skills such as observation, analysis and inference when discussing specimens. In particular, the concept of animacy, in which children's conversations about objects such as a snail shell or bird feather would relate to the living snail or bird was a limitation. As a result of their research they also recommend criteria including animacy, novelty, familiarity, aesthetics and emotional engagement when selecting items for a nature table.

There are emergent needs for in-depth studies about children's attitudes towards specimens. This study begins to address this gap by examining children's attitudes towards preserved animal specimens. Additionally, it attempts to articulate for both visitors and museum educators the value of potentially unpleasant characteristics of specimens and how this kind of knowledge may support visitors' learning and intensify their understanding of conservation. The research was guided by the following questions:

1. What do children know about museum specimens and the live animals they represent?
2. What characteristics of the preserved animal specimens influence children's reactions towards them?
3. What kind of attitudes do children express towards preserved animal specimens?

METHODOLOGY

This research was conducted at the Beaty Biodiversity Museum, Vancouver, (www.beatymuseum.ubc.ca), which displays the University of British Columbia's six natural history collections, comprised of more than two million specimens, including a treasured 26-metre-long blue whale skeleton. The museum's exhibits portray how scientists use the vast collection to better understand biodiversity.

The philosophical approach of this research was phenomenography (Marton, 1986), as it attempted to investigate the qualitatively different ways in which children experience and think about animal specimens. In order to look more deeply into children's complex views and ideas about preserved animals, and give more freedom to their cognitive and emotional process, semi-structured interviews and participant observations were employed (Creswell, 2009, p. 8).

Participants

The targeted demographic of this research was children (5–14 years old) within family groups who were capable of explicitly expressing their feelings about a specimen and clearly understood the requirements of the questions asked. A total of 40 children, 21 females, 19 males, participated in this research. Most children (32 of the 40 participants) said that they had a pet or pets at home.

Data Collection

Two kinds of qualitative research approaches were used to collect data: semi-structured interviews and participant observations. These methods enabled the researcher to gather more in-depth information about the children's personal experiences during their visit (interview) and assess a wider range of factors which may influence children's attitudes to specimens. At the same time, by applying these two strategies, the researcher was able to triangulate the data during data analysis.

Semi-structured interviews. Forty children were interviewed at the Beaty Biodiversity Museum. The short interviews (approximately 15 minutes) were semi-structured and led by several prepared open-ended questions. The questions explored three aspects: cognitive knowledge of the specimen, emotional connections with or feelings about the specimen, and past experiences with the specimen or its live

animal counterpart. The interviews were audiorecorded and the interview transcripts were used in data analysis.

Participant observations. Participant observation was used to "investigate, experience and represent the social life and social processes that occur in that setting" (Emerson, 2001, p. 352). The aim of the observation was to record the body language, facial expressions and interactions with specimens during the interview, particularly focusing on how the behaviours contradicted their oral responses in the interviews. Background information was noted, such as whether the children had participated in any museum educational activities, or whether they accidentally overheard the research questions and the answers from other participants, as well as unexpected influences such as parent interference, museum tours, and children's potential disruption of the specimens.

Research Procedures

Family groups were approached during their visit to the museum. After the researcher introduced the research objectives and the purpose of the research project, care-givers and their children were asked if they would like to participate in the research and adults were given a consent form to sign.

During the interviews, participants were shown a range of specimens on a *touch table*, an approach commonly used by museum educators to engage visitors in discussions. The specimens included taxidermies of a robin, crow, rat, raccoon, a dried porcupine fish (also mistakenly recognized as a puffer fish), a long-fin mako shark jaw, a grizzly bear skull and a preserved clown fish in formaldehyde (Figure 1).

Figure 1. The specimen touch table used in interviews

The following interview questions were asked while showing the specimens to participants:

1. Can you recognize these specimens?
2. What do you know about these specimens?
3. What do you feel about these specimens, and why?

4. Would you like to touch these specimens? Why or why not?
5. Have you ever seen these animals/specimens before?
6. Which of these specimens do you like/dislike the most? Why?
7. Do you have a pet at home?

Data Analysis

All audio-recorded interviews were transcribed and observations annotated and coded. The process of coding summarized and categorized all the collected research materials (Creswell, 2009). The information about children's attitudes towards preserved animal specimens was categorized using Kellert's (1985a) attitudes: naturalistic, ecologistic, humanistic, moralistic, scientistic, aesthetic, utilitarian, dominionistic and negativistic.

Ethical Considerations

Interviewing children is a complicated approach to research because of the sensitivity of children's emotions and the possibility of unintentionally causing distress in the children during the interview. The unpleasant intrinsic nature of the concept of death is a sensitive topic to discuss with children. Consequently, extra attention was paid to the wording of the prepared questions, and permission was granted by their caregivers to discuss these concepts before the interview.

OUTCOMES

Attitude is determined by an individual's cognitive knowledge, feelings and past experiences of the object. Children's responses including knowledge, experience and feelings related to the specimens and of the corresponding live animal of the specimen; the characteristics of the specimens that most influence participants; and, their attitudes towards specimens are introduced below.

A response was coded as recognized when children identified the specimen by name. None of the participants identified the porcupine fish by its correct name, but used its more common name of puffer fish. Considering the aim of this research, the researcher accepted puffer fish as the correct name for the specimen. As Figure 2 shows, participants readily identified most specimens, with the exception of the bear skull, which was identified by only nine children (23%).

Children's Knowledge about Specimens

Children had little knowledge about the specimens. As exemplified in the following excerpt, when answering the question, "What do you know about these specimens?" they tended to respond with their knowledge of the live animal the specimen represents. Some of the knowledge the children shared about the live animals

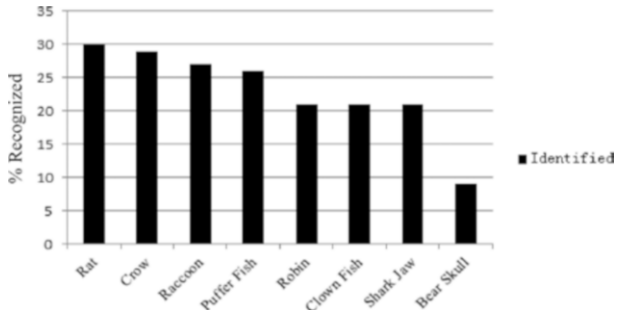

Figure 2. The recognizability of specimens. (n=40)

was quite complex. Nine (22.5%) of the participants demonstrated more complex knowledge about the porcupine fish, such as "it puffs up when it get scared", and "there is poison inside of the fish." Four (10%) of the participants showed in depth knowledge about the shark, such as "people use shark fin soup", and "sharks are predators".

Researcher: What do you know about these specimens?
Child: The puffer fish has poison inside, and will kill a human within like five minutes.
(*seven-year-old, male, a bunny as pet*)

During the interviews, participants were provided opportunities to think and talk about the specimens. The participants illustrated science process skills by using observation skills to gather information, describing the characteristics of the specimen and making inferences based on their observations.

Researcher: Can you recognize these specimens?
Child: That's looks like a jaw of a shark, I think according to its teeth, I think its white [great white shark].
Researcher: What do you think about these specimens, are they real or fake?
Child: I think some of them are fake and some of them are real. I think those ones with the weird looking eyes are fake [the specimens without eyes], because that will prove they are just stuffed animals or something. The puffer fish is a spike ball, I could choose the white jaw, because of its shinning teeth, it might be a fake, but I am pretty sure it's real, and because of its weird looking bone-ish colour and shape, I believe those three are real [bear skull, shark jaw, puffer fish].
Researcher: You think these [raccoon, crow, rat] are fake because they do not have eyes?
Child: Yes, and this robin, probably. It's fake too.

Researcher: But it has eyes?
Child: This robin is paralyzed, and usually the robin will just usually swing down, so it's paralysed. You can grip on it and tell it's fake. (*eight-year-old, male, no pet*)

Children's understanding of death. All participants in the study had the cognitive awareness of the death of the specimens to some extent. As the excerpts from interviews below illustrate, most participants related the concept of specimen with the concept of death.

Researcher: Do you think these specimens are dead or alive?
Child: They are all dead, they are not moving! And the puffer fish is not [either]… it could not be alive! (*eight-year-old, male, no pet*)

Researcher: What do you know about these specimens?
Child: You mean these animals or these specimens?
Researcher: The specimens, are they alive?
Father: Of course dead, she said "specimens".
Child: I know "specimen" – specimens are all dead! (*11-year-old, female, has a dog and two fish as pets*)

However, three participants were not certain whether a specimen was dead, but could give explanations once this was confirmed.

Researcher: What do you know about this clown fish?
Child: Is it dead?
Researcher: Yes.
Child: If it's sideways or upside down, they are dead. But sometimes they pretend they are dead. (*seven-year-old, male, has a cat as pet*)

Two participants who were interviewed together had the awareness of the death of the specimens, but showed low awareness of the concept of the irreversibility of death.

Researcher: What do you feel about these specimens?
Children: Raccoon scares me, because if this one is going to move, I think it looks awful.
Mother: Like a zombie?
Participants: Yeah.
Researcher: Do you want to touch them?
Children: I do not want to touch, because I am scared, I think they are going to get alive. (*seven-year-old, male; nine-year-old, female; two cats and a dog as pet*)

Experiences related to live animals. All participants reported that they had direct experiences with robins, crows and raccoons. A few participants had direct experience with bears and rats. They had seen these animals in the wild and in their daily life. One of the participants (10-year-old, female) had a pet rat. She was the only participant to touch the rat specimen during the interview and, interestingly, it was the only specimen she touched. Some participants had seen porcupine fish, clown fish, sharks, and bears at an aquarium or zoo. Most participants had indirect experiences with clown fish as it appeared in movies and popular media.

Children's feelings towards specimens. One participant did not respond to the question, therefore data related to feelings towards specimens was collected from 39 of the 40 participants. The top three specimens participants liked the most were robin (n=21), porcupine fish (n=12) and shark jaw (n=6). The top three they disliked the most were rat (n=11), porcupine fish (n=6) and shark jaw (n=5) (Figure 3).

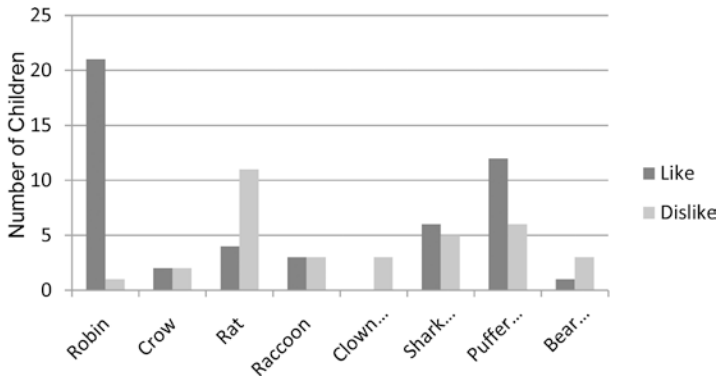

Figure 3. Children's choice of liked and disliked specimens

The emotional reactions children had to specimens were diverse (Table 2). Children used two approaches to describe their feelings. In one approach children described their own emotional reactions triggered by the specimens. Twenty-seven participants used only the emotional descriptors when describing their feelings towards the specimens. Within this group there was a marked difference in gender, with the majority (63%) of this group being girls. The other approach was to use more descriptive or tactile terms related to the characteristics of specimens. Only three participants used this approach, and all of them were boys. Some participants even described elements they could not physically sense at that moment such as smells and perceived cleanliness. Nine participants used both the descriptive and emotional terms to describe their feelings towards the specimens.

Table 2. Descriptive word use by children

Category	*Descriptor*
Emotional	Freaky, afraid, scary, creepy, crazy, dumb, lame, weird, awful, gross, yucky, disgusting, annoying, silly, deadly, boring, nothing dangerous, cool, cute, funny, friendly, like, sorry, happy, interesting, sad, bad.
Descriptive	Fluffy, soft, feathery, fury, spiky, spooky, pointy, sharp, slimy, smooth, shiny, hard, woody, wet, ugly, smells, rough, pretty, beautiful, colourful, paralyzed, fast, tiny, small, big, huge, fat, not clean.

Influential Characteristics of Specimens

Based on the frequency of comments from participants, the following are the three most influential characteristics of specimens: (a) tactile impressions, (b) specimen damage, and (c) unique characteristics, including visible traces of the specimen preparation process.

Tactile impression. The majority of participants (82.5%) touched the specimens and described their tactile impressions. If the specimen was soft, such as the raccoon and the robin, the participants tended to have more physical contact with the specimen. How the specimen felt became participants' reasons to like or dislike it. Eight participants said they liked the robin and racoon because they felt soft; three participants disliked the porcupine fish and shark jaw because they felt pointy or sharp.

Specimen damage. Some specimens used in this research were partially broken or damaged, such as the grizzly bear skull's missing teeth, broken spikes on the porcupine fish and the clown fish's washed out colour. Participants showed curiosity towards the missing teeth of the grizzly bear and the broken spines of the porcupine fish. Their questions about the damage were related to confirming their thinking about whether the specimen was dead or whether the specimen was real, finding the "criminal" who damaged the specimens, and searching for the cause of the damage. Almost half the participants did not recognize the clown fish. After they were told the specimen was a clown fish or *Nemo*, the clown fish character in a popular children's movie, the participants started to look more closely at it and asked questions about the faded colour.

Researcher: Can you recognize these specimens?
Children: A robin, crow, rat, raccoon, a fish…
Researcher: You could have a close look at it.
Children: Is it the kind that is in the movie *Finding Nemo*? What's it called?
Researcher: Clown fish.
Children: Oh! Where are its stripes?
(*nine-year-old, seven-year-old, females, no pet*)

Unique characteristics. Participants were attracted by unique characteristics that make the specimens different from their living counterpart, particularly the visible traces left by the specimen preparation process. For some specimens these characteristics were apparent to the children such as the missing eyes on the racoon, crow and rat, the unfamiliar pose of the robin, and the hollow nature of the porcupine fish. These characteristics attracted participant's attention and even triggered questions.

Researcher: [Pointing at the rat] actually, this one is a rat.
Child: A mouse are pretty much looks the same any way. Hey! What happened to their eyes? It seems creepy!
(*eight-year-old, male, no pet*)

The visible traces of the specimen preparation process always triggered participants' curiosity. The questions they asked during the interview were mainly around these traces. Three of the traces most frequently mentioned by children participants were the stitching on the porcupine fish, the lack of eyes on some specimens, and the fact that the clown fish was in a jar. Also, one participant responded that the faded colour of the clown fish made it hard to recognize.

Children's Attitudes Towards Specimens

Children's attitudes toward specimens are determined by their cognitive knowledge, feelings, and past experiences with the specimens. However, their feelings towards the specimens may differ from their feelings towards the live animal. Using Kellert's (1985a) categories of attitudes toward live animals as a lens through which to analyze the children's reactions reveals a few differences.

As Table 3 illustrates, children's conversations reveal a range of attitudes towards the specimens. Examples of all Kellert's categories with the exception of ecologistic were found in this research. In addition to Kellert's categories, three children also showed attitudes that had a more sympathetic perspective. This attitude was often expressed in relation to the children's awareness of the death of the specimens. They expressed this sympathy through statements such as, "I kind [of] feel sorry for them, because they are all dead", "Sad, they are all dead, nothing else", "Not scary, but feel sorry". In these responses, participants illustrated their awareness that they regarded the specimens as animals not objects.

DISCUSSION

An individual's attitude is constructed by three components: their cognitive knowledge, emotional reactions and past experience with the object (Maio et al., 2004). As there is limited research into attitudes towards specimens, and in particular specimens presented in the context of a research-based natural history museum, this study takes important first steps towards understanding children's attitudes towards

Table 3. Children's attitudes toward specimens

Categories	*Definition*	*Participants' Responses*
Naturalistic	Primary interest and affection for wild life and the outdoors.	"I kind of like all of them."
Humanistic	Primary interest and strong affection for individual animals, principally pets. Regarding wildlife, focus on large attractive animals with strong anthropomorphic.	One of the participants just touched the rat specimen, she had two rats as pets at home, and she said she only liked the rat among all the presented specimens.
Moralistic	Primary concern for the right and wrong treatment of animals, with strong opposition to exploitation of and cruelty toward animals.	"They use shark fin soup, which I think is wrong. They just cut off the fins. If they use the whole shark, I mean it's OK…"
Scientistic	Primary interest in the physical attributes and biological functioning of animals.	"It [shark] is a pretty big predator."
Aesthetic	Primary interest in the artistic and symbolic characteristics of animals.	"I like the robin because it is beautiful."
Utilitarian	Primary concern for the practical and material value of animals.	"When it [porcupine fish] puffs up, you could use it as a ball."
Dominionistic	Primary satisfactions derived from mastery and control over animals, typically in sporting situations.	"They are all dead, nothing dangerous." "You could see them close, if they are alive, you cannot really do that."
Negativistic	Primary orientation is an avoidance of specimens due either to indifference, dislike or fear.	"The rat is disgusting."
Sympathetic	Primary emotion due to the awareness of the death of the specimen.	"I kind [of] feel sorry for them, because they are all dead."

animal specimens and the opportunities that using specimens presents to museum educators to further their educational objectives.

Children's Knowledge about Specimens

This study begins to explore an area where there is limited research specific to the use of specimens as an educational tool. Tunnicliffe's (1996) research into children's conversations at natural history museum dioramas provides valuable

insights into children's reactions to individual specimens used in a common *touch table* format. Even though their experiences with specimens were limited and most of the participants had never visited the Beaty Biodiversity Museum, most children could identify most of the specimens. Although all children reported that they had direct experience with animals they may see in their daily lives such as the rat, crow, racoon and robin, not every child was able to identify them by name. Even when children could not identify specimens by name they demonstrated a series of science skills, in particular observation, analysis and inference, when discussing the specimens (Tompkins & Tunnicliffe, 2007).

Participants showed strong interest in the dried porcupine fish and shark jaw. Interestingly, children in this research chose these specimens as both the top three most popular and unpopular specimens. Participants also demonstrated more in depth and complex knowledge about the porcupine fish and the shark than other specimens. Although, these specimens were rated as both the most favourable and most unfavourable specimens, the results still partially agreed with the result in the prior research, which showed that children had better knowledge of, but less favourable attitudes toward, unpopular animals compared with popular animals (Prokop & Tunnicliffe, 2010).

More female participants use emotional words to describe their feelings regarding the specimens than male participants. They made more emotional connections to the specimens than male participants. This is consistent with Tunnicliffe's (1996) study in which girls made more affective and emotive comments than did boys. From observations, female participants also had more physical contact with the specimens.

Children have stronger emotional responses to the specimens that they have better knowledge of; eleven children in this research demonstrated more knowledge about the most popular and unpopular specimens. This general trend is contradicted by reactions to the robin specimen, a common bird in the area. Although all participants stated that they had experience with robins (75% identified it by name and over half the participants stated they liked the robin specimen), few of them had much knowledge about live robins or the robin specimen. This could be because participants were attracted by the pleasing aesthetic of the specimen, and yet the participants' familiarity with robins in their surroundings and their lack of novelty sparked little curiosity to learn more about it (Tomkins & Tunnicliffe, 2007).

When asked about the specimens, children generally relayed knowledge specific to the live animal counterpart, not information specific to the specimen. Even the few participants, who owned specimens (shark jaw or a single shark tooth) talked about the live animals rather than the preserved specimens. This is reflective of Tomkins and Tunnicliffe's (2007) discussion of the role of animacy in children's perceptions of specimens. During these conversations children seem to use the specimens as a starting point for discussing the live animal. This connection could have important consequences for the use of specimens as an educational tool. The exceptions to talking about the live animal related to the specimen occurred when children noticed features on the specimens either related to damage of the specimen or visible signs

of the specimen preparation process (addressed in the following section), or when more challenging concepts where being discussed, such as whether the specimen was real or fake, or dead or alive.

Anecdotally, museum educators often report children using terms such as real, fake and alive when asking questions about specimens, and this is supported in Tunnicliffe's (2007) research into children's conversations about animals in dioramas. In this study, children made quite decisive statements about whether a specimen was real or fake. These comments were often made when discussing specimens that were missing key features of the live animal, such as eyes. Children in the study had an understanding of death of the specimens to some extent. Their understanding of the sub-concept of cessation (Lazar & Torney-Purta, 1991) seemed to be related to the specimen's lack of movement. However, two participants' (9 year old females) understandings of the irreversibility of death were low. They seemed to need to be reassured that the animal would not come back to life before they shared further information, and in one case her concern seemed to create fear towards the specimen. This is consistent with Lazar and Torney-Purta's (1991) findings that children do not necessarily understand the sub-concepts of death as they relate to animals, other than cessation, very well.

Influential Characteristics of Specimens

Specific characteristics of the specimens in the study seemed to influence the children's reactions and may contribute towards their attitude towards the specimens. This finding is consistent with Tompkins and Tunnicliffe's (2007) criteria for selecting natural objects for teaching. They suggest that items with an aesthetic appeal, including texture, items with a novel appearance and objects that elicits an affective response are more likely to attract children's attention.

The specimens in this study presented a range of tactile experiences for children, from the softness of animal fur and feathers to the sharpness of shark's teeth and the protective spines of the porcupine fish. Tactile impressions, such as the softness of the animal fur, attracted children to have direct contact with the specimens. Previous research showed that soft tactile impression provides a sense of safety (Harlow, 1958). It also provided an enjoyable affective experience for the participants. Different kinds of tactile impressions of the specimens provide museum educators with an opportunity to discuss topics about the functions of different parts of animals' bodies, such as sharp teeth for hunting, and provide a valuable cognitive experience of having a close observation of an aggressive predator's giant mouth without being attacked.

The unique differences between the specimens and the live animals the specimens represent reflect the novelty that Tomkins and Tunnicliffe (2007) describe and are triggers for children's curiosity. Unconsciously, the researcher tended to avoid specifically referring to the damage on some of the specimens, but the participants were often curious about the damage. Their questions about the damage seemed to reflect a moralistic attitude (Kellert, 1993) towards the specimen and the person who

caused the damage. Children were also attracted by features related to the processing of the specimens, such as the absence of eyes, fake eyes, or visible stitching.

Children's curiosity and interest about these features of the specimens could provide museum educators an opportunity to deliver information about specimen protection. Museum educators could facilitate scientific, utilitarian and aesthetic considerations of the specimens.

Children's Attitudes Towards Specimens

The specimens seemed more like mediators to elicit participants' knowledge of live animals. The findings suggest that children's attitudes towards specimens are related to the specimens' appearance and the children's interests in the live animals the specimens represented. Children tended to show stronger affection towards specimens with pleasing aesthetic characteristics as illustrated by children touching and standing closer to specimens they thought were beautiful, soft or cool. If they had some knowledge about the specimen or the animal of the specimen, the attitude showed by participants was more complex, as exemplified by one girl who had a pet rat at home she described the rat as "soft and cute" and touched only the rat specimen during the interview. Having pets at home was associated with positive attitudes towards, and better knowledge about both popular (robin) and unpopular (rat) animals in general (Prokop & Tunnicliffe, 2010). These results are also supported by prior research, which showed that positive affect were correlated with the exhibitions which visitors could connect with their pre-existing knowledge and understandings (Piscitelli & Anderson, 2001).

Participants' attitudes toward specimens shown in this research are similar to Kellert's (1985a) categorization of children's attitudes towards animals. In addition to the child's knowledge of the living animal, the physical condition of the specimen and the fact that it is dead seemed to generate a range of attitudes towards it. Participants' awareness of the concept of death of the specimens seemed to influence some children to feel more in control and express more dominionistic attitudes toward specimens. They were confident to touch the specimens and they showed appreciation and satisfaction for the opportunity for direct contact. Meanwhile, the negativistic attitudes toward specimens showed by children were different from what they recalled about the live animals. They may show avoidance of touching a specific specimen, but they also claimed they liked the specimen, but just did not want to touch it. In contrast, children may also claim a negative emotion towards a specific specimen, while being willing to touch it. Although most of the children reported they felt the specimens were scary and creepy, many were willing to touch or at least stand close to the specimens. They actually showed less fear than they described. Additionally, they also showed a humanistic attitude to the specimens.

Children did not seem to express any ecologistic attitudes (Kellert, 1985a). This is not surprising given the context of the study; a research-based collection with limited diorama-like exhibits displaying specimens in an environment, and unrelated specimens exhibited on a table.

In addition to Kellert's (1985a) nine categories of attitudes, participants seemed to illustrate an additional attitude, sympathy, related to their awareness of the death of the specimens. As one child described, "I kind [of] feel sorry for them, because they all dead." More female than male participants in this research showed this kind of attitude, and participants who showed this attitude tended to be more aware of the specimens' characteristics instead of just focusing on the animals of the specimen. These findings are consistent with Tunnicliffe's (1996) observation on differences in conversations between boys and girls while looking at dioramas in natural history museums.

EDUCATIONAL IMPLICATIONS

The unique characteristics of the specimens; they are animals, but dead animals; they may be posed as alive but are not alive; they have fake eyes but the bodies are real, make the specimens both a vivid mediator for interpreting the knowledge of live animals and reinforcing science process skills. The educational potential of specimens as interpretive tools can be better met with a more rigorous selection of specimens using criteria such as aesthetic appeal, novel appearance and specimens that have the capacity to elicit an emotionally affective response. When educators are selecting specimens for a *touch table* they should not only consider the animal species but the characteristics of the specimen and how those characteristics may create opportunities to reinforce different attitudes towards animals. Special attention should be made towards how children respond to novel characteristics such as damage to the specimen and visual signs of the specimen preparation process.

The study also provides indications for future research into the use of specimens to better support conservation education. Of particular note was the apparent lack of ecological attitudes shared by participants. Further research into what characteristics of specimens help educators make stronger connections to conservation issues as well as whether the types of species grouped together are more likely to elicit ecologistic attitudes would be well worth pursuing.

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7. MUSEUMS AND MARGINALIZED HISTORICAL NARRATIVES

Learning the Truth about Indian Residential Schools at the UBC Museum of Anthropology

INTRODUCTION

On September 18, 2013 the Truth and Reconciliation Commission of Canada arrived in Vancouver, British Columbia, a date that also marked the opening of a new collaborative exhibition at the University of British Columbia's Museum of Anthropology (MOA) entitled Speaking to Memory: Images and Voices from St. Michael's Residential School. While Indian Residential School survivors, Aboriginal[1] community members and non-Aboriginal allies gathered in the city's east end to bear witness to former students' testimonies, museum visitors flowed through the doors of the O'Brian Gallery, an intimate exhibition space to the side of the museum's monumental Great Hall, to witness the history of St. Michael's Residential School, which operated for fifty-five years in the small coastal community of Alert Bay, British Columbia. This comprehensive exhibition, established through the collaborative efforts between MOA and the 'Umista Cultural Centre (a community-based institution that stands next to the original St. Michael's Residential School building), invited visitors to engage in a dialogue regarding the experiences of Aboriginal youth who attended the school. The exhibition revealed a complex historical narrative by featuring black and white photographs captured by a young Aboriginal girl during her residency in the 1940s, as well as printed excerpts from survivor testimonies gathered in 1991. Mounted on an adjacent wall were a series of official apologies from various church and government authorities printed on long, white banners, and a single historical artefact – the school's original, industrial-sized bread machine, once operated by the hands of young children. The multidimensional display offered several entry points and varied perspectives on the residential school experience, and placed the visitor at the centre of this challenging historical narrative by establishing a calm and reflective space where museumgoers could contemplate the complexities and legacies of this Canadian institution.[2]

The mounting of this exhibition prioritizing Aboriginal experiences offered a unique opportunity for visitors to enhance their understandings of historical and contemporary Aboriginal/non-Aboriginal relations in Canada, and the significant and enduring effects that attendance at residential schools had on young Aboriginal

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 115–129.

children, their cultural identities and the foundational structures of Aboriginal communities. The present study, conducted in the spring of 2014, embraced such an opportunity, as the author set out to understand how visitor experiences at the *Speaking to Memory* exhibition impacted their awareness of the history of Indian Residential Schools in Canada. To contextualize the research, the following discussion first briefly attends to the history of Indian Residential Schools in Canada, and deliberates on the current state of awareness of this history amongst Canadians that has elicited a call for a public education movement prioritizing critical conversations on Canada's colonial past. Further, this conversation will examine the colonial heritage that is so intimately tied to museum institutions, and contemporary movements towards collaborative museology and the prioritization of previously marginalized narratives. Thirdly, this discussion will address several findings from the present impact study as indications of the potential educational possibilities of museum exhibitions representing challenging historical narratives.

This study represents a uniquely Canadian perspective on the impacts of colonialism and the ongoing role that museums play in representing Canada's colonial past. However, the history of European colonization is an international narrative that continues to shape Western-Indigenous relations around the globe, and connections can easily be drawn between the stories shared in this chapter and international narratives pointing to the enduring impacts of colonization on the global indigenous community. With this in mind, this chapter highlights one example of how museums can function to bring these narratives to the forefront to engage citizens living in colonial states in critical dialogue on the past, present and future of Aboriginal/non-Aboriginal relationships. As Canadian citizens begin to engage in critical dialogue about Canada's colonial past, and acknowledge the mechanics of history that have brought Aboriginal and non-Aboriginal peoples to the present-day realities of social and cultural fragmentation, we must ask: Are museums effective vehicles to transmit this information in an effort to bring about meaningful change and dialogue?

SETTING THE CONTEXT: DIFFICULT HISTORIES, EVOLVING RELATIONSHIPS

Indian Residential Schools: A Canadian Legacy, A New Conversation

> The destiny of a people is intricately bound to the way its children are educated. Education is the transmission of cultural DNA from one generation to the next. It shapes the language and pathways of thinking, the contours of character and values, the social skills and creative potential of the individual. It determines the productive skills of a people. (Royal Commission on Aboriginal Peoples, 1996a, p. 434)

Since time immemorial, the indigenous peoples who have inhabited the vast landscape of what is now North America have passed down traditional cultural teachings through holistic, intergenerational practices, methods which were, and

continue to be, integral to the maintenance of social and cultural cohesion. As colonialism swept across the continent, however, the dissemination of traditional knowledge through orally-based pedagogies became the target of a brutal assault, as the continued intergenerational passing down of traditional teachings was viewed as a threat against colonial claims of sovereignty and the advancement of the Canadian nation. Today, many consider the attempted destruction of Aboriginal cultures an act of cultural genocide (MacDonald & Hudson, 2012). Moreover, the Royal Commission Report on Aboriginal Peoples (RCAP) (1996b) asserts, "Of all the steps taken to achieve that goal none was more obviously a creature of Canada's paternalism toward Aboriginal people, its civilizing strategy and its stern assimilative determination than education" (p. 421).

Mi'kmaw education scholar Dr. Marie Battiste (1998) states, "Education has not been benign or beneficial for Aboriginal peoples. Rather, through ill-conceived federal government policies, Aboriginal peoples have been subjected to a combination of unquestionably powerful but profoundly debilitating forces of assimilation and colonization" (p. 19). This history is most prominently marked by the Indian Residential School (IRS) system. For more than a century, Aboriginal children were forcibly removed from their homes and transported to institutions designed to sever connections to customary practices and values to assimilate the children into colonial society. Forbidden to speak traditional languages, and deprived of the care, love and guidance of family and community, many children sustained abuse by religious authorities and administrators who oversaw the management of these institutions. Assimilation through Western educational systems interrupted Aboriginal peoples' cultural legacies with the purpose of breaking ties to ancestral territories. The implications of this complex and lingering history continue to shape contemporary Aboriginal realities; substance abuse, family dysfunction, culture loss, violent death and suicide are but a few of the modern-day manifestations that plague many Aboriginal communities as a result of the Canadian government's attempt to eradicate Aboriginal cultures through the systemic institutionalization of innocent children (Royal Commission on Aboriginal Peoples, 1996a).

Despite the extensive nature of this history that saw the removal of over 150,000 Aboriginal children from their families and communities, two major studies conducted in the last twenty years indicate that the majority of Canadians are unaware of this aspect of their nation's history. In fact, these studies revealed that, overall, Canadians are relatively uninformed when it comes to matters of Aboriginal history in Canada. To begin, the Coalition for the Advancement of Aboriginal Studies (CAAS) (2002) conducted a survey with over five hundred Canadian high school graduates to determine the extent of their knowledge concerning contemporary and historical Aboriginal cultures. The results from this survey paint a scathing portrayal of the Canadian education system that systematically negates Aboriginal perspectives in the classroom, resulting in generations of Canadian students leaving secondary school with little to no knowledge of the historical and contemporary realities of Aboriginal peoples and cultures:

> More than 50% of all students surveyed state clearly that they did not have an adequate opportunity to learn about Aboriginal Peoples' histories and cultures in elementary and secondary school…. When incomplete, "no answers," "don't knows" and neutral responses are excluded from the data, about 80% of the respondents expressed serious or very serious dissatisfaction with what they had learned about Aboriginal Peoples in school. (p. 112)

The second study by Environics Research Group (2008), prepared for Indian Residential Schools Resolution Canada and the Truth and Reconciliation Commission, examined the Canadian public's awareness of the history of Indian Residential Schools. More than two thousand Canadians participated in this study, representing varying demographics including new immigrants and Aboriginal peoples from various regions across the nation. Results from this survey revealed that, "Overall, just over one-third of Canadians report familiarity with the issue of native people and residential schools, with only one in twenty very familiar" (Environics Research Group, 2008, p. i). In this regard, Regan (2010) unequivocally articulates, "Clearly, an enormous public education task lies ahead" (p. 42).

Before entering into a discussion concerning the current impact study, however, it's vital to take a step back for a moment and consider *why* museums are integral to this process of decolonizing public perceptions of indigenous peoples. Onciul (2014) contends that, "Museums are key sites for reclaiming and decolonizing public representations of Indigenous heritage" (p. 34). In this regard, one might ask: What is the history of museum relationships with Aboriginal communities and cultures? And why is it necessary that these institutions take a leadership role in providing decolonizing contexts for learning about Aboriginal history and Canada's colonial past, and present? The following discussion will deliberate on these topics, as the Museum of Anthropology's presentation of residential school survivors' experiences sits at the intersection of the history of museums as disseminators of colonial ideologies, contemporary collaborative museological practices, and conversations on the role of museums in providing safe spaces where public conversations concerning difficult histories can take place.

Colonial Museums, Collaborative Museology and Contact Zones

The history of museums as institutions representing national cultures and histories is inextricably linked to the history of colonialism and all of its complexities (Cooper, 2008; Phillips, 2011). However, Native American scholar Amy Lonetree (2012) draws attention to recent shifts within the relationship between Aboriginal peoples and western cultural institutions, asserting, "Today, Indigenous people are actively involved in making museums more open and community-relevant sites" (p. 1). It is now widely accepted that this significant shift occurred in response to protests from Aboriginal communities regarding the Glenbow Museum's 1988 mounting of *The*

Spirit Sings: Artistic Traditions of Canada's First Peoples, an exhibition featuring rare and exceptional examples of Aboriginal material culture meant to showcase Canada's history and culture for the Calgary Olympics (see Clifford, 1997; Cooper, 2008; Lonetree, 2012; Phillips, 2011). Over the past two decades, as a result of this evolving relationship, a new museological practice has emerged focusing on community-based collaboration, emphasizing the responsibilities of museums to involve colonized communities in the representation of their histories and cultures (Schultz, 2011).

Furthermore, as museum professionals adopt the movement towards collaboration and accurate representation of indigenous histories, conversations have emerged around the social role of museums in engaging visitors in socially challenging conversations relating to contemporary matters of culture and heritage. For example, Australian scholar Fiona Cameron (2005) argues, "Ongoing cultural, social and political tensions…heighten the need for civic spaces where diverse communities might learn about and debate issues of contemporary relevance and importance" (p. 213). Moreover, cultural studies scholar Jenny Kidd (2014) shares, "Approaches to difficult histories often involve interpretation from different perspectives, revealing hidden, sidelined and forgotten artefacts of culture…and expose the process of history 'making' as inherently biased and at its worst, bigoted" (pp. 1–2).

The inclusion of such challenging narratives is an essential and poignant facet of the evolving relationship between museums and Indigenous communities. Furthermore, museums that embrace the movement towards the dissemination of difficult narratives ultimately function to bring their visitors into contact with unfamiliar and sometimes uncomfortable aspects of the national identities represented in the exhibitions. The mounting of the *Speaking to Memory* exhibition embraced these two dynamics. Through this exhibition, the museum highlighted its continued dedication to collaboration with previously marginalized communities, while simultaneously inviting visitors to this silenced aspect of Canadian history. With this in mind, the following discussion looks at results from the present study to understand how visitor engagement with the *Speaking to Memory* exhibition impacted their awareness of the history of Indian Residential Schools in Canada.

IMPACT STUDY: METHODOLOGY, RESULTS AND ANALYSIS

By highlighting several notable experiences of study participants, this research study will speak to how engagement with the exhibition content impacted visitors' awareness of the history of Indian Residential Schools in Canada, and illustrate the exhibition's success in rendering educational visitor engagement. The discussion will evaluate how visits to this exhibit enhanced visitor understanding of the complexities of the history of Indian Residential Schools, thereby supporting the claim that museums are, indeed, spaces for critical reflection on the cultural implications of challenging and uncomfortable social narratives.

Methodology

Research for this study took place over a four-week period in the spring of 2014. Twenty-two adult visitors participated, eight of whom were local visitors from the Vancouver area, and seven were visiting from various regions throughout Canada (Yukon, Quebec, northern British Columbia, and Ontario). One participant self-identified as having Aboriginal ancestry. The remainder of the participants represented an international cohort, however, for the purposes of this chapter the following discussion will focus solely on the fifteen Canadian participants.

The research process involved a series of informal, semi-structured interviews, occurring before and after each participant's visit to the exhibition. Potential study participants were randomly selected and approached as they neared the entrance to the exhibition space. The majority of participants opted to participate in the interview process in pairs if they were visiting the museum in the company of others. The inclusion of pre-entry interviews was founded in a relativist-constructionist principle of learning, as explored by informal education theorists Falk, Moussouri, and Coulson (1998), who explain that a relativist-constructivist approach "assumes that each individual brings varied prior experiences and knowledge into a learning situation and that these shape how that individual perceives and processes what he or she experiences" (p. 109). Moreover, Falk and Dierking's (2000) Contextual Model of Learning contributed to this study's theoretical framework, as the model is founded in the understanding that all educational experiences "are situated within a series of contexts" (p. 10) – the personal, physical and sociocultural contexts that shape how an individual understands their social relationships, and influence an individual's access to, and processing of, new information. In this regard, pre-entry interviews functioned to establish how familiar each participant was with the history of Indian Residential Schools, and where study participants may have engaged with such narratives prior to entering the exhibition space. Moreover, it is important to consider that information shared during pre-entry interviews, and the prospect of a follow-up interview upon exiting the exhibition space, most likely contributed to the depth of engagement each participant had with the exhibit. However, this factor was not formally analyzed as part of the present study.[3]

Expanding upon Falk, Moussouri, and Coulson's (1998) theory, they maintain, "[t]he combination of prior experience and the new experience result in learning, but the resulting learning is unique for each individual situated within the context in which it was learned" (p. 109). With this in mind, participants were invited to continue the conversation upon exiting the gallery, to explore how their engagement with the exhibition contributed to their understanding of the history of residential schools.

Study Results: Emerging Themes, Shifting Degrees of Awareness

Pre-entry interviews revealed four predominant categories representing participants' previous knowledge of the history of Indian Residential Schools in Canada: No

Previous Knowledge, Limited Previous Knowledge, Basic Previous Knowledge and Extensive Previous Knowledge. The following discussion presents notable findings shared by some of the fifteen Canadian participants, with the purpose of first inquiring as to how these participants' prior awareness of the history of Indian Residential Schools relates to the current Canadian standard of knowledge as evidenced by the previously mentioned studies conducted by the CAAS (2002) and Environics Research Group (2008). Secondly, this discussion focuses on understanding the various ways that participant engagement with the exhibition impacted their awareness of this history, placing this understanding in the context of current scholarly views of learning within museum environments, with the purpose of illustrating the educational success of the *Speaking to Memory* display.

Pre-Entry Findings and Study Correlations

Six Canadian participants, all of whom were young adults at various stages of post-secondary studies, were considered to have basic prior knowledge because they cited in pre-entry interviews some previous educational experiences that touched on this aspect of Canadian history, or they communicated basic knowledge of dates and/or some factual information such as the role of government and religious institutions. For example, several participants indicated the only exposure they had received to this aspect of colonial history was through watching films such as *Rabbit Proof Fence* (Noyce & Noyce, 2002) and *We Were Children* (Irving & Wolochatiuk, 2012). In fact, the participant who referenced the latter mentioned that this preliminary introduction to residential school history only occurred while she was completing her Bachelor of Education degree. Another participant expressed that what she knew about residential schools she had learnt by proxy from her mother who was a local educator and who had grown up close to an Aboriginal community on Vancouver Island. Interestingly, five participants in this group shared that they had not received any education on this history prior to entering post-secondary studies, a finding that shares similarities with the conclusions from the CAAS (2002) study.

Eight Canadian participants were considered to have extensive prior knowledge of the IRS history, as they expressed a deep understanding of the implications of this complex history in terms of ongoing impact on Aboriginal peoples and communities through the sharing of personal narratives articulating a multifaceted knowledge of this history, and/or commenting on current affairs such as the Truth and Reconciliation Commission. Two of the eight participants in this group self-identified as university students, whereas the remaining six participants represented an older demographic representing experienced working professionals or retirees. Five participants in this category shared personal stories related to how they understood IRS history in Canada, whether because they grew up in regions with highly visible Aboriginal populations, worked professionally with Aboriginal people as social workers, or disclosed direct or indirect relationships with someone who attended a residential

school. For example, one Canadian, non-Aboriginal participant visiting the museum from the Yukon shared the following anecdote:

> I basically grew up in a small community, we were probably eighty percent Native, and so we were all well aware of it as we grew up, and as you got older you start putting all the pieces together. Like when you're a kid you hear people talking about it over your head, but as you get older you realize it couldn't have been that great going into it.

For this participant, it was his lived experiences that contributed to his understanding of the history and impact of residential schools on his Aboriginal neighbours. Other participants shared similarly personal accounts.

Most tellingly, one participant, a college-aged man from the Vancouver region, articulated, "I'm confused, what's a residential school and how does it differ from a regular school? This is all new to me."

Study Participants and the Canadian Status Quo

Pre-entry interviews functioned to establish a baseline for comparison with post-visit conversations to understand whether participants' knowledge of residential schools was impacted by their visit to the *Speaking to Memory* exhibition. Firstly, though, it is of interest to note several correlations, as well as one or two incongruities, that reveal connections and differences between the participant sample, and how their experiences and knowledge relate to the Canadian status quo as indicated by both the Environics (2008) and CAAS (2002) studies. To begin, while Environics Research Group (2008) found that, overall, "half (51%) of Canadians report that they have heard or read something on the subject of Indian residential schools" (p. 13), pre-entry conversations with Canadian showed that fifteen of the sixteen participants (approximately 93%) were aware of the existence of residential schools. Certainly, it is necessary to consider that the sample size for this impact study was significantly smaller than the survey's sample size of over 2000 participants. However, these study results could also be explained by the Benchmark Survey's assertion that "[a]wareness of Indian residential schools rises with education and age" (p. 14). Although participants' educational achievements were not expressly requested in the interview process, many voluntarily shared information about their scholarly backgrounds, or made mention of their line of work, such as social worker or editor, which implied they had achieved a certain degree of educational experience. Furthermore, there is a correlation between an individual's educational achievements and their propensity to visit museums and other informal educational institutions, as noted by Eileen Hooper-Greenhill (1994), "The level of education is a very important variable in indicating whether an individual is likely to become a museum visitor. The more highly educated some is, the more a museum or gallery visit becomes likely" (p. 65). Moreover, the survey's findings indicating connections between older age and awareness of residential schools were further confirmed by

the impact study findings. The majority of participants who entered the exhibition with extensive knowledge represented a more aged demographic, whereas younger participants repeatedly acknowledged their lack of exposure to this narrative in their education. This also compares to previously mentioned findings from the CAAS (2002) study that revealed overarching patterns of younger Canadians leaving the education system having little to no knowledge of Aboriginal histories and cultures. These factors account for the significantly higher awareness amongst impact study participants than the general Canadian public.

Turning now to similar trends found across all three studies, impact study results indicated that many Canadian participants with extensive prior knowledge were most often aware of how the residential school system functioned to separate children from families and communities and disconnected students from traditional cultural practices and language, a pattern that was also prevalent amongst the Environics Research Group's (2008) study participants (p. ii). Also notable, Environics Research Group found a correlation between geographic region and familiarity with issues related to Indian Residential Schools, pointing to increased awareness amongst those from northern and western Canada, and to a lesser extent amongst those from eastern Canada (p. iii), a pattern that was similarly replicated in this impact study data.

Although it may appear that pre-entry study findings contradict claims that the majority of Canadians are relatively unaware of the history of residential schools, when considering the various factors mentioned in this discussion, it appears that the Canadian participants in this impact study, in many ways, represent a microcosm of the Canadian public in terms of the depth and breadth of awareness of this history. As this conversation transitions to a discussion concerning post-visit conversations, we will explore the various ways that engagement with this exhibition enhanced participant awareness of residential schools, regardless of whether they had limited or extensive prior knowledge concerning this narrative, with the purpose of illustrating the impactful nature of an exhibit examining challenging historical narratives.

Post-Visit Reflections and Challenging Content

Post-visit interviews revealed several intersecting patterns pointing to ways that engagement with exhibition content expanded participants' understanding of the complexity and severity of the history of Indian Residential Schools in Canada. One predominant pattern spoke to Falk and Dierking's (2000) assertion that, "More typically, visitor learning follows two parallel pathways: the learning of global ideas; and the learning of very specific, usually idiosyncratic facts and concepts" (p. 153). Furthermore, learning in museum environments sometimes also involves an emotional, or affective, engagement with exhibition narratives, a notion that Barry Lord (2007) explores:

> Learning is primarily *affective* when it is focused on our *feeling* about things – when it affects our attitudes, interests, appreciation, beliefs, or values. Of

> course, cognition of data accompanies this affective experience. However, the essential museum learning experience is the change in our feelings, interests, attitudes, or appreciation of the subject matter due to the museum display. (p. 13)

With these two ideas in mind, this discussion will now turn to look at several illustrative examples of participant reflections that demonstrate the exhibit's educational function in relation to these concepts of what learning in a museum environment can resemble.

Firstly, we look to the one Canadian participant who entered the study with no prior knowledge of the history of residential schools. As previously stated, this participant initially expressed confusion concerning the differentiation between residential schools and "regular" schools, and acknowledged a general lack of education concerning the existence of these institutions. Upon exiting the gallery, this participant shared, "From what I read…they weren't treated very well. I wasn't aware of that. I didn't know about any of this stuff." He was rather troubled about what he had learned, and expressed shock towards learning about the traumatic nature of this historic event. This experience did spark inquiry, as this participant questioned his previous understandings about the relationship between Aboriginal peoples and the Canadian government, sharing: "Well, 'cause I knew, like, Aboriginals have privileges in Canada, like they get free education and stuff. What does that have to do with it?" In this sense, this participant's encounter with the exhibition could be understood as an affective and transformative event based in the learning of much generalized information about this history.

Regarding participants who expressed basic knowledge of residential schools prior to entering the exhibit, members of this group demonstrated learning on various levels, and several notable observations strongly supported both Falk and Dierking's (2000) and Lord's (2007) theories of museum learning. For example, one participant was particularly emotionally charged after learning more intimate details about the violent nature of assimilation inflicted upon innocent children, and commented that learning about the horrible treatment of children was a very devastating and sad experience, sharing:

> I find it devastating, and sad. It's really, really sad to witness that kind of violence experienced by children from adults…. And the degree to which it was, was not just the personal violence, but the cultural violence too, that's a different thing.

It seemed that visiting the exhibit gave this participant more of a comprehensive awareness of the residential schools, as prior to entering the exhibit he expressed concern for the extent of his detailed knowledge concerning this history. It was clear that this participant experienced several transformative moments as he engaged with the exhibition, and that he became increasingly familiar with the realities experienced by former residential school students.

Another Canadian participant with basic prior knowledge revealed that this exhibition helped her to understand how the history of residential schools affects contemporary Aboriginal peoples:

> It's just shocking, like, they did all this and they took their culture away from them and it's really affected them now…. And it also makes you understand, too, why they have all these privileges now, and not to think badly that, like, they shouldn't. 'Why are they taking the government's money?' I've heard people say that before. But…this was their land; they deserve all that and more. This is terrible and it's not something you can take back.

This participant's engaging exhibition experience contributed to the development of her general awareness of the ongoing impact of the residential school experience, and increased her understanding of the complexities of contemporary Aboriginal/non-Aboriginal relations.

The majority of participants who entered the exhibition with extensive prior knowledge of residential schools shared in follow-up interviews that, through their engagement with exhibition materials, they had gained knowledge about specific aspects of the residential school experience, which enhanced their overall awareness of this history and its contemporary manifestations. One poignant example of this came from the university student completing his BA in history, who shared:

> New information for me was the disease and the tuberculosis that was so rampant…. and that [school authorities] got grants based on how many students they took away from their parents, [which] incentivized them to overcrowd the schools. And yet [this is] not terribly surprising…. [it's] just a new element.

This participant went on to express:

> It affected me. It was just very moving. Again, like, a lot of it was familiar, but the specific anecdotal version of the things that I knew had happened….To read it in somebody's own words was definitely a change.

This participant's experience with the Speaking to Memory exhibit did not only increase his awareness of the realities that many students faced during their time in these institutions, but also affected him emotionally, as he was clearly touched by the words of the survivors, which was something he had yet to experience in his education on residential schools.

The post-visit reflections shared in this section illustrate the various ways that study participants were impacted by their visit to the *Speaking to Memory* exhibition, and how this experience deepened their awareness of the complex and enduring legacy of Indian Residential Schools in Canada. Although space limitations do not provide for a more comprehensive review of the many profound thoughts contributed by all study participants, the examples provided within this discussion indicate that the Museum of Anthropology's presentation of the experiences of Aboriginal children attending St. Michael's Residential School engaged the museum-going audience

in a critical dialogue with the researcher about this facet of Canadian history, and the importance of acknowledging how this history lives on in the present to shape contemporary Aboriginal/non-Aboriginal relations.

MOVING FORWARD: SUPPORTING RECONCILIATION THROUGH MUSEUM EDUCATION

Achieving reconciliation between Aboriginal and non-Aboriginal peoples first requires truth telling and full disclosure on Canada's colonial past and the treatment of Aboriginal peoples to the present day. Public education on historical and contemporary Aboriginal experiences is vital to these decolonization efforts, an argument supported by Tupper (2014), who articulates, "The need to create opportunities for critical peace building education in Canada, specific to reconciliation between settler populations and Aboriginal peoples, is urgent in light of ongoing processes of colonialism that shape these relationships" (p. 469). As evidenced by the results from this impact study, it is clear that museums have great potential for supporting the process of disseminating knowledge of the difficult histories and marginalized social narratives associated with the Indian Residential School system in Canada, and bringing more Canadians into discussions on this issue through thought provoking and approachable exhibits addressing these challenging aspects of our nation's heritage. With the mounting of this exhibition, the Museum of Anthropology appears to have signaled its support for the Truth and Reconciliation Commission's mandate to bring greater awareness of the history of Indian Residential Schools in Canada to the Canadian public. It also served as a formidable representation of the museum's commitment to collaborative museology and community-based engagement in the name of decolonizing conventionally colonial institutions that shape how the public perceives Aboriginal cultural heritage. As more of Canada's cultural institutions embrace this approach to representing Canadian heritage, there is great potential for reaching a vast audience to support ongoing and open reconciliatory dialogue.

Moreover, while this particular study focused on adult visitors, results also point to opportunities where museums can engage a younger audience with the double purpose of creating a future cohort of museumgoers, as well as drawing youth into critical reflections of heritage and history. Museum professionals often discuss the challenges of engaging young adult audiences. John Reeves (2006) remarks, teenagers and young adults are "a notoriously difficult audience to capture and keep, especially if their earlier experience on school trips has been unrewarding" (p. 52). In this regard, while provincial governments, such as in British Columbia, are heeding calls to decolonize curriculum by integrating Aboriginal content and perspectives into classroom practices, museums engaging in critical reflections of the nation's colonial heritage can also play a significant role in providing support for educators who wish to heighten cross-cultural awareness amongst their students.

In demanding such a task, however, one must consider that teachers themselves are part of this system which for many generations has negated Aboriginal perspectives. As a result, it is highly likely that teachers in Canada are unprepared to accurately and appropriately engage in conversations with their students about these challenging topics. Teachers will require support in their endeavours to educate both themselves and their students on the true nature of Canada's historical relationship with Aboriginal peoples. Furthermore, as text books and classroom resources catch up to the new curricular demands, museums engaging in critical dialogue about challenging histories, such as Indian Residential Schools in Canada, can champion such narratives and assist educators in their personal and professional decolonization efforts. Through field trip visits to exhibitions, or by providing supportive and educational toolkits for classroom-based investigations, cultural institutions participating in decolonization practices can be dynamic and valuable resources for teachers looking to expand their students', and their own, understandings of Canada's colonial legacies.

The truth about Aboriginal experiences in government-mandated education systems is no longer up for debate. The Truth and Reconciliation Commission has now travelled across the nation gathering testimonies from residential school survivors and their families detailing the horrors of their treatment within this system, as well as the enduring colonial legacy that continues to impact the daily lives of these individuals and their communities. The Canadian public must engage in critical and productive conversations about this history if they are to understand to the fullest extent the enduring implications of Canada's colonial legacy. As indicated by the findings from this study, museums are ideal environments to support public dialogue on decolonization, and can assist in decolonization efforts beyond museum walls by increasing visitor exposure to these narratives and inspiring visitors to question previously held understandings of the nation's colonial heritage. Museums can support educators as they explore how to integrate challenging narratives into their classrooms to bring about a new generation of informed citizens. Museums can connect fragmented communities through the sharing of stories with the goal of increasing cross-cultural understandings and dialogue. Now is the time when Canada's national historical narrative must prioritize previously marginalized Aboriginal voices, and in doing so support reconciliation which will contribute to an inclusive future where Aboriginal peoples and cultures are supported and strengthened by the nation as a whole.

ABOUT THE AUTHOR

As a non-Aboriginal Canadian of British and Dutch ancestry, the author has spent the last eight years as a guest in the traditional, unceded territory of the Musqueam people. Her first critical encounter with Aboriginal peoples and cultures occurred during a second-year introductory course to First Nations Studies at the University of British Columbia. Struck by her own ignorance about Aboriginal peoples,

cultures and histories, the author undertook a journey towards decolonization that has inspired the completion of a major research project investigating the history of Aboriginal education in Canada. She is passionate about public education on Aboriginal issues, and maintains a focus on endangered language revitalization as a student of the Coast Salish hən̓q̓əmin̓əm̓ (Musqueam) dialect.

NOTES

[1] Throughout this chapter, the following terms are used to refer to Indigenous peoples: Aboriginal, First Nation, Indigenous, Native, Native American, Indian. Terms used outside the context of citation refer to the definitions that can be found at http://indigenousfoundations.arts.ubc.ca/home.html

[2] For a critical reflection on the representation of the history of Indian Residential Schools at the Canadian Museum of History (formerly the Canadian Museum of Civilization) see Brady (2013).

[3] The complete report of this study considers factors such as advanced education and age that influence the likelihood that one would visit museums and critically engage with exhibition content.

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WEI HU

8. TRAINING SCIENTISTS TO COMMUNICATE SCIENCE TO THE PUBLIC IN A SCIENCE MUSEUM SETTING

INTRODUCTION

Science communication refers to a wide variety of communication processes relevant to science. These range from communication among experts within specialties, to the mediated or direct communication of science to lay audiences, to the influence of messages on science policy (Dunwoody, 2010). Science communication has become a part of the social life of the scientific community. A survey conducted by the Royal Society in 2006 of research scientists and engineers in the United Kingdom found nearly three quarters (74%) reported taking part in at least one science communication or public engagement activity over the past year (Royal Society, 2006). However, in the practice of science communication, a common concern among scientists is the disconnection between scientists and the general public, and some scientists argue that "some of the blame lies with the lay public because many people have 'little factual knowledge of science'" (Baum, 2012, p. 5). This blame implies a deficit model of science communication in which the general public is viewed as being deficient in knowledge, understanding and agency; they are an empty vessel waiting to be filled with a collection of authoritative scientific facts (Davies, McCallie, Simonsson, Lehr, & Duensing, 2009). This deficit model also caused the prevalence of top-down, one-way communication from scientists to the public (Durant, 2010). This concern of a disconnection between scientists and the general public calls for a shift towards two-way science communication, that is, a model based on dialogue between scientists and the public (Durant, 2010; Fischhoff & Scheufele, 2013). In other words, it calls for a transition from promoting the public understanding of science to promoting the public engagement with science. Accordingly, how can this transition rightly be achieved? Many science communication scholars advocate conducting communication training for scientists and undergraduate or graduate students who will be future scientists in order to encourage meaningful public dialogue between scientists and the public, as well as prepare scientists to interact with policy makers and the mass media (e.g., Besley & Tanner, 2011; Bubela et al., 2009). Despite this increased interest in communicating science to the public, little literature has reported what is addressed in this training, why it is taught, what educational resources are drawn upon, and what training techniques are used.

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 131–146.

Public science communication events can be seen as educational activities happening in informal environments. Scientists at these events therefore can be seen as museum educators.[1] There is a growing body of literature on the roles and identities of museum educators that explore their professional development. Based on the research of informal learning, museum educators successfully engage audiences (Bevan & Xanthoudaki, 2008). Moreover, face-to-face scientific events often take place in informal learning settings such as museums and community centres. If these science communication events are seen as educational activities happening in informal environments, the nature of informal learning can be applied to them; that is, teaching strategies and skills used in museum education can be employed in facilitating these events to foster two-way science communication.

In fact, in recent years a few science museums in the United States, Canada, and Australia have already carried out collaborative programs with the scientific community, colleges and universities to bring current science to the public and to help scientists develop their capabilities to effectively communicate with the public (e.g., Dougherty, Oliver, & Fergusson, 2014; Selvakumar & Storksdieck, 2013; Webb et al., 2012). The relatively limited examples of collaborative programs described in the literature portray a great variety in terms of institutional sizes, stakeholders' goals, funding resources and training for the scientists. Therefore, further empirical studies on these programs are needed in order to formulate generalized elements on how to teach scientists to engage the public in science. This research focused on the training of Community Scientists, recruited scientist volunteers participating in the *Community Scientist Initiative* program at Science World British Columbia (http://www.scienceworld.ca/communityscientist). In particular, it examined Community Scientists' perceptions of their training to engage the public in science and how they improve their pedagogical knowledge.

LITERATURE REVIEW

The Knowledge Framework for Training Frontline Museum Educators

As critical agents to help museums fulfill their educational missions, frontline interpreters/docents/facilitators/explainers[2] come from widely disparate backgrounds. Because people tend to teach as they are taught (Bevan & Xanthoudaki, 2008; Lunenberg, Korthagen, & Swennen, 2007), museum educators probably inherit traditional pedagogical methods (most likely the transmission model) from their schoolteachers. Since frontline museum educators' active interaction with visitors has a significant and direct impact on the learning experience of visitors, it is imperative to train them with contemporary professional knowledge of museum education (Bevan & Xanthoudaki, 2008; Tran & King, 2007).

One of the often-cited learning models in museums is the Contextual Model of Learning seated in the theory of constructivism (Falk & Dierking, 2000). Constructivism emphasizes the impact of learners' prior knowledge and

sociocultural context on interpreting new knowledge (Erikson, 2000). It recognizes that all learners, even very young children, are capable of constructing reasonable concepts and integrating them into their own knowledge structure while engaging with their physical and social environment (Erikson, 2000). Numerous studies have provided substantial evidence that constructivist pedagogies, such as scaffolding and interpretive inquiry, could improve students' understanding (Barron et al., 1998; Erikson, 2000; Hubard, 2011).

Based in constructivist learning theory, Tran and King (2007) articulate a knowledge framework comprised of six components describing science museum educators' professional work. The components, *context*, *choice and motivation*, *objects*, *content*, *theories of learning*, and *talk*, are organized into three domains of knowledge by borrowing from Lee Shulman's (1986) conceptualization of professional knowledge for school teachers: *museum content knowledge*, *museum pedagogical knowledge*, and *museum contextual knowledge* (Figure 1) (Tran & King, 2007).

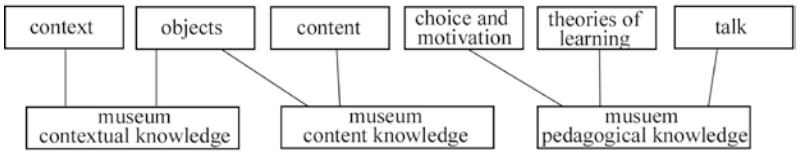

Figure 1. The organization of Tran and King's (2007) knowledge framework

Context refers to the physical and sociocultural environment of museums, as well as the rapport between visitors and museum staff. Choice and motivation reflect informal learning in which free choice and visitors' motivations shape their learning experiences. Objects refer to exhibits in museums, which are interpreted by museum educators in multiple forms to best suit their understanding of visitors' needs and provide tangible experiences for visitors. Two concepts generally used in museums to describe an exhibit's appeal to visitors are attracting power and holding power (Dierking & Falk, 1994). Attracting power refers to the ability of an exhibit to draw the attention of a visitor while holding power refers to the ability of an exhibit to keep the visitor's interest (Dierking & Falk, 1994). Content refers to the specific disciplinary knowledge of museums that museum educators should have. Talk denotes talk-based interactions between educators and visitors in the context of social learning, including verbal and non-verbal interactions during casual conversations or organized programs. More specifically, Tran and King (2007) argue that, "for museum educators, their knowledge of talk must involve knowing how to speak about objects to learners of different ages, abilities, and interests at the same time or for only brief instances" (p. 142).

The theories of learning mainly include constructivism and sociocultural theory. Castle (2006) suggests that conceptions of learning and learners could be addressed during training, if museum educators reflect upon their own processes of learning

how to teach in museums and compare and contrast them with both their peers and educational theories. Seated in contextualized constructivist learning theory, Bevan and Xanthoudaki (2008) express a similar idea by suggesting that museum educators design learning opportunities with multiple participation structures and connections to everyday lives, so that visitors with varying levels and areas of expertise can develop their conceptual agency upon their own identities and funds of knowledge. This knowledge framework provides a sound foundation for frontline museum educators' training.

Experiential Learning in Preparing Frontline Museum Educators

Experiential learning refers to "learning by doing" (Sharp, 2010, p. 360). Grenier and Sheckley (2008) contend "the integration of experiential learning into a multifaceted approach to docent preparation" (p. 81) is a possible way to give docents a more contextual training which is critical for museum docents' professional development. They further explained that for frontline docents, experiential learning means "critically examining current docent education practices and formulating alternatives more in line with an experiential approach to learning" (p. 82) and values "the dynamic process of transforming experience into knowledge by placing docent experience within the context of the museum" (p. 81).

Grenier and Sheckley (2008) cited Castle's (2006) work as an example to support their arguments. Castle (2006) conducted research on the nature of teaching in museums from the perspective of museum teachers[3] to explore how museum teachers believe they learn to teach in museums. In this research, she found that "observation, or shadowing, of fellow museum teachers" is one of three methods for museum teacher-participants to learn to teach. Moreover, Castle (2006) argued that, "shadowing was felt to be successful only when it was accompanied by focused discussion among the museum teachers involved" (p. 125). Bevan and Xanthoudaki (2008) also gave examples of how to do this focused discussion. In addition, in the process of training and development for every museum teacher, experiential learning plays a role in the process of pedagogical reasoning which transforms subject matter content knowledge into pedagogical content knowledge, because pedagogical reasoning involves "a cycle through the activities of comprehension, transformation, instruction, evaluation, reflection and new comprehensions" (Shulman as cited in Castle, 2006, p. 129). Grenier and Sheckley (2008) reinforced this opinion and emphasized that "only through experiential processes will docents develop the cognitive flexibility necessary for applying knowledge and skills in real museum and visitor situations" (p. 84).

The Knowledge Framework for Training Scientists to Communicate with the Public

Despite increasing attention to a more interactive public engagement or dialogue model in science communication, the deficit model thinking remains prevalent in the

scientific community (Besley & Tanner, 2011; Bubela et al., 2009). Generally, face-to-face science communication with the general public can be seen as an educational activity, which consists of the scientific community, scientific knowledge and the public. Considering that scientists already have rich content (subject matter) knowledge and drawing on Shulman (1986), *scientists as teachers* still need pedagogical content knowledge and curricular knowledge in order to effectively facilitate science communication. In the deficit model, science communication focuses on the transmission of scientific knowledge from scientists to the public. The epistemology behind this model is grounded in objectivism, realism and positivism (Castle, 2006; Hein, 1998), in which knowledge is decontextualized and conceived as existing independently of the people who know it. The pedagogy in this model easily goes to the traditional didactic knowledge transmission model (Hein, 1998). In order to better support the use of a more contemporary pedagogy such as a constructivist approach, the museum educators' professional knowledge framework offered by Tran and King (2007) could provide a foundation for training scientists to communicate with the public. It is clear that scientists need to develop an understanding of constructivist learning theories and contemporary pedagogies in order to engage audiences. Based on this assumption, some aspects of the professional knowledge of museum educators can be incorporated into scientists' training. However, scientists as an expert group interacting with the public have unique qualities that differ from the roles of professional museum educators and as such their training should address these specific needs.

Training for Scientists within Existing Collaborative Programs at Science Museums

In recent years, a few science museums realized that by collaborating with scientists and universities, they could play an important role in making a connection between working scientists and the public in order to bring current scientific knowledge and the nature of science directly to every citizen. To help scientists understand the level of science awareness and literacy within the public, and effectively communicate their scientific knowledge to the public, museums usually design and implement training programs to prepare scientists to interact engagingly with audiences. For example, Selvakumar and Storksdieck (2013) report a case of a science communication program named the *Portal to the Public* at the Pacific Science Center in the United States. In this program, museum educators with experience in inquiry-based learning train working scientists from universities, government agencies, industries, or private research organizations to help them interact with museum audiences effectively. Scientists take away the four following constructs from the training workshops: (a) understanding the features of informal learning based in the constructivist theory of learning, including that museum visitors have their own agenda and motivation; (b) designing materials-rich activities that represent each scientist's research work; (c) understanding and practicing inquiry-based activity

facilitation skills; and (d) recognizing the end goal of their communication training is to present a public program. Comparing this with the professional knowledge framework proposed by Tran and King (2007), we can see the pedagogical supports for scientists used in this example includes the theory of learning, visitors' agenda (free choice) and motivation, museum context, museum objects, and inquiry-based talks. The component of "content" was left out because scientists are experts in their specialties.

Webb et al. (2012) reported a similar science communication program collaborated by Washington University and the St. Louis Science Center—the *Science Communication for Brain Scientists*, but they further studied the lasting effect of scientists' participation in outreach on their attitudes, as well as the effectiveness in science communication to the public. In this case, scientists refer to a cohort of graduate students (PhD candidates) in the cognitive, computational and systems neuroscience relevant to general brain science. This program offered hands-on training, modeling and personalized coaching through workshops which covered (a) introduction to informal science education and its approaches to science communication, (b) developing and delivering educational experiences about graduate students' research for a general public audience while working closely with museum educators, (c) understanding the significant gap in knowledge and language that exists between specialists and lay audiences in different settings, and (d) identifying and improving audience engagement skills through observation, experimentation, and practice (Webb et al., 2012). Through evaluating and comparing the learning outcomes of visitors, after they participated in the educational activities facilitated by graduate students, Webb et al. (2012) conclude that all these training and educational activities positively impacted the audiences' understanding of scientific content and perception of scientists and demonstrate improvement in the effectiveness of graduate students communicating about their scientific research and its importance with a large and varied public.

RESEARCH CONTEXT AND METHODS

Community Scientists and CSI Program

Community Scientists are recruited scientist volunteers in the *Community Scientist Initiative* (CSI) program at Science World British Columbia. Community Scientists who participated in this study represented a range of science disciplines and over 70% of them had experience with various science communication activities prior to their participation in the CSI program.

The goal of the CSI program is to "support Science World in engaging British Columbians in science and inspiring future science and technology leadership throughout the province by providing regular opportunities for visitors to explore current science and technology with local passionate professionals" (Science World, n.d.a). It is a substantial platform for visitors to learn about current science and

technology topics, which are probably not taught in school or part of the mandatory school science curriculum. In order to achieve this goal, all Community Scientists attended a series of training workshops focused on building skills to effectively engage visitors. In addition, museum educators provided one-on-one mentorship with Community Scientists to help them develop hands-on activities so as to make their professional expertise tangible. In the end, all Community Scientists presented their activities relevant to their specialties to visitors at Science World.

Research Methods

All targeted Community Scientists had finished the training and delivered their activities at Science World. A case study approach (Creswell, 2007) was used with multiple research methods to explore Community Scientists' training experiences and their experiences of communicating their specialties with the public at Science World. Training workshops' handouts provided initial data of what pedagogical supports had been offered to community scientists by Science World educators. Data was further collected through an online survey and follow-up semi-structured interviews.

The online survey employed a combination of single choice, multiple choice, five-point rating scale, and open-ended questions. Answer choices were formulated according to the content of workshop handouts and relevant literature. There were 18 questions in the Community Scientist survey, organized into four parts. Part I included questions on the background information of participants, including their research fields and prior experiences of public engagement activities. Part II included questions about the CSI program, mainly focusing on the training workshops which aimed to help Community Scientists develop museum pedagogical knowledge, museum context knowledge, and a hands-on activity related to the Community Scientist's research work. Part III investigated Community Scientists' delivery of hands-on activities to the public. Part IV addressed the Community Scientists' perceptions of personal and professional development arising from their participation in the CSI program. Twenty-seven complete surveys were returned.

The last question in the survey invited Community Scientists to participant in a voluntary follow-up interview in order to better understand Community Scientists' responses provided in the survey questionnaires. Twelve Community Scientists were interviewed. Based on the survey responses, the follow-up semi-structured interview further explored Community Scientists' stories relevant to their experiences at Science World and other science communication activities.

Both quantitative analysis and qualitative approaches were used in data analysis. Demographic information of participants were analyzed, including educational level, professional area, the kinds of organizations they are affiliated to, and whether they have previous experiences of communicating science to the public. The variables, which were measured with five-point rating scale on the online survey, were evaluated and interpreted in terms of the meaning of the variables. In multiple-

choice questions, the statistics of each choice were calculated and compared. The qualitative data from the open questions on the online surveys and interviews were examined inductively, and finally attributed to themes related to Tran and King's (2007) concepts of museum pedagogical knowledge and museum context knowledge.

RESULTS AND DISCUSSION

Based on an analysis of the training workshop handouts (Science World, n.d.b), the CSI training workshops covered four educational themes: (a) learning in informal environments; (b) how people learn; (c) expert blind spot and how people teach; and (d) visitor learning behaviours. Expert blind spot refers to subject matter content where experts cannot perceive the difficulties that novices will experience while learning new subject matter (Nathan & Petrosino, 2003). In the workshop handouts, it is explicitly explained as "the tendency of content experts to forget what it's like to be a non-expert" (Science World, n.d.b). The topics "learning in informal environments" and "visitors learning behaviours" help Community Scientists understand museum visitors. "How people learn" gives Community Scientists an overview of contemporary constructivist learning theories. Finally, "expert blind spot and how people teach" teach Community Scientists how to use communication strategies and skills to avoid the expert blind spot. Compared with Tran and King's (2007) knowledge framework, these educational themes involve four components—museum context, visitors' choices and motivation, theories of learning, and talk.

The analysis of survey responses and interview data revealed Community Scientists' perceptions of their training to engage the public in science and how they improve their pedagogical knowledge in order to effectively communicate with audiences at Science World. Through relating these findings to the literature previously reviewed, several key issues in helping Community Scientists deliver their hands-on activities to audiences are discussed as follows.

Perception of the Effectiveness of Training

Effectiveness was determined in terms of Community Scientists' understanding of the four educational themes addressed in the workshop and the role of mentoring.

Understanding of key themes. Community Scientists were surveyed about their understanding of these four educational themes. Survey results indicate that they significantly understood visitors' learning behaviours and the characteristics of informal learning because there were 22 (81.5%) and 20 (74%) respondents selecting these two educational themes respectively, whereas their understanding of how people learn and the expert blind spot was not as great because only 15 (55.5%) and 12 (44.4%) respondents chose these two educational themes respectively. The high level of understanding related to learning may be because Community Scientists' experiences in Science World—a typical informal learning environment—gave

them real and in-person experiences of what informal learning is, and they observed visitors' behaviours to evaluate whether their activities were of interest to visitors. These two concepts related to learning are visible and easily applicable when they interact with visitors. Therefore, Community Scientists had a deeper understanding about them as reflected by the survey answers. This supports Grenier and Sheckley's (2008) contention that contextualized experiential learning is valuable in adult education and specifically within museum education.

However, when asked in the follow-up interviews to give examples of these educational concepts, every Community Scientist could give suitable examples of those four educational concepts, although they sometimes confused "the characteristics of informal learning" and "learning is contextualized". This also contradicts survey results that indicated only two out of 27 respondents responded that they understood all four of these educational concepts. It may indicate that Community Scientists may not connect the museum pedagogical knowledge applied in delivering hands-on activities to these theoretical statements. An opportunity to reflect on their teaching practices and review these educational concepts may help Community Scientists connect theoretical knowledge to the teaching practice. Bevan and Xanthoudaki (2008) also argue that opportunities to reflect on and analyze the processes of learning and the practices of teaching are key to the professional development of museum educators, while Castle (2006) specifically suggested that the concept of learning and learners can be really understood only by reflecting upon museum educators' own professional knowledge development.

Working with mentors. In the CSI program, Community Scientists communicated their expertise to visitors through hands-on activities. If needed, experienced Science World educators were available as mentors to provide suggestions for designing hands-on activities. According to survey responses, most Community Scientists participating in this study thought mentors helped them primarily by (a) determining which subject concepts and ideas are feasible and appropriate to the knowledge levels of visitors, (b) choosing and preparing activity materials, and (c) refining the hands-on activities. With the help of mentors, Community Scientists learned what activity materials are functional in a museum and what materials can be used to support transforming their particular subject matter into tangible museum objects. This reflects Tran and King's (2007) argument about museum objects, "Using their knowledge of the objects, [museum] educators must select from a range of interpretations to best suit their understanding of the visitors' needs" (p. 140). It suggests that in this process of developing hands-on activities, Community Scientists gain the knowledge of museum objects, learn curricular knowledge and pedagogical content knowledge as the activity serves as a teaching tool, as well as indirectly gain some understanding about museum visitors and museum context from mentors as their activities need to meet visitors' needs.

Overall the Community Scientists thought the training was very effective, giving it an average score of overall effectiveness of 4 out of 5.[4] Nevertheless, many

Community Scientists expressed they still hoped the training could leave more time for discussing how to design feasible and effective hands-on activities specific to their expertise and provide opportunities to watch Science World educators or other fellow Community Scientists deliver their public programs to get ideas from concrete examples. The reason that Community Scientists want more specific pedagogical supports such as these may be that Community Scientists' research expertise is quite diverse, so that the required pedagogical content knowledge is varied, as the development of pedagogical content knowledge is contingent on the subject matter content knowledge (Adler, 2012). Further, this need for specific pedagogical supports can be met by observing and shadowing of Science World museum educators or fellow Community Scientists, because "only through experiential processes will docents [museum frontline educators] develop the cognitive flexibility necessary for applying knowledge and skills in real museum and visitor situation" (Grenier & Sheckley, 2008, p. 84).

How Community Scientists Improve Their Pedagogical Knowledge

Although training workshops and one-on-one mentorship provided pedagogical supports to Community Scientists, the current study suggests that many of them thought they learned or improved their pedagogical knowledge and skills through observing others presenting similar activities, observing visitors, and doing self-evaluation while delivering activities. This supports the arguments that pedagogical content knowledge can be acquired through research and practice (Shulman, 1986; Adler, 2012), and is consistent with research with museum frontline educators who suggest that they learned to teach by observing fellow museum educators and through the actual experience of teaching (Bevan & Xanthoudaki, 2008; Castle, 2006).

When asked about how to further their pedagogical knowledge development, almost 22% of the Community Scientists hoped to have opportunities to watch how Science World educators or fellow Community Scientists deliver their public programs, and reflect, share and review each other's teaching, both before and after they design hands-on activities. This wish corroborates Shulman's (1987) explanation of pedagogical reasoning that "involves a cycle through the activities of comprehension, transformation, instruction, evaluation, reflection, and new comprehensions, although not necessarily in that order" (cited in Castle, 2006, p. 129). This cycle also echoes works on experiential education (Castle, 2006). Castle further states that, "observations of and interactions with fellow museum teachers that encouraged reflection and new comprehensions were productive overall" (p. 130). Bevan and Xanthoudaki (2008) even proposed a central strategy to facilitating such reflection, "to have educators review examples of learning interactions as represented in video clips, written descriptions, or as enacted in real time" (p. 115). However, except for the one-on-one mentorship in developing the hands-on activity, the CSI program training workshops did not provide Community Scientists with structured and collective opportunities to observe other fellow

Community Scientists or Science World educators as they facilitated programs, nor were opportunities to reflect on, share and discuss teaching experience with both fellow Community Scientists and Science World educators provided.

In contrast, the *Portal to the Public* project (Selvakumar & Storksdieck, 2013), a program similar to the CSI program, has more structured support for scientists to engage the public in their current research. After several years of development, it provides a guiding framework to bring scientist and public audiences together in informal learning environment. In the professional development for scientist in the *Portal to the Public* programs, when scientists design materials-rich activities that represent each scientist's work, they observe and experience existing educational activities in science museums as models of effectively engaging museum visitors. They are also provided opportunities to "'test drive' their activity mechanics and facilitation" (p. 74) before presenting the activity to visitors, and to reflect on their interaction with visitors and think about how they can improve their communication strategies at the conclusion of the public programs they delivered, together with their museum education coach. The *Science Communication for Brain Scientists* program also offered hands-on training, modeling and personalized coaching in workshops (Webb et al., 2012). The professional development experiences for scientists/graduate students in these two programs again demonstrated that modeling/shadowing/observing fellow museum educators is an important part of experiential education for training scientists/graduate students to engage public audiences.

Communication Strategies and Skills Used by Community Scientists to Engage the Public

According to survey responses, Community Scientists gained a first-hand understanding of museum visitors, which included a realization that visitors have freedom to choose what, how and when to engage with learning opportunities, and that within the family groups (the typical demographic of visitors) there exists a range of interests. Community Scientists described applying these first-hand understandings into refining their activities and consequently enriched their curricular knowledge and pedagogical content knowledge.

Interview data and survey responses show that in both activity design and delivery, Community Scientists realized that the first challenge is to attract visitors to approach them. The concept of attracting power and holding power, generally used in relation to exhibits (Dierking & Falk, 1994), could apply to the scientists' activities. The study's findings indicate that Community Scientists are aware that attracting power and holding power in their hands-on activities are important to promote visitors' engagement levels. This recognition is an essential part of museum educators' knowledge about museum objects, because "enabling visitor facilitation with objects is… a key role for museum educators" (Tran & King, 2007, p. 140). Dierking and Falk (1994) further suggested that attracting power was only important for adult-child family groups as adults did not necessarily interact with all the

exhibits they viewed. Because Community Scientists also noticed the majority of Science World visitors are adult-child family groups, Dierking and Falk's point further supports Community Scientists' recognition of the importance of attracting power for their activities. Also, survey data of Community Scientists' impressions of visitors' behaviours indicate that the interaction between Community Scientists and visitors went well and the level of visitor engagement increased (Barriault & Pearson, 2010). This suggests that the holding power of Community Scientists' hands-on activities is strong.

The current research also shows that two communication strategies—designing activities with multiple participation structures and asking open-ended questions—are relatively widely used in the CSI program but not in Community Scientists' previous public scientific activities. Realizing visitors' different points of interest and different knowledge levels, Community Scientists modified their hands-on activities to provide multiple entry points to engage visitors. Multiple participant structures also provided a platform for Community Scientists "to speak about objects to learners of different ages, abilities, and interests at the same time or for only brief instances" (Tran & King, 2007, p. 142) which Tran and King suggest is essential for museum educators. This suggests Community Scientists have considered the importance of the visitors' prior knowledge to guide what they will teach and how (Hein, 1998; Tran & King, 2007). This may also reflect the Community Scientists' epistemological perspective in education shifting toward constructivism; in other words, the science communication between Community Scientists and the general public is shifting toward a dialogue model (Durant, 2010; Fischhoff & Scheufele, 2013).

The Importance of Understanding Museum Context

Museum context refers to the physical and sociocultural environment of museums, as well as the rapport between visitors and museum staff, and therefore has several dimensions including physical context, social context, community context and temporal context (Tran & King, 2007). Being present in the physical building of Science World, Community Scientists may have sensed the museum's physical context directly. Tran and King (2007) further argue that, "in interacting with visitors, museum educators need to acknowledge the many ways in which museum context may impact on individuals" (p. 139). Community scientists reported that they modified their activities with the multiple participant structures, tried to attract visitors in the first place, and then built rapport with them by using different verbal communication skills and observing visitors' reactions, indicating that Community Scientists were aware of the impact of museum social context and temporal context on visitors' learning experiences. Science World's community context is also realized by some Community Scientists. This is implied in concrete communication skills. For example marine biologist Daisy[5] said, when giving examples to visitors, she would not give an example of fish that cannot be found in British Columbia because visitors may not be familiar with the fish.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of the CSI program is to provide regular opportunities for Science World visitors to explore current science and technology with local passionate professionals (Science World, n.d.a). One of the research findings shows that Community Scientists thought once visitors started to participate in Community Scientists' hands-on activities, the interaction between Community Scientists and visitors went well and the overall level of visitor engagement steadily deepened. This means that, in general, Community Scientists thought they engaged Science World visitors in the science related to their expertise. While interacting with visitors, Community Scientists also benefited from personal enjoyment and improved their communication skills and strategies.

Tran and King's (2007) knowledge framework was a useful lens to analyze the CSI training. Through participation in the CSI program training workshops, as well as developing and delivering the hands-on activities, Community Scientists increased their understanding of informal learning theory, museum objects and curriculum materials, museum context, the nature of Science World visitors, and practiced skills of communicating science to the public. Importantly, the ways in which the Community Scientists spoke about their interactions with visitors suggested that the Community Scientists aligned their approaches with promoting the public engagement with science and established a dialogue model (Bubela et al., 2009) with visitors, rather than the deficit model which lays blame on visitors if they cannot understand the research.

Nevertheless, according to Community Scientists' survey responses, their experiences of developing the hands-on activities and directly interacting with visitors gave them more in-depth understanding of the nature of informal science education than the training workshops did. Moreover, many Community Scientists hoped to have the opportunity to observe Science World educators' or fellow Community Scientists' educational practices and share each other's experiences. Therefore, future CSI training could improve the scientists' understanding of the nature of informal science education by more closely aligning the training workshops with Tran and King's (2007) knowledge framework of the professional development of museum educators and providing more experiential learning experiences in the professional development of Community Scientists as museum educators.

Specifically, experience-based learning opportunities can be created for Community Scientists by:

- Providing more time during the training workshops to discuss what subject matter concepts relevant to Community Scientists' expertise can be presented in hands-on activities. This would strengthen Community Scientists' understanding of the types of concepts and real museum objects that would be readily accessible by visitors.

- Providing more structured mentorship. A more structured mentorship relationship would help the Community Scientists further develop key skills such as self-evaluation and reflection on practice as well as provide more opportunities for them to learn from the expertise of their mentor.
- Providing Community Scientists with at least two opportunities per training to observe how Science World educators and fellow Community Scientists deliver their public programs and share thoughts with each other. One observation can be scheduled in the workshops; the other can be conducted after they deliver their first activity. Also individual observation opportunities could be provided as required.

In addition, as Grenier and Sheckley (2008) assert, "preparation of these individuals through thoughtful experience-based learning processes is critical to the retention of docents and the long-term success of educational programs in museums" (p. 80). More emphasis on experience-based skill development is also a possible incentive for some Community Scientists to fulfill their commitment of delivering hands-on activity or public program four times per year and to retain experienced Community Scientists.

The CSI program is successful in helping scientists share their research with the public. Additional research is needed to evaluate visitors' learning outcomes in the CSI activities. Visitors' responses about CSI activities may provide valuable information for Community Scientists to improve their pedagogical skills and strategies.

NOTES

[1] In this article the term museum educators refers to educators in various informal learning settings.
[2] For convenience, I will use frontline museum educators when referring to all these frontline educational staff in museums.
[3] In Castle's (2006) research, museum teachers refers to museum frontline educators.
[4] The overall effectiveness of training is rated with a number ranging from "1" poor to "5" excellent.
[5] Each interviewee was assigned a pseudonym.

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9. IDENTIFICATION OF POTENTIAL METHODS OF PROFESSIONAL SUPPORT FOR MUSEUM EDUCATORS WORKING WITH YOUNG CHILDREN WITH COGNITIVE DISABILITIES IN MUSEUMS

INTRODUCTION

One of the most significant pedagogical changes to elementary school education has been the widespread implementation of inclusive education (Artiles & Kozleski, 2007). The main tenet of inclusive education is that all students are educated in the same classroom, and are all expected to have the same opportunities to participate in all learning activities and experiences to the best of their abilities (Artiles & Kozleski, 2007). As a result of this inclusivity, the class composition of many elementary school classrooms now includes students with special learning needs. In response to this shift in composition, many classroom teachers work collaboratively with highly trained special education teachers and educational assistants to ensure that the diverse learning needs of all of their students are met (Buell, Hallam, Gamel-McCormick, & Scheer, 1999; Vernon-Dotson, Floyd, Dukes, & Darling, 2014).

While the majority of a child's formal education takes place within a classroom, many teachers also choose to take their students on field trips to locations such as museums, which provide different types of educational activities that are not always feasible within the classroom setting (Talboys, 2010). As a result of the implementation of inclusive education in elementary schools, classes visiting museums are likely composed of all types of learners, including students with cognitive disabilities.

A review of the available museum education literature, however, revealed a lack of research that focuses specifically on the professional experiences and needs of museum educators when supporting this specific visitor group. The study documented in this chapter looked to identify potential methods of professional support for museum educators who develop and facilitate programming for elementary school student visitors with cognitive disabilities and was framed by the research question: *What kinds of support do museum educators need in order to better serve young children with cognitive disabilities within the museum?*

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 147–160.

LITERATURE REVIEW

In the context of this study, the term 'cognitive disability' was used to refer to a wide variety of psychological conditions and disabilities that may affect how children learn socially and academically, including Autism Spectrum Disorder, intellectual disabilities, and learning disabilities (National Center on Accessible Instructional Materials, 2013). In British Columbia, the study's location, the Ministry of Education's Special Education policy officially recognizes ten special needs categories, four of which are focused predominantly on cognitive ability (British Columbia Ministry of Education, 2013): intellectual disabilities, learning disabilities, behavioural needs or mental illness, and Autism Spectrum Disorder. The choice to use such a broad term was an intentional decision by the author, so as to include all of the different types of cognitive disorders and disabilities that a museum educator may professionally encounter as a result of the inclusive education policies.

Inclusion in Special Education and Museum Education

The main principle of inclusive education is that it should be made available and accessible to all individuals, "regardless of their differences in culture, gender, language, ability, class, and ethnicity" (Artiles & Kozleski, 2007, p. 351). Inclusive education policies were developed as a response to traditional methods of special education, where learners with special learning needs were segregated from their peers and taught in separate rooms or buildings (Lindsay, 2007; Shepherd, 2009). With the implementation of current inclusive education policies, the composition of some classes has been dramatically altered as learners of all ability levels now share the same classrooms and resources (Artiles & Kozleski, 2007). This major shift in classroom composition has caused many teachers to reconsider how they design their lessons (Theoharis & Causton-Theoharis, 2009).

In order to better respond to the increasingly diverse learning needs of their students, classroom teachers have begun to search out different resources and locations that can be used to support and facilitate their students learning needs (Rapp, 2005). One such resource is the museum. Research has begun to explore how to develop and deliver museum programming to create more inclusive learning environments for younger students with cognitive disabilities. Rapp (2005) explored whether a science museum could serve as "a successful learning environment for students with exceptional needs" (p. 296), through observations of four children with social and psychological learning needs. Rapp concludes that museums are ideal informal learning environments for such children, and that ideally they would be able to work collaboratively with schools to supplement the student's learning. Rapp does identify a number of issues that she argues would need to be addressed in order to facilitate that collaboration, including the need for greater communication between museum educators and classroom educators. Shepherd's (2009) case study

looks at how *Thinktank,* a science museum in the United Kingdom, attempted to make their galleries and displays more inclusive to all types of visitors, including those with specific learning needs, using examples and strategies from classrooms to guide their work. Shepherd argues that efforts towards greater inclusivity, such as those implemented at *Thinktank,* are becoming increasingly necessary, and that methods and tools used in inclusive formal education settings can and should be repurposed for use in informal education settings.

Communication in Special Education and Museum Education

One of the major components of special education practices is the ongoing communication and cooperation between classroom teachers, special education teachers and educational assistants (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010; Koppang, 2004). This collaborative working relationship allows for all educators involved in supporting a student with special needs to be kept appraised of the progression of that student's learning.

Communication between museum educators and classroom educators is also important. In their study of communication between classroom educators and museum educators at a science centre, Tal and Steiner (2006) observed three types of communication between museums and schools: *administrative* (a teacher or other school representative contacted the museum to book a program that was selected from a list); *content* (teacher speaks with a booking agent in order to select a program that best matches the classroom curriculum); and *pedagogy-content* (teacher works directly with a museum educator to design a program that best suits their students and their needs). The majority of communication for planning elementary school field trips was of the administrative type, with little to no discussion occurring between the museum educator and classroom educator prior to the date of the field trip visit.

The study conducted by Wright-Maley et al. (2013) focused specifically on developing stronger methods of communication between high school social studies teachers and museum educators. Analysis of conversations between these two groups of educators concluded that pre-visit conversations between classroom teachers and museum educators are important because they provide the museum educator with specific information about the visiting students and their learning needs. They also concluded that classroom teachers need to be more proactive in seeking out opportunities to establish and create a strong collaborative working relationship with museum educators.

Museum Educator Training and Professional Development

In his comparison of usage of professional development models in special education for classroom teachers, McLeskey (2011) identifies two specific models: the expert-centred professional development and learner-centred professional development. In the expert-centred model, "an outside expert who is familiar with an innovative

practice presents information to teachers using written material, lectures, demonstrations, and/or practice over a relatively short period of time" (p. 27). The learner-centred model "assumes that teachers actively construct knowledge based on their past experience, the context of their classrooms, and the new instructional strategies they are considering" (p. 28). He argues that research shows the learner-centred professional development model is a more effective method of teaching classroom educators how to implement new strategies in their classrooms because it actively engages the teachers in "identifying, learning about, adapting, and using instructional strategies to improve classroom practice" (p. 28). It also encourages them to share the knowledge and strategies learned from the professional development with other teachers in order to improve their collective educational practices.

The topics covered during teacher professional development opportunities are determined by the teachers themselves, often focusing on themes or topics relevant to their school-based practices (Coates, Hodgson, & Lombardi, 2000). Similarly to school teachers, museum educators participate in professional development opportunities that focus on a variety of topics, such as presentation skills, educational program design and volunteer training methods (Bevan & Xanthoudaki, 2008; Dragotto, Minerva, & Nichols, 2006). A review of the museum education literature related to the professional development needs of museum educators, however, found no reference to resources that focus *specifically* on working with children with cognitive disabilities in the museum setting.

METHODOLOGY

Research Design

This interpretive case study (Stake, 1995) sought to understand museum educators' perceptions about the potential methods for supporting their professional practice with children with cognitive disabilities. The study employed semi-structured interview methods as a "systematic approach to understanding qualities, or the essential nature, of a phenomenon within a particular context" (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005, p. 196), specifically, the seven Vancouver-based museum educators' perceptions about methods for supporting their practice with this demographic. Furthermore, this method of data collection was fruitful because it allowed for the researcher to obtain "detailed data on individuals' experiences, views, and feelings" (Buston et al., 1998, p. 197). During each of the short, one-time participant interviews, the researcher began with a set of general questions about the museum educators' experiences working with children with cognitive disabilities. Based on the statements made by the museum educators, the researcher asked follow up or clarification questions, instead of being constrained by the usage of only the initial set of questions (Brantlinger et al., 2005).

Participants were recruited through an advertisement distributed via the electronic mailing list of Lower Mainland Museum Educators (LMME), a group

of "community-based educators from the Lower Mainland of British Columbia" (Lower Mainland Museum Educators, 2014). The advertisement solicited educators who had either an interest or experience in working with children ages six to thirteen years old with cognitive disabilities in an informal learning setting to participate in one short interview. Participants signed an informed consent form prior to the interview. Interviews were audio-recorded and subsequently transcribed.

In order to preserve the anonymity of both the museum educators and their institutions, each participant was assigned a numbered code name of 'Museum Educator' or ME. An overview of the biographical details of the participants is summarized in Table 1.

Table 1. Study participants biographical information

Participant code	*Role at museum*	*Academic background*
ME1	Museum Educator	Undergraduate degree
ME2	Museum Educator / Administrator	Undergraduate degree Education degree (Secondary)
ME3	Museum Educator	Undergraduate degree Master's degree
ME4	Museum Educator/ Administrator	Undergraduate degree Master's degree
ME5	Museum Educator	Undergraduate degrees (two) Public History certificate
ME6	Museum Educator	Undergraduate degree Education degree (Secondary)
ME7	Museum Educator/ Administrator	Undergraduate degree

ME3 and ME6 both work at the same museum, but were interviewed separately. ME4 and ME5 work together at another museum, and were interviewed together at their request. While two of the participants, ME4 and ME7, are currently employed in administrative roles at their museums, they also have some previous experience working in museum education. ME2 is presently moving from a museum educator role to a more administrative role, so both roles were included.

Data Analysis

The interview transcripts were reviewed to identify common themes or statements that had been shared by multiple participants. Statements that specifically addressed potential methods for supporting museum educators, such as further professional training, were also identified. Those themes and statements were then compared to articles and resources that explored special education practices in the classroom

setting to try and identify any pre-existing supports for classroom educators that could be repurposed for museum educators.

RESULTS

Current Approaches towards Program Facilitation and Design

Participants described two major types of educational programming they offered: guided programming and self-guided programming. Due to the visitor age group that was specified in the study (children aged 6–13), participants described programs for visiting elementary school field trip groups. The programming they described typically consists of a tour and an interactive experience, the structure and content of which are dependent on the age of the children and their institution's collections and facilities. The interactive activities included dissections, art projects, or opportunities for the children to explore the museum space and collections. These programs were often led by one museum facilitator, either a staff member or volunteer, who was often supported by additional staff members and volunteers. Participants also stated that any educational assistants who accompanied the children to the museum were also welcome to participate in the activities.

When asked to discuss whether they had designed any educational programming for children, some participants stated that they had designed some of their programs and had inherited others from other staff members. The participants were also asked to discuss whether their programming had been designed to be more accessible for young children with cognitive disabilities.

Museum Educators Working with Young Children with Cognitive Disabilities

Six of the seven participants indicated that they had worked with children with cognitive disabilities. The seventh participant described that she knew her staff and volunteers had worked with children with cognitive disabilities. All of the participants stated that they or their employees and volunteers were sometimes made aware of those children before the day of the field trip. One of the questions asked by the institutions when teachers book a field trip is whether the class has any special needs requirements. Responses to this question can vary, as noted by ME7, "We get everything from allergies to facts about how the class works together as a team". Many of the participants noted, however, that while this question is always asked, any response given may also be dependent upon how the teacher booking the trip chooses to interpret the question. As ME3 theorized:

> If they want to disclose that to us, they will let us know beforehand, but a lot of teachers don't want to do that because they don't want us to have a preconceived idea of any of the challenges that the students may be coming with.

Some of the educators also noted that they sometimes observed children who they felt were learning or interacting differently than their classmates. They noted that this was not intended as an attempt to determine whether that child had a cognitive disability. Instead, they used these observations to try to determine how that child was responding to the educational programming, and whether any changes needed to be made for the benefit of that student. Two participants said that their previous training as a classroom teacher likely helped them to recognize when a child could benefit from a change in activity or setting. The influence of previous experience working as an educator with children, including those with special needs, was echoed in statements made by ME5, who said "a lot of us have that experience already – they may have known children in those situations, and they can pick it up quickly."

When asked whether knowing ahead of time about a visitor with cognitive disabilities would change their approach to facilitating educational programming, the participants offered different responses. ME1 and ME3 noted that it did from a logistical standpoint, so that they could ensure that they had enough staff and resources available for the program in order to best support that student. ME2, ME5, and ME6 noted that it did not drastically change their approaches. Their sentiments can be succinctly expressed in the following statement from ME2, "I think from my training as a teacher, my goal as a museum educator is to set up programming that is accessible to everyone – ESL, special needs, etc." ME7 expressed that she felt knowing ahead of time could potentially negatively affect how she delivered programs, stating, "I find it hard knowing ahead of time, because you have all of these preconceived notions and you put people into buckets, rather than you just start delivering and adapt as you see fit". She then noted that she could only speak for herself, and that other educators may in fact prefer to know ahead of time.

Participants then described how they were able to, or would like to, make their programs more accessible for children with cognitive disabilities. One specific approach to facilitating that accessibility was shared by ME4 and ME5, who provided an example of a physical, textual resource that was available to teachers who indicated at the time of booking that their class contained at least one child with special needs. This resource, called 'social stories', is a set of stories and photos about the museum, its collections, and its on-site activities. These stories are emailed to the teachers, who are to print them out and review them with the special needs students. ME5 described that one of the volunteers at her museum, a retired special education instructor, had identified the need to create such a resource for children with special needs. The volunteer and ME5 worked together to design the social stories, which incorporate photographs, illustrations and simple text. These stories are similar in nature to visual supports that are sometimes used with children on the autism spectrum to provide contexts and information about events and locations, such as picture schedules and reminders (Dyrbjerg & Vedel, 2007).

When asked whether they felt comfortable working with children with cognitive disabilities, the majority of the study participants stated that they were, but each participant also made additional comments about what affected their, or their employees and volunteers, comfort levels. ME1 noted that he felt more comfortable working with smaller groups of children which included those with cognitive disabilities, because he felt that the smaller groups were easier to manage if an unexpected situation or problem occurred. ME2 expressed that due to her classroom and museum experience, she felt very comfortable working with all types of children. ME3 acknowledged that she sometimes felt nervous or unsure about working with this specific group of children, but noted that she decided to focus on helping all of the children she worked with find something at her museum that they enjoyed. ME4 and ME5 also spoke for the staff and volunteers at their museum, noting that while many of the facilitators felt comfortable, some did not. ME6 stated that she felt that she still had a lot to learn about how to be an effective museum educator. ME7 stated that she wanted to learn more about how to make individuals with all types of disabilities feel more confident and comfortable when visiting her museum.

Availability of Professional Development

None of the participants interviewed for the study stated that they had ever received any specific training on how to recognize or support young children with cognitive disabilities in a museum. Four of the participants had received some training in or exposure to special education, often in a classroom setting. Some of the participants, especially those in administrative roles, noted that other educators and volunteers at their museums were also asking for more training focusing on special education. In response to such a request, ME4 noted that she was in the process of trying to organize a workshop for her education staff and volunteers, but was encountering difficulty in locating a knowledgeable speaker. A number of participants also noted that they had shared strategies and questions about working with special needs visitors with their co-workers and museum volunteers, either through program debrief sessions and meetings organized by other staff members or through informal conversations.

The majority of study participants expressed strong interest in participating in some form of professional development for museum educators that focused specifically on working with visitors with cognitive disabilities. Those same participants raised questions about the logistics of organizing that professional development, such as cost, who would lead it, and whether it should focus on one type of cognitive disability or try to cover multiple types.

DISCUSSION

Museums are popular destinations for school field trips (Talboys, 2010), and as a result of inclusive education practices, classes that visit museums are likely composed of many different types of learners, including those with cognitive disabilities or other

special learning considerations. Statements made by the study participants support this assertion.

Based on the statements made by the seven participants during their interviews, the author suggested two specific types of additional support that could be of benefit to the museum educators:

1. More purposeful communication between museum educators and classroom educators
2. Future training and professional development for museum educators

What follows is a discussion of both types of support, and suggestions for how that support can be provided for the museum educators to help them better facilitate educational programming for children with cognitive disabilities. These suggested supports are based upon pre-existing resources already available to classroom teachers and educational assistants.

Current State of Programming for Children with Cognitive Disabilities

Similarly to classroom teachers, museum educators have begun to develop and implement some strategies when designing and facilitating educational programming for young visitors with cognitive disabilities. Based on the data from the participant interviews, one program design strategy which has its roots in special education is already being used at the museum where ME4 and ME5 are employed – the social stories. Shepherd (2009) also lists the usage of social stories as a pre-visit strategy for learners with special needs.

The literature provides examples of other strategies that are rooted in classroom-based special education practices. Shepherd (2009) describes some additional methods of adapting program design and delivery to make programming more inclusive for children with cognitive disabilities, including the intentional grouping of students who have special learning needs with other classmates who do not during visits to the museum and the usage of simple, easy to understand language, diagrams and images in order to facilitate comprehension.

Rapp (2005) provides a list of "eight factors of successful learning environments" (p. 298), of which one is "activities that are responsive to learning styles, rates, and ability levels" (p. 298). Through her observations of a small group of students with special needs, she noted that each of those students had distinct preferences about the types of learning activities and resources that they wanted to utilize during their visits to the museum. She also stated that this autonomy in choosing their own experiences allowed the students to regulate their own learning through the selection of activities that they considered enjoyable and important.

While some of this study's participants stated that they wanted to provide students with opportunities to participate in activities that focus on their specific interests, they also noted that the content of much of the programming that was designed for elementary field trip groups was often restricted by the provincial school

curriculum, thereby limiting the focus of any programming to a specific topic or theme. Encouragingly, a number of the participants stated that they had designed their programming to incorporate a wide variety of activities and materials that focused on that specific topic, and that were made available to all young learners.

More Purposeful Communication between Museum and Classroom Educators

Ongoing communication between educators is incredibly important for children with special learning needs, including cognitive disabilities, as they likely have multiple school-based educators supporting their learning, such as classroom teachers, special education teachers and educational assistants. Maintaining this dialogue about a special needs student's progress allows for all staff to be aware of what each child needs to be able to learn and participate to the best of their ability (Koppang, 2004; Friend et al., 2010). This ongoing communication about students with special learning needs is not always extended to include informal educators, such as museum educators, who facilitate learning experiences for those students outside of the classroom.

From statements made by this study's participants, there is currently one approach being used at their museums to determine the composition of a visiting school group: the classroom teacher is asked at the time of booking. If the museum educator is only told about certain qualities of the class at the last possible moment, such as upon arrival to the museum, they may not be able to prepare any necessary strategies or materials to support visitors with special needs.

Also interesting to consider are the reasons that some of the participants in this research study gave for why the classroom educators did not share more explicit information about their students with special needs. These reasons included the classroom teacher not wanting to provide the museum educator with a poor impression of a student's abilities prior to the visit; a student may have a disability that is not considered to be severe enough to negatively impact their learning at the museum; and that the teacher may have misinterpreted the booking question. The participants did not provide rationales for these, but they can be considered as evidence of the current lack of communication between classroom and museum educators.

Research into museum and classroom educator collaboration (Wright-Maley et al., 2013; Tal & Steiner, 2006) shows that conducting pre-visit discussions between the classroom teacher and the museum educator about the content of the visit often enables the museum educator to prepare an effective and enjoyable program for the visiting class. In order for museum educators to be able to optimize educational learning experiences for visiting school groups, they need to know specific details about those groups, including whether there are any children with special learning needs, including cognitive disabilities.

Museum educators need to have more of the 'pedagogical-content' type of conversations with classroom teachers that Tal and Steiner (2006) described

prior to the day of the field trip. One potential way to facilitate these pre-visit conversations would be to directly involve the museum educators in the booking process. If the museum educators were given the opportunity to speak directly with the classroom teacher at the time of booking in order to discuss both expectations of the program and whether any of the participating children had any specific special learning needs, this would allow the museum educators to better prepare for that class' visit.

Future Training and Professional Development for Museum Educators

Museum educators often identify as life-long learners, and look for opportunities to learn about topics that will further their professional skills and knowledge (Bailey, 2006; Dragotto et al., 2006, Bevan & Xanthoudaki, 2008). Opportunities to learn about how to better support all types of learners, including young students with cognitive disabilities, within the museum should therefore be made available to them. When asked during their interviews whether they had ever noted or participated in any professional development opportunities that focused specifically on working with children with cognitive disabilities within the museum, all seven participants stated that they had not. All participants also expressed an interest in participating in any such opportunities.

Coates et al. (2000) state that school-based educators are often involved in the selection of topics for their professional development opportunities, and that those topics are often derived from experiences those educators had in their classrooms. That same approach to topic selection can also be used when choosing a focus for museum educator professional development opportunities. What follows is a series of suggestions for potential components for a professional development for museum educators that focuses on working with children with cognitive disabilities in the museum. The majority of the following suggested components were based upon the learner-centred professional development model, which "assumes that teachers actively construct knowledge based on their past experience, the context of the classrooms, and the new instructional strategies they are considering" (McLesky, 2001, p. 28).

The first suggested component of professional development for museum educators would be to provide the participants with specific background information about the many different types of cognitive disabilities, and to emphasize that they will manifest differently in individual children. No two children with the same cognitive disability will be affected to the same level of severity.

The second suggested component for this professional development opportunity would focus on introducing museum educators to different strategies that they could use when working with children with cognitive disabilities within the museum environment. The participating museum educators would also be provided with time to discuss the usage of those strategies and to ask questions about their implementation.

A final suggested component would be to have museum educators visit elementary school classrooms and observe the classroom teachers, special education teachers, and educational assistants as they work with children with cognitive disabilities. By participating in direct observations of how classroom-based educators facilitate learning experiences for those students, the museum educators may be able to identify strategies that they can extrapolate for usage in the museum. Additionally, having the museum educators and the classroom educators together in one location would likely provide opportunities for these two types of educators to discuss methods of supporting students with cognitive disabilities as they participate in learning activities.

The last two suggestions incorporate collaboration between the educators as a significant part of the learning process. The importance of such collaboration was emphasized by McLeskey (2011) as one of the critical components of the learner-centred professional development model of professional development, which he argued was more effective at helping educators develop new skills.

CONCLUSION

The efforts to make elementary education more inclusive for all students have resulted in classes being comprised of all types of learners, all of whom learn differently. Some of these students, for any number of reasons, need extra support to both facilitate and enhance their learning. At school, such support is provided by classroom teachers, special education teachers and educational assistants who have been trained in how to best support those children as they learn.

When these classes of diverse learners visit museums, however, their learning is being facilitated by museum educators, who may or may not be familiar with special education practices and strategies, or with the conditions such as cognitive disabilities, that cause certain students to require special education support. In response to this potential lack of knowledge and training, this small case study sought to identify potential methods of professional support for museum educators who need to design and facilitate programming for young students with cognitive disabilities.

Based on the statements the study participants made during their interviews, two specific types of support were identified as being potentially beneficial for museum educators and should be the focus of future research projects: more opportunities to speak to and collaborate with classroom-based educators; and the development of professional development opportunities that focus specifically on working with children with cognitive disabilities. Any subsequent research into connections between museum education and special education would likely greatly benefit from also exploring how classroom educators prepare students with special learning needs, including cognitive disabilities, for visiting the museum and participating in programming and activities.

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SECTION 3: INTRODUCTION

Museum Educators' Praxis: Learning through Ones' Own Reflexive Research

This section contains five chapters representing studies of museum educators' own learning through reflexive arts-based research, such as a/r/tography (Irwin, 2013), rooted in praxis (the art of working within theory and practice), while questioning the construct of meaningful engagement through lenses of autoethnographic and phenomenological understanding. This is important to museum educators because a developed reflexive understanding of their personal practice (and thus working within a modality of praxis) helps them more easily communicate and offer meaningful engagement with their diverse visitor base. A reflective practitioner is attuned and reactive to the daily nuances that are part of their lived experiences (Aoki, 2005) as museum educators and helps focus their attention to the creation of meaning for all visitors. Each of the studies represents a different and diverse range of informal learning settings, from a formal Chinese garden, and Anthropological and Farm Museums, to a local community art gallery. The key themes of this section include: understanding the hybrid nature of one's curatorial self; how student-centred activities impact meaning-making during field trips; an autoethnographic approach to exploring the process of exhibit creation; artist apprenticeship projects for secondary students; and finally, and nicely culminating a book devoted to the work and practice of museum educators, what professional art museum educators consider meaningful engagement with works of art.

Kendra Fehr's "Representing Other: Finding Reflections of Myself from a Space In-Between a Garden and a Museum", works through the hybrid tensions of being herself a TCK or "third culture kid" curator. Fehr questions how her autobiography is mirrored through and onto her curatorial experience while conceiving, and finding the physical elements for, an exhibition that highlights the building of a formal Chinese garden in downtown Vancouver, Canada, a garden far from its original source, and thus also a hybrid of sorts. Through the artefacts that Fehr collects, she creates two parallel narratives or exhibits, one personal and hidden, the other public and visible. Fehr's use of two distinct fonts helps us to visually *read* the chapter from the two perspectives that she writes from, the formal curatorial lens of building an exhibition and the autobiographical one of her hybrid TCK self. This contrast offers the reader a fascinating glimpse into the *complicated inner-conversations* that

may take place for many museum educators and gallery curators. As Fehr attests, her TCK cultural understanding helped her to acknowledge the ways in which her cultural position could be both helpful and harmful in her role as a curator.

Karla Smedley's "Using Informal Learning Spaces to Increase Meaning-Making: Museum Visits with Young Adults", considers the K-12 teachers role as the formal arbitrator of young adults museum experience and how important it is to engender meaningful student-centred learning in this informal setting. By engaging with an arts-based museum visit plan that encouraged her students to freely roam the incredible treasure trove of the Museum of Anthropology at the University of British Columbia, she opened her student's eyes to their own learning and meaning-making. These are museum's and art galleries future audiences and Smedley's study shows teachers and museum educators how important it is to make young visitors the leaders of their own destiny and to thus harness their own potential in understanding(s) and meaning-making(s) as they march towards their futures.

Kate Petrusa's "Embodied Tensions: Digging into Agriculture at the BC Farm Museum", like Fehr's chapter, utilizes autoethnography and reflexivity to open a space behind the educational and curatorial project that she was engaged with, to help the reader understand the possibly conflicted nature of the process of guiding an exhibition to its fruition. The tensions that arise are held as a reality of praxis and are allowed to form an integral part of the final exhibition. We are engaged in the reflexive writing of a curator who must live the pace of the unfolding process. As Petrusa worked at keeping the avenues of communication open, she learned valuable lessons in curatorial and education meaning-making. This chapter illustrates how it is useful for museum educators who enact curatorial projects to be self-aware so that a reflective nature can be embodied throughout their praxis.

Talya Fuchs' "Ecologies of Youth Art Apprenticeship: A Case Study of the Burnaby Art Gallery's Artist Apprenticeship Project", like Smedley, looks at young adults through an arts-based school program and extends the curatorial role of the museum educator by focusing on the exhibition produced by students under the mentorship of an artist. This case study allows both teachers and museum educators to be reminded of the importance of the 'artist' in the "creation" of meaning-making and how young adults can grow in their understanding of art processes by hands-on engagement with the materials of creativity. Through gallery and studio visits, students were brought face to face with the realities of how an artist lives and creates, and dispelling many prevalent stereotypes of the artist's profession. Furthermore the students were fully engaged in the curating of an exhibition of their own art works, and thus familiarized themselves, under the tutelage of an artist, with the breadth of an artist's work. Similar to Smedley's study, this example, of student-centred museum education, enhances teachers' knowledge of how they can work with museum educators to enliven their students understanding of both a museum, and in this case, art making praxis.

Finally, Nathalie Sienkiewicz's "Creating Meaningful Experiences in Art Museums: A Study of Museum Educators' Perceptions of Meaningful Engagement

with Works Of Art", begins with an autobiographical quest to understand her youthful experience of a museum trip at which she vividly remembers seeing a painting that she later understands as a depiction of the tale of Icarus. This leads Sienkiewicz to employ a case study of 10 museum educators to help understand what choices they make to engender meaningful visits for their patrons. This final chapter in our book is apt in that it represents a desire of all museum educators for visitors' visits to be as engaging and meaningful as possible. Sienkiewicz's study represents a fascinating glimpse into this complex enterprise, supplying concepts, that in her own words, "expand our understanding of good teaching practices in museums, with regard to whether sharing information about art pieces limits possibilities for personal meaning-making or ultimately enriches visitors' encounters with works of art".

Collectively, these five chapters provide new insights for further investigations of how museum educators might support the learning and educational needs of a wide variety of museum visitors and settings through embracing reflexivity in their daily praxis. As Vallance (2007) reminds us, it is the task of all museum educators to provide museum visitors "with the experience that can help them make meaning, on their own, … in the broader visual culture, …and make aesthetic decisions regularly, and where one department store's (Syms') slogan is 'The educated consumer is our best customer'" (p. 27). These final chapters represent a timely call to museum educators to embrace their own lived experiences (Aoki, 2005) and thus open themselves to the possibilities of learning and teaching through reflexive research practices.

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10. REPRESENTING OTHER

Finding Reflections of Myself from a Space In-Between a Garden and a Museum

INTRODUCTION

As a museum educator, my role is to represent and reveal works of art, artefacts or spaces connected to individuals or to a group which have some type of national, ethnic, cultural or social significance. Because I am a cultural hybrid, I often feel like an inadequate interloper who cannot represent anyone's culture with integrity and purity because it is not mine and I am not theirs. In addition, I experience feelings of self-identification to the cultures I take time to represent. Through studying my experience of creating an exhibit for the Dr. Sun Yat-Sen Classical Chinese Garden in Vancouver, I was able to gain further insight to my cultural identity as a TCK (third culture kid) who is always finding pieces of herself through experiences with the *other* and in doing so discovered that there is a place of belonging in the space in-between cultures.

METHODOLOGY

For my research I chose the qualitative methods of autoethnography and a/r/tography. These two methods acknowledge that all researchers hold frameworks and paradigms through which they will experience phenomena; therefore, reflexivity and acknowledgement of the researcher's position is part of the study (Ellis, Adams, & Bochner, 2011; Springgay, Irwin, Leggo, & Gouzouasis, 2008). The data from both of these methods is gained from self-study within the context of an experience or through relationships. In a/r/tography, new inquiries are explored through a relational lens of the multiple roles of artist, researcher and teacher (Springgay, Irwin, Leggo, & Gouzouasis, 2008). In the role and activity of being artists, a/r/tographers can research and discover through the process of interacting with art materials and through visually working through concepts (Barone & Eisner, 2012; Springgay et al., 2008). Autoethnography is the combination of both autobiography and ethnography (Ellis et al., 2011). However, it is more than telling one's story because, inclusive to life events, there must be the academic rigor of understanding one's story by analyzing it through a reflexive lens of research and academic literature. It is also ethnography in that its primary concern is the study of one's own cultural experience "for the purpose of helping insiders (cultural members) and outsiders

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 165–181.

(cultural strangers) better understand the culture" (Maso as cited by Ellis et al., 2011, p. 275). The research objectives for a/r/tography and autoethnography are to gain new insights and perspectives through personal experience as well as to discover further areas of inquiry (Barone & Eisner, 2012; Ellis et al., 2011; Springgay et al., 2008)

As an artist/researcher/museum-educator, I chose and arranged objects and created aesthetically and educationally effective exhibition vitrines as well as researched the cultural and contextual narratives that I developed into text panels. I used supporting academic journals, books, journaling, memory and image to explore my own cultural lens. One might say my methodology is a/r(TCK)ography as I am an artist/researcher/teacher understanding my experience as a curator through a TCK lens.

GARDEN EXHIBITION CONTEXT AND GOALS

Planning an Artefact-Based Exhibition for a Non-Artefact Based Museum: Putting the Garden in a Box

The Dr. Sun Yat-Sen Classical Chinese Garden is located in the heart of Vancouver's Chinatown (http://vancouverchinesegarden.com/). The Garden is the first full-scale classical Chinese garden built outside China (Keswick, Oberlander, & Wai, 1990). Although the garden is not a museum in a traditional sense, it refers to itself as a *living museum* because it preserves ideas, culture and plant life as opposed to inanimate objects.

The Irving K. Barber Learning Centre on the campus of the University of British Columbia served as the site for the exhibition of the Dr. Sun Yat-Sen Classical Chinese Garden. As part of its mission to support community engagement initiatives and cultural programming, the Irving K. Barber Learning Centre approached the garden to ask if they might be interested in curating an exhibition using the learning centre's six 2'X6' display cases. In the following sections I describe how I endeavoured to represent a *living museum* through artefacts in order to animate the story of the garden. After explaining the background and process of each vitrine, I then explore my own TCK experience through the themes explored. In this chapter I visually separate the text explaining exhibition development from the text exploring my TCK viewpoint by using different fonts (Times New Roman for exhibition development, Calibri for my TCK viewpoint). In this way, I anticipate creating an experience that allows the reader to oscillate from the outward experience of creating the exhibition into the inward experience of exploring my autoethnographic perspective.

FRAMED VIEWS

Rationale and Process for Vitrine One

Concept. To bring the viewer into an experience of a framed view within the garden and, as a result, create an understanding of this concept.

Figures 1a. & b. Vitrine one: The framed view, detail (Kendra Fehr, 2014)

Figure 2. Vitrine one: The framed view (Kendra Fehr, 2014)

When I had visited the original scholar gardens in Suzhou, China, my photographs were all framed by doorways, leak windows[1] and latticework. As someone who had lived in China for a considerable amount of time, I was familiar with the aesthetics of Chinese landscape paintings and I noticed that these framed garden viewpoints looked like stylized scroll paintings. In order to provide this experience for others, I created a design plan that would allow the vitrine to become a three-dimensional viewing experience with a transparent leak window in the foreground framing the garden scene in the background (Figure 1a & b, Figure 2).

Using the Vitrine Themes as My Framed View

Most things about me are hybridized: I was raised in South America amongst Bolivian locals and American expatriates. I moved to Canada for university and then to China for nine years of work experience in order to work and live in an international, predominantly Asian environment. The only essentialised thing about me, if we can believe the records, is my gene pool. I come from a long line of Dutch-German Mennonites who can trace themselves back to the sixteenth century; this is the one area where I should be able to self-identify or represent myself clearly. Oddly enough when I meet people for the first time, my darker complexion and thicker features means that I am often asked, "What are you?" In every country I have visited or lived, in which nationals were not Caucasian, local people have assumed that I was a mix of their ethnicity. It has always served as a deep-seated compliment to hear that someone thinks my blood is somehow connected to his or her blood and I've noticed that I often long to find myself in every culture with which I have significant contact. This tendency to self-identify with other cultural groups has occasionally led to hurt feelings upon the reminder that I actually don't belong.

The purpose of the leak window vitrine was to allow an embodied experience of the garden for the exhibit visitor. The scenery of the garden is perceived through the shape and patterns of the leak window, in the same way that my understanding of the world around me is framed by my socio-cultural framework and is seen through the patterns of my past experiences. Although I don't fully belong to any established cultural group, I understand the world from a space in-between as it allows me to be simultaneously "a part of and apart from" the story (Simmel's Stranger as cited by McCaig, 2011, p. 51; Useem & Downie, 2011, p. 22).

LOCATING THE GARDEN

Rationale and Process for Vitrine Two

Concept. Create a context for the garden and create further impetus for people to visit the Chinatown neighbourhood and the garden as a holistic experience.

The narrative that most captured my imagination was the cultural-historical narrative of the garden's location: Vancouver's Chinatown. Chinatown is rooted in liminality. This neighbourhood and the surrounding area was where the Afro-Canadians, Japanese, Italians and Chinese lived because they were not allowed to fully belong to the rest of city life (Ng, 1991; Rudder, 2014; Yee, 2006). At the time of its naissance, Chinatown was not even a place for in-between people to settle, but instead it was a place for them to be in-between jobs or countries. Many Chinese labourers were in Canada with the understanding that they would eventually return to their families in China. In this neighbourhood they established a cultural pocket where they could live out aspects of being Chinese. Nevertheless, Chinatown is not China; it is the in-between cultural space of mixing many kinds of Chinese from

Figure 3. Vitrine two: Locating the garden, detail (Kendra Fehr, 2014)[2]

Figure 4. Vitrine one: Locating the garden (Kendra Fehr, 2014)

different times in history within a Canadian location and surrounding cultures (Ng, 1991, p. 5; Yee, 2006). It is in this place that the re-mix of in-between is constantly happening in a neighbourhood that has already transitioned through many different phases of city life and is currently in the midst of yet another transition (Bula, 2013; Yee, 2006).

In order to imagine the types of artefacts that might represent Vancouver's Chinatown, I took time to become familiarized with the neighbourhood. I had my own ideas of what artefacts would represent Chinese culture, but exploring the area allowed me to create and find a list of artefacts that were authentic to the distinct aspects of Vancouver's Chinatown.

Architecture represents the exterior personality of a neighbourhood and, as I walked around the area, I found the numerous historical buildings especially fascinating. The buildings that stood out as remarkable were the *Tongs* 堂 (benevolent associations) which were started as social security organizations for Chinese immigrants who shared family names or regions of origin in the Chinese

homeland (Ng, 1999; Yee, 2006). My immediate desire was to create a street scene experience for the exhibition visitor, so I went around Chinatown photographing the historical buildings for the purpose of making a diorama. I realized that I could find historic images of most of these buildings in The Vancouver City Archives so I decided to layer the street scene with juxtaposed black and white images from the past with color images from the present (Figure 3). In front of this diorama of buildings I arranged the artefacts that came from or represented the individuals, shops and restaurants in the area (Figure 4).

Liminal Spaces Feel Like Home

Where are you from? Like most TCKs, when I am asked this question I cringe and I envy those who can answer this question with a definitive response (Ender, 2002). Even though I spent most of my childhood in Bolivia, I attended kindergarten, fifth grade and ninth grade at a small private Mennonite school in Saskatchewan full of rooted people who defined themselves by the land they farmed and the towns closest to their land. While living in a small Saskatchewan town during those years in Canada I felt very conspicuous. I experienced a feeling that my presence was disrupting the flow of normalcy and I had an awareness that, in communities like this, an extremely narrow range of normative behaviour existed which mostly involved interests, rules, and a schedule of life events that most people were born into (Pollock & Van Reken, 2009, pp. 42–52). From the corner of my eye I would furtively watch and copy my peers. Like many TCKs living in the parent's home culture, I walked a social tightrope act and, even though I was fairly good at faking assimilation, I knew that belonging was another story altogether (Pollock & Van Reken, 2009, pp. 42–52).

Although I have always felt on edge in landed communities, there have been neighbourhoods in cosmopolitan cities where I suddenly feel at ease. The only way I can explain this is there is a spirit of liminality in these places. One summer during my adult years when I came home to Saskatchewan from overseas to be with family, I took a side trip to New York for a week. Even though I had never previously visited New York, I distinctly remember feeling relief and familiarity as soon as I hit the streets. I have come to understand this as a connection I experience whenever I am in an in-between space. When I started working in Vancouver's Chinatown I experienced that same feeling of relief and familiarity that I recognized in New York City.

These are the spaces where I feel at home: transitional cities or liminal city neighbourhoods, vehicles, train stations, bus stations and airports. These are spaces that suspend the occupants in a state of being neither here nor there. These in-between spaces were woven into my identity and understanding of the world early on and in these places I breathe both a sigh of relief and an emotional gasp of longing to find both concrete edges and nameable departures and destinations to define the in-between.

THE BUILDING OF AN AUTHENTIC CHINESE GARDEN IN VANCOUVER

Rationale and Process for Vitrine Three

Concept. Create an understanding of the process and collaboration required to create the garden in Vancouver as well as the unique privilege of having it in our city.

Figure 5. Exhibit three: How the garden came to Vancouver, detail (Kendra Fehr, 2014)

Figure 6. Exhibit three: How the garden came to Vancouver (Kendra Fehr, 2014)

Most of the building material for the garden, including the pebbles that now make the floor patterns in the courtyard, came from China (Keswick et al., 1990). Seventy steel containers with 965 wooden packing cases inside were shipped from China for the building of the garden (Wai, 1990). In addition to that, fifty-two artisans from Suzhou came and lived in Chinatown during the year the garden was being built. The artisans who came used traditional techniques and simple tools which, at times, caused tension between the Canadian team and the Chinese team of builders because the Canadians did not think that the Chinese safety measures were sound nor did they always want to use the *inefficient* traditional building methods. In the end, the Chinese workers did have to give up their canvas shoes and rattan hard hats at the

insistence of the Workers' Compensation Board inspector, and the Canadian workers allowed that some building was better done manually (Wai, 1990).

In vitrine number three (Figure 6), I wanted visitors to see the authenticity of materials, traditional building techniques and the privilege gained by having the Chinese artisans share their time-honoured knowledge in creating the garden. The artefacts used for this vitrine were traditional building tools left behind by the artisans, extra, unused ceramic roof tiles with the lucky bat patterns found decorating the ledges of the upstairs office space, extra pebbles which were meant for the courtyard floor patterns and a rattan Chinese hardhat outlawed by the Workers' Compensation Board inspector which I found in a box of archival garden artefacts. In order to create a backdrop for the vitrine, I photographed the various courtyard floor patterns and printed them out for the bottom of the display case. Lastly I printed some photographs from the photo archives of the Chinese artisans using their skills to create the garden (Figure 5 & Figure 6).

One of the primary things to attract visitors to museums is that they house authenticity (Leinhardt & Crowley, 2002). A longing to create authenticity is reflected in many layers of the garden. There is a purist assumption to things that are authentic; however, if you look closely at the garden, its authenticity is far from pure. The garden is re-contextualized through all manner of shifts and hybridities. It is a Chinese garden built on Canadian soil designed by both Canadian and Chinese landscape and building architects. It is a 28 year-old garden copying a 14th–17th century garden. The garden functions as a tourist site not a Chinese scholar's residence. And while many of the plants found in the garden are native to China, import regulations mandated that they all be sourced in Canada, which meant that additional native Canadian plants were also added (Keswick et al., 1990; Keswick & Jencks, 1978; Morris, 1983; Vaughan & Oberlander, 1990, p. 39; Wai, 1990). Although the garden is inauthentic in many ways, the main purpose of this vitrine was to show the process by which a full-scale classical Chinese garden was built in Vancouver using the authenticity of the garden as impetus to visit.

Finding Authenticity in the Re-Contextualized

Having the right to represent or relate to a culture is connected to questions of authenticity, a quality that is socially policed both internally and externally (Fine, 1995; Johnson, 2003; Peterson, 2005). Authenticity in identification is a fluid and porous border in which one is excluded or included from relating or representing by a vague combination of a number of factors such as language, cultural upbringing, blood, nationality and appearance. Authenticity is rarely total and even though there are real factors that make something or someone authentic, if you look deeply you will always find dilution in cultural, national and ethnic purity.

People assume that I like Salsa dancing because I am from Latin America and have a darker complexion, but I can promise you that no one has ever asked my

pale, blonde, blue-eyed sister to go Salsa dancing with them. In addition, Bolivians mostly dance Merengue and, even still, I never learned to dance Merengue or Salsa in Bolivia because my Mennonite parents were morally uncomfortable with dancing. I learned to dance Salsa in Beijing where my dance instructors were Russian and Chinese and most of my dance partners were German businessmen or American college boys. I like the story of how I learned to Salsa because it makes more sense to who I actually am than if I had learned how to Salsa in Bolivia.

Salsa itself is a metaphor for a mix. The direct translation for the word salsa is sauce, reflecting accurately that salsa dance and music is made from a fusion of styles (Renta, 2004). This mixing happened through a network of connections through time and space with a variety of cultures and races by way of a series of economic and political circumstances, some tragic, some serendipitous (Renta, 2004). The reality of my TCK culture is that it is made of many connections and these connections dilute, mix and re-contextualize me into the dance or the sauce that I have become. Like the garden, there are isolated parts of me that are authentic, but also, like the garden, all of the authentic parts of me have been re-contextualized into new places and mixes.

THE WHITE-WALLED RETREAT OF THE SCHOLAR

Rationale and Process for Vitrine Four

Concept. To create an understanding of the historical background of a scholar's garden and the geo-political context from which it came.

Figure 7. Vitrine Four: Historical Context of the Garden, detail (Kendra Fehr)

The initial feeling that came over me the first time I walked inside the Dr. Sun Yat-Sen Classical Chinese Garden was the feeling of withdrawal from the outside

world. The neighbourhood around the garden is raw, chaotic and shows evidence of city grime on tired concrete that has witnessed hard living. High white walls surround the garden and the moment you walk in you are teleported to a disconnected environment. In the tranquility of the garden you see only beautiful things and people who feel safe. The world outside the garden, though seemingly chaotic, has a system of interaction and the residents of the neighbourhood are familiar with the patterns of navigating each other's presence; however, many of them do not have access to the garden.

Figure 8. Vitrine four: Historical context of the garden (Kendra Fehr, 2014)

The reception hall, the intimacy of the courtyard, the scholar's study, and the large private walls around the garden speak to the fact that the entire garden was meant to be a domestic space (Keswick & Jencks, 1978; Morris, 1983). The scholar, a civil servant from the Ming Dynasty, was named a scholar because he was able to pass government issued examinations as part of the official way of moving up a ladder of social influence (Morris, 1983). He would build a garden such as this as part of his home within the city where he worked (Oberlander, 1990; Lou, 2011; Morris, 1983). The scholar's world-view towards nature was Confucian and was framed by the belief that being in nature was an integral way to find balance and harmony in one's life. However, the scholar was also trapped in a lifestyle of busy urban employment, which did not allow him the time or space to go into nature (Morris, 1983; Oberlander, 1990). He solved this conundrum by building high, white walls to shut out the dirt and chaos of the city and he included landscapes in his residence as a way to bring nature near (Lou, 2011; Morris, 1983; Oberlander, 1990).

In creating this box I wanted to gather artefacts that would represent the Chinese scholar who resided in the garden retreat (Figure7, Figure 8). Although I could not find a scholar's hat or robe, I folded a traditional Chinese man's jacket to represent the scholar's robe. Since scholars were wealthy and influential members of society, I included Chinese domestic items that would give the feeling of an upper class home. Since calligraphy and painting were two of the arts in which a scholar was to demonstrate skill, I added a calligraphy set and a scroll (Keswick, 1990; Morris, 1983). Most importantly I included a replica of a scholar's examination, a symbol

of an academic accomplishment necessary for the scholar's social mobility into the civil service during this time (Morris, 1983).

A TCK's Justification for Going Behind the Walls

As a TCK you simultaneously live in a world of exclusion and inclusion. You are often included in the transitional, disconnected spaces and excluded from inhabited, connected spaces. As a TCK I was allowed into spaces that many local people could not so easily enter. Fancy hotels, country clubs, foreign housing compounds, churches and international schools were all spaces for privileged transitional people who retreated behind high walls. These walls were semi-porous and only a certain segment of society could come and go; money, language, race government and culture created exclusions. These were places where we could rest, breathe and prepare ourselves to go outside the walls again where we were far too conspicuous and did not always understand the rules of engagement.

As a TCK I have found that these walled spaces created a soundtrack of guilt in my everyday life. I live in a world of should. Race, class, money, religion, language, culture and government laws should not separate me. As I have grown older and learned more about the socio-historical contexts of expatriate enclaves I have learned that "Colonialism, in a sense, first created third culture kids" (Bell-Villada, Sichel, Eidse, & Orr, 2011, p. 5) and in that context a TCK is often treated as special and as the representation or ambassador of the organization, country or religion to which they are associated (Hylmo, 2002). The feelings of guilt over inequality as well as the pressure of being watched and monitored in one's ambassadorial role are weights carried by many TCK's.

These metaphorically walled spaces are translatable to every country where expatriates live and they are built so that we, who live in a country of difference, can congregate and feel belonging in what we have in common, which primarily is in sharing the experience of being different from the outside (Pollock & Van Reken, 2009). Different from the outside means one lives a lifetime of being catcalled, being stared and pointed at, being asked to have one's picture taken with random families at national tourist sites, being yelled at by taxi drivers (for God knows what), or being ripped off at every chance when shopping or negotiating for a service. There have been times where I've wanted to yell like a crazy person – Puta mal creado! Wǒ tīng bù dǒng! Wǒ bù zhīdào! Wǒ bùshì wàiguó rén! (You badly raised son of a bitch! I hear you but I don't understand you! I don't know! I am not an outside person!). The voices yell back: Gringa, Wàiguó rén, 外国人, lǎowài 老外, Farang, inostranets иностранец, yabancı, barbarous βάρβαρος, agnabeya أجنبية, mgeni, Paradēsī, dayuhan, wehgook-een 외국인, goy יוג, âng-moo 红毛, mat salleh, vulagi, 外人 gaijin! *When so many voices yell and call me an outsider, it feels good to go inside the white wall where I can be an insider for a spell.*

THE FABRICATED LANDSCAPE

Rationale and Process for Vitrine Five

Concept. Create an understanding of the philosophy of a classical Chinese landscape garden with the inclusion of symbolic artefacts that represent the five elements of a landscape.

Figure 9. Vitrine five: The elements of a scholar's garden, detail (Kendra Fehr, 2014)

Figure 10. Vitrine five: The elements of a scholar's garden (Kendra Fehr, 2014)

The garden traditionally was a home where the scholar could retreat from the chaos of the outside world to study or peacefully conduct his administrative duties (Keswick & Jencks, 1978; Morris, 1983). In this home he created a microcosm of nature; an idealized form of the place that he wished to be but could not be because his responsibilities required him to be in the city (Oberlander, 1990). This idealized space was constructed of metaphors: water, rock, plants, poetry and architecture were balanced and arranged in the garden through a highly formulaic design meant to capture the randomness of nature in the most perfect way possible (Keswick et al., 1990). Unlike Western gardens, the focus of a Chinese garden is not plants alone. Chinese gardens house philosophical symbols which strive to communicate

the Confucian concept of yīn yáng 阴阳 (balance) and gardens are seen as miniature landscapes in which all aspects of a landscape should be balanced (Keswick & Jencks, 1978; Keswick et al., 1990).

It was challenging to find artefacts to represent the five elements of a Chinese landscape garden. Initially I had sourced some items online but because of budget constraints, we were not able to buy them. Instead we had to depend on items which belonged to the garden or which employees and friends of the garden could lend to the exhibition. The day before we installed the exhibit, the only sourced items for the vitrine were the calligraphic woodcarving (poetry) and the miniature rockery. The scarf, which represented water, was found by chance in a bag of cloth when we were setting up the exhibit, and the *tíng* 亭(garden pagoda) and *pén jǐng*盆景 (a small ornamental tree artificially prevented from growing to its normal size) were added into the boxes at the last moment coming from a colleague's living room. Although unpredictable and unplanned, in the end we were able to represent all five landscape elements and I enjoyed the organic nature in which it came together.

Idealized Understandings of Home

I wonder if the scholar ever decided to go camping, and upon having a real experience in nature, he discovered that his constructed experience of nature was nothing like the real thing. What happens when the constructed reality does not match the reality of the thing it represents? As a result of hearing parents complain about the host country and grieve in homesickness for the home country, a TCK has been made to understand her whole life that, although she does not belong now, she will one day return to her real country, the one on her passport, the place where she really belongs (Van Reken, 2011; Cottrell, 2011; Pollock & Van Reken, 2009). And so, TCK's "come back riding on their parent's mythology of home" (Timothy Dean as cited by McCaig, 2011, p. 49). TCK's construct utopic understandings of the ease and comfort that the home country will offer and idealized stereotypes of the relationships, places and experiences they will one day have upon repatriation. Overarching everything is the expectation that, in that place known as home, a sense of belonging will finally be found (McCaig, 2011; Pollock & Van Reken, 2009).

In moving back to Canada, the constructed reality I had created of home quickly came crashing down. I struggled with the cold weather and found the scenery sparse. My dreams and life expectations greatly differed from my parent's home community. My relatives questioned my intention to go to university and many of my Canadian peers were already talking about marriage. Everyone thought I was too loud and too opinionated. I thought everyone was too boring and uninformed. The only job I could find was skewering raw souvlaki at a butcher shop for five dollars an hour when I, like most TCKs, was accustomed to being elite and associated with country clubs and the high-class echelon of society (Hylmo, 2002; Pollock & Van Reken, 2009). The Canadian prairies offered nothing similar to the college experience I was told to expect from my American expatriate peers, nor did it offer that comforting

feeling of belonging and home that my parents described (McCaig, 2011). I spent many years of my life trying to find home in places it was assumed I would fit into, which made me frustrated with myself for feeling uncomfortable and awkward.

CONCLUSION

Reflecting through an autoethnographical focus, I realize my tendency to adopt the cultural narratives of *others*. Through the process of this reflexive research I was able to locate a distinct cultural narrative that paralleled that of my curatorial self as I fashioned each vitrine. In reading the literature on TCKs, I was reassured that feelings of self-identification to a variety of cultures, while failing to feel a complete sense of belonging to any, is a common attribute of being a TCK (Cottrell, 2011, p. 66; Hylmo, 2002; Pearce, 2002; Useem & Downie, 2011; Van Reken, 2011). For a TCK there can be "constant fluctuation that exists among diverse and changing identities. Individual identities become fluctuating constellations of partial loyalties expressed as a constant morass of allegiances" (Hylmo, 2002, p. 204). Forty-one percent of TCKs "do not identify strongly with their own ethnicity and seventy-four percent see themselves as outsiders to the home culture" or they see themselves as "very different", as persons having "other" status (Finn Jordan, 2002, p. 221). Instead TCKs are on a cultural continuum that is rarely fixed during their life. With every major life transition "different voices may call them to lost homes from past journeys or to new homes in lands begging to be explored…or not" (McCaig, 2011, p. 53).

In knowing that this is a normal attribute of my TCK culture I am able to feel less confusion and guilt when I continue to self-identify or feel allegiance with *others* while not feeling full belonging with those with whom I am *supposed* to belong. I am able to give myself permission to self-identify and feel authentic to individual aspects of other cultures even when those cultures will never recognize me completely and I am not technically *authentic* to them. For the TCK "culture is in the process of becoming while, at the same time, culture is being, but the being is comprised of many cultural identities existing simultaneously" (Hylmo, 2002, p. 204). However, through this self-reflexive autoethnographic writing process that paralleled my curatorial duties I found that, even though it is good to find pieces of myself in the cultural enclaves of others, it can also be unmooring if I do not claim a cultural space of my own (Gilbert & Gilbert, 2011; Pollock & Van Reken, 2009). Even though, as a culture, TCKs have numerous subcultures and a multitude of differentials, we do find a strong sense of cohesion in the attributes that many of us have in common (Cottrell, 2011; Pearce, 2002; Pollock & Van Reken, 2009; Useem & Downie, 2011; Van Reken, 2011), and one of those main attributes is that we "… achieve identities informed by all, constricted by none, balanced on the threshold of each, to live in both/and world rather than an either/or world" (McCaig, 2011, p. 52).

Taking time to claim my cultural identity as a TCK creates for me a sense of grounding in my personal life that I believe will positively enhance my professional

life. In conducting this self-reflexive autoethnographic research I have come to realize that, as a TCK, I can understand myself from *the space in-between* cultures, and perhaps that is why I find museum work so gratifying.

Not only did the curatorial experience serve as a research platform to develop TCK cultural understanding, but this TCK cultural understanding also has helped me to acknowledge the ways in which my cultural position could be both helpful and harmful in my role as a curator. Being a TCK means that my multi-cultural experiences make it easier to empathize and relate to the stories I research and curate. On the other hand, my position as a TCK also means that I often suppose understanding or default to self-identification. This means that it is essential that I take the time to listen, understand and give voice to others by acknowledging that there is much to which I cannot relate or understand. By acknowledging my cultural position I hope to avoid the pitfall of speaking for others out of my assumptions and misaligned self-identification.

RECOMMENDATIONS FOR FURTHER RESEARCH

In researching my experience as a TCK curator and mediator of cultural heritage I found that a higher percentage than average of TCKs go on to post-secondary studies and subsequently find careers in the areas of language, culture, travel and public service (Finn Jordan, 2002; Cottrell, 2002; Useem & Downie, 2011; Gilbert & Gilbert, 2011). Because of having to navigate firsthand the constantly changing and multiple cultural experiences that TCKs juggle throughout their lives, they often have skills beyond their age in perceiving multiple viewpoints and understanding cultural complexities (Finn Jordan, 2002; Van Reken, 2011). Their childhoods allow them to have a "3D view of the world", "an expanded world view" and "cross cultural enrichment" that most people never get to experience or develop (Pollock & Van Reken, 2009, pp. 70–86). Because of these reasons I believe that TCK culture is an advantageous lens for museum and heritage work. Through my own experience in museum and heritage work I was able to see how motivated I became when working with other cultures, and I often felt like I could draw on skills and insights needed to find, write and represent the stories. As an area for further research, I recommend a study on the percentage of workers in museum and heritage work with TCK backgrounds and how this cultural background enhances, influences and motivates them in their careers.

NOTES

[1] A leak window is the name for the garden windows with a patterned screen. They are called leak windows because they allow the scenery to leak through to the viewer on the other side of the wall.

[2] All black and white photographs from this vitrine were public domain photographs credited to the Vancouver City Archives image collection found on http://searcharchives.vancouver.ca

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11. USING INFORMAL LEARNING SPACES TO INCREASE MEANING-MAKING

Museum Visits with Young Adults

INTRODUCTIONS: BEGINNINGS

Teachers often plan field trip activities to extend and contextualize knowledge taught within the walls of the classroom. By creating experiences connected to information students have learned in an abstract way, teachers hope to make clear the links between concepts students study inside the walls of a school and those they face in their everyday lives. It is also in the interest of museums, art galleries, aquariums, planetariums, heritage sites, historical farms and other informal learning sites "to engage all the senses" of students as this may lead to "attracting new and returning visitors" (Pittman, 1999, p. 15). However, when students do not make personal connections during the field trip experience, important opportunities for individual meaning-making and knowledge formation may be lost. Meaning-making takes into account all factors that lead to understanding and learning. These include cognitive, appreciative, social, affective, cultural, aesthetic and individual factors. In his book *Kant, Cognitive Metaphor and Continental Philosophy: From Kant to Derrida* (2007) Cazeaux explains Locke's idea that direct experience with the world "is the foundation of knowledge and morality" (p. 60). Field trips provide opportunities for students to experience their world and to begin to understand their own interests and motivations.

The approach of this research project was from the perspective of an educator, artist and student. An arts-based approach to research was used to "evoke or promote understandings that traditional research formats cannot provide" (Sinner, Leggo, Irwin, Gouzouasis, & Grauer, 2006, p. 1225). The main problem investigated was to learn more about how educators can foster personal connections for students during field trip experiences to ensure both "engagement and achievement" (Baines, 2008, p. x).

Through a collaborative process with the Museum of Anthropology (MOA) at the University of British Columbia, the idea of '*travelling the museum*' was developed as a starting point while designing the research project. The concept of travel led to the idea of having students use blank postcards as a means to move through, explore and describe the museum space, thus providing students with a voice to communicate their unique learning experiences during the field trip at MOA. The

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 183–200.

research investigated what students would learn if they were given time to connect personally with the informal learning space, rather than limiting their learning by curricular restraints or teacher-driven activities. The idea was to allow for multiple levels and points of entry; students would choose where to begin their own investigation of MOA. Hence, the main research question framing the study: *How do open-ended, student-centred image-making, writing and discussion activities impact student learning from field trips and other informal (non-classroom based) education experiences?*

The act of travel involves movement, and a postcard is often used to communicate and describe a traveller's actions to another person. As Butler (2001) describes in *Giving an Account of Oneself*, "telling is a kind of action" (p. 37) that allows the writer a means to "try to make sense through narrative" (p. 32) of their experiences. This "action element" (Warren, 2005, p. viii) combined with written and visual language, was key to the self-documentation of each student's experience, perception and learning during the field trip.

INVESTIGATIONS: LITERATURE REVIEW

Both classroom teachers' and museum educators' agendas may overshadow those of students asked to complete field trip assignments with which they feel no connection. Research completed by Falk, Moussouri, and Coulson (1998) indicated that addressing and involving student motivations during a field trip can "significantly influence how, what and how much" they will learn from their visit (p. 106). When students feel a bond to where they are and what they are learning, they are compelled to "learn more, learn more critically, and to care more deeply" (Ball & Lai, 2006, p. 268). There is a need to balance external, educator and museum agendas, with intrinsic, self-determined experiences for students. Witcomb (2010) argues that museums (and other informal learning spaces) need to take the opportunity to move beyond mere representation to capture the transformative capabilities of the museum space. As she explains, "without an affective experience, facts may be imparted and information about a subject or object accumulated but without leaving a strong impression" (p. 41). The question then is how to foster these important personal connections and transformative experiences for students during field trips.

Providing opportunities for students to choose how to explore an exhibit or site will allow them to focus on their own interests and enhances engagement. What a student values is where their attention is drawn. With research supported by Anderson, Piscitelli, and Everett (2008), Hawkin (2011) suggests field trips that provide fluid, open-ended opportunities for students to engage with their surroundings enhance students' ability to "gain knowledge of self through intellectual engagement with text (mind)… expression (spirit) and emotional reflection and expression (emotion)" (p. 10).

Students' life experiences and cultural backgrounds affect how they create understandings in an informal learning environment. It is important that field trip

activities are culturally responsive by highlighting the idea that exhibits, objects and environments experienced while on a field trip are perceived from a multiplicity of viewpoints. "Children come to their education with their own unique explanations" for the world in which they live and as they "encounter new information they constantly construct and reconstruct new meaning" (Wetton & McWhirter, 1998, p. 263).

As Witcomb (2010) describes, the museum space and contents act on the visitor by causing an involuntary response, or sensation, "which eventually gives rise to thought" (p. 41), in some cases allowing a memory to be unearthed. Witcomb further explains that these involuntary visceral responses are transformative for learning as they are "linked to signification, to the process of making meanings" (p. 41) for the museum visitor. Dudley (2010) connects these ideas to student learning by suggesting that images, especially those chosen for display in museums, "are objects both representational and material, and like all objects, are encircled by questions about the nature of memory, history and cognition" (p. xv). The vital place for meaning-making to occur is the intersection between sensory response, memory, recognition and communication.

Previous research discussed the interaction between knowledge-driven processes and sensory processes in individual knowledge formation, but also revealed a lack of understanding of how to foster this type of learning during a field trip experience. An awareness of how our senses affect our learning is important, but due to security and conservation concerns, artefacts at museums are usually only allowed "to be seen, not felt, smelt, sounded and certainly not tasted" (Classen, 2007, p. 895). Despite these sensory limitations, Dudley (2010) suggests that when students attempt to imagine taste, texture, smell and weight in typically "ocularcentric" (p. 8) museum displays, their intimacy to and understanding of the object they are observing can increase. Ting (2010) explains how she used tactile experiences with Chinese porcelain in combination with musical and food associations to engage students' senses. Her research was "directed more to getting the students to appreciate the materiality of the objects rather than communicate particular cultural significance" (p. 283). This approach was taken to alter the students' perception of objects in museums; changing lifeless, unmoving objects of the past into dynamic and stimulating spaces students could 'see' themselves in. Witcomb (2010) argues that "we need a pedagogy which allows for identification through imagination" (p. 49) and that over-interpretation by museums planners and educators can lead to a deadening rather than an understanding of history. While students may not, at first, understand the cultural context of an object in a museum, their personal response can attribute their own meaning to the object; the importance of this should not be overlooked as it plays a vital role in developing student's relationships to their world and lives (O'Malley, Sandlin, & Burdick, 2010, p. 698).

From a phenomenological perspective, the most interesting part in the museum going experience "is the process of perception lying between oneself and the object" (Dudley, 2010, p. 12). Casey (1997) links "sensory inputs" to precursors

of knowledge and as a means to "find ourselves in places" (p. 17). Perception is described by Abrams (1997) as "the concerted activity of the body's senses as they function and flourish together" (p. 57). Both Irwin and de Cosson (2004) and Golding (2010) promote the use of discussion, creative writing, poetry and art making as a means to allow information to pass through an individual learner, thus increasing meaning-making. When "knowing, doing and making merge" (Pinar, 2004, p. 9) in what Candlin (2010) describes as "embodied experiences" (p. 95), knowledge becomes internalized in the learner, so the process of exploring a museum space can work to create significance and understanding for students. In addition, Cazeaux (2009), Jay (2011) and Dudley (2010) have discussed links between language and the body, action and experiences and knowledge acquisition. This combination of movement and language (both words and visual images) can be used during museum experiences to provide students with a way to explore, reflect and communicate their constructed and reconstructed understandings.

METHODOLOGY

Theoretical Framework

The research question, data collection and analysis followed a constructivist and culturally responsive philosophy of teaching and learning. According to Gray (1997), constructivist teaching is based on the concept that significant learning occurs as learners are "actively involved in a process of meaning and knowledge construction rather than passively receiving information" (p. 1). Such teaching fosters critical thinking and involves creating a context within which students are able to explore new ideas and experiences. Within this context, an educator's role in providing information decreases and is replaced by a "strengthened role in eliciting and supporting students' own thinking" (Langer & Applebee, 1987, p. 77) and meaning-making abilities to create motivated and independent learners. In keeping with Aoki's (2005) goal of creating "curriculum as live(d) experience" (p. 418), an arts-based approach to creating, organizing and synthesizing of information during the research process helped open a door to transformation, both for the students and the researcher. The research also was undertaken with a view to connect curricular development with the ideas of symbolic anthropology: described as "a turn towards a more phenomenological approach, an emphasis on the body and theories of embodiment and steps towards an anthropology of the senses" (Morphy, 2010, p. 278).

Participants

Research involved the perceptions and experiences of twenty-eight students (thirteen girls and fifteen boys) who, based on entry testing and a portfolio application, had been selected for the Synergy program offered at Sir Winston Churchill Secondary

School (SWC) in Vancouver. Synergy is a Grade 8 and 9 learning cluster program designed for students "who have demonstrated excellence, have a positive attitude toward learning, are highly motivated and reliable, are curious, critical, creative thinkers" and "are open to learning in new ways and places" (VSB, 2012, home page insert). Teachers involved in the Synergy program try to link knowledge and skills to several subject areas including Science, Social Studies and English.

To push beyond curricular limits even further and to show cross-links between subject areas, the choice was made to plan the field trip to MOA for the researcher's enriched Grade Eight Science class. Typically, social studies, fine arts or First Nations studies teachers organize elementary and secondary school field trips to MOA. This particular class was also selected since there are fewer curricular constraints and time pressures in junior science classes than senior classes that may have provincial exam requirements.

Data Collection

A multi-method approach to data collection included questionnaires, observations and open-ended student-focused art and literary activities. Students were asked, before the day of the field trip, to think about what the trip would be like. What did they expect from the field trip experience? In addition, students each completed a pre-visit questionnaire that contained closed and open-ended questions. The closed questions were used to establish student attitudes towards field trips and their past experiences using Likert scale questions (Bryman, Teevan, & Bell, 2009). The open-ended questions allowed the researcher to determine if students had experienced individual meaning-making while on previous field trips.

At the start of the field trip to MOA, students were gathered and the "*Travel the Museum*" postcard activity was explained. Students briefly discussed what they knew about the purposes and uses of postcards. It was important to make clear that postcards could use both images and words to communicate.

Following the initial gathering, students were encouraged to explore the entire museum and were asked to seek out and describe something that conjured a memory or to which they felt an emotional connection, thus connecting to the idea that "We call our emotions feelings, and care most deeply when something "touches" us" (Ackerman, 1990, p. 70). They were given approximately one hour and fifteen minutes to complete their postcards. As they began to self-identify with the field trip environment or specific objects within the museum space, students were asked to communicate their interests in writing and image on blank postcard size cardstock. They had been given a list of questions/triggers to write about if they needed prompting. These postcards were collected at the end of the trip at MOA. While students were exploring and investigating, the researcher moved around the museum to observe and make note of student activities including their level of engagement, spaces/objects they had chosen to investigate and their general behaviour.

One month after the field trip, the postcards were returned to students for examination. Students recognized the cards they had made and picked them up from the front of the room. Using their postcard as a visual and physical memory, students completed a reflective writing activity during which they described their experience during the field trip at MOA and explained what, if anything, they learned as a result of the field trip. This activity, combined with the pre-visit questionnaire, was used to discover if ideas, opinions and learning had changed as a result of the open-ended, arts-based techniques used.

INTERPRETATIONS AND DISCUSSION

The research project was focused on interpreting to what extent open-ended arts-based activities enhanced meaning-making and learning in the museum environment. Learning activities during the field trip experience can take the form of "looking, thinking, and wondering" (Duke, 2010, p. 277). When visitors to informal learning spaces assimilate events and observations into mental categories, learning has occurred (Falk & Dierking, 2000). Another factor taken into account was that learning can be seen simultaneously as "a process and a product" (Falk & Dierking, p. 13); both intertwining as knowledge is developed. As student generated data was analyzed, student meaning-making was evaluated based on four criteria:

- Increase in knowledge and understanding
- Evidence of enjoyment, engagement and creativity
- Change in attitudes and perceptions
- Evidence of self-identification with the field trip environment

Increase in Knowledge and Understanding

To determine whether students engaged in learning during the museum visit led to an increase in knowledge and understanding, pre-visit questionnaires were compared to post-visit written reflections. One of the Likert scale questions on the questionnaire asked students to rank which activities helped them understand new concepts while on a field trip. Most students agreed that being given time to explore on their own helped them learn the most. Worksheets were chosen as being least helpful to gain an understanding of new concepts. This is consistent with research (DeWitt & Storksdieck, 2008; Griffin & Symington, 1997; Kisiel, 2003) on the usefulness of teacher or museum created worksheets used as tools to keep students on task or to move through an informal learning space in a pre-determined route. Kisiel (2003) notes that, unless worksheets are carefully designed to promote student determined discovery and inquiry they can "actually impede student learning by inhibiting student observation, preventing students from formulating their own questions" (p. 5) and causing a lack of self-identification with the field trip experience.

When answering the Likert scale pre-visit question about learning new concepts or ideas, the majority of students were divided in their opinions between whether they learned more while on a field trip than in the classroom or learned about the same while on a field trip as in the classroom. Very few thought that they learned less while on a field trip than in the classroom. These results may reflect the notion held by many students (and parents) that learning is determined solely by a cognitive product, (e.g., a test score or letter grade), rather than a process combining inquiry and experiences. In the post-visit reflection, one student mentioned that he thought they didn't learn much because most of the time they were drawing and writing. However, these activities are both important in what Duke (2010) describes as "the beginner's natural meaning-making tools" (p. 274) of exploring the narrative and personal rather than the historical or formal details of what they see at a museum. With the increase in constructivist and project-based learning in classrooms, students who have developed their learning though these methods may recognize the museum as another site to cultivate observational and personal inquiry skills through experiences designed by the museum educator or their own teacher (Duke, 2010, p. 272).

While reading the reflections students had written one month following the field trip, a number of trends in knowledge acquisition were discovered: a deeper understanding of objects they viewed; a realization of the great diversity of life on the planet; a connection to the past; a perception that the museum space itself was designed for the objects it contained; and an increase in knowledge about themselves.

Several students mentioned that through their careful observations they gained an understanding of how objects were made by the people who had used them. Some noticed that most artefacts were made from materials found in the natural environment. One student described the connection between objects they observed and the "*gods and myths*" of the people who made the objects such as "*the Buddhist statue or the myth about the creation of man from a shell*."

Many learners felt an appreciation for the diversity of life and ways of imagining the world. One commented, "*Sure, everyone says that the world is diverse, but until you see it, you won't believe it*." Other students described the multitudes of cultures they saw evidence of and others expressed that their visual investigations at MOA helped them learn that every culture is different. Through the postcard activity, another student learned to interpret, and thus began to develop an understanding of objects they had never seen before. One student learned that "*what is important to other people is not the same as what I think is important*", and another noted "*what could be completely strange in one place can be an everyday object in another place*." Both had realized that life can be viewed through multiple perspectives, an important learning goal in all education settings.

While most students had spent their time on the field trip investigating specific objects, a few commented on the shape and design of the museum itself. One student noticed that each part of the museum was designed for the objects it contained.

Prior to the field trip, the history or purpose of MOA's architecture had not been explained. MOA was designed by Arthur Erickson to house Northwest Coast totem poles and other monumental art as well as minimize the separation between interior and exterior. By paying attention to the space they were moving in, this student intuitively gained an understanding of Erickson's intentions.

Since the design for the field trip to MOA primarily involved providing the class with time to explore on their own, it was noted that several students commented on this opportunity in their reflections. Examples include, I "*gained more of a knowledge about myself during the field trip than a knowledge of the different art*", and that they appreciated being given time to "*delve into our minds and see our real personality*." Knowledge of self is vital to all learners, but is something that often is overlooked as educators try to complete a mandated curriculum or pre-set museum education program.

Evidence of Enjoyment, Engagement and Creativity

Student postcards and their post-visit reflections were analyzed to find examples of student enjoyment, engagement and creativity while on the field trip. Behavioural observations were made during the museum visit as students were making their postcards. It was noticed that the majority of students were focused on the postcard activity for the duration of the time they had been given (one hour and fifteen minutes). In their reflections, one student mentioned that having a short (in their opinion) span of time to complete the postcard enabled them to focus more quickly, while another mentioned that they wished they would have had more time for exploration, but the short time they had spent at MOA made them want to return.

Figure 1. Student postcard: Engagement (front and back)

The postcard in Figure 1 is indicative of the high level of engagement most students demonstrated and communicated through their work. Students made a point to observe their chosen artefacts very closely and to explain what had attracted them to the object and what questions arose during their investigation. An excellent example of this is the observation noted in Figure 1 that one foot of the carving being studied was bigger than the other, and in Figure 2 the writer expresses fascination with the intricate drawings of people found on the tiles.

Figure 2. Student postcard: Questions (front)

The process of finding the object was deemed the most interesting by a few students, while one expressed that she "*enjoyed being left alone without a guided group because I often learn more easily alone than in a group with everyone talking*." The calm, soothing and "*immersive*" environment provided by MOA added to many students' personal experiences. However, what was peaceful to one student was described as "*silent and serious*" by another who further went on to suggest "*something should be done to lighten the place up.*" While perhaps lacking in excitement and enjoyment for these students, there was evidence in their work of imagination and creativity. To provide an explanation for the solemnity they felt at MOA they surmised that people visiting the museum were quiet not because the guards told them to be but so as "*not to disturb the deep slumber of the spirits that slept inside the artefacts*."

Change in Attitudes and Perceptions

As described by Garoian in "Performing the Museum" (2001), the entire body participates in perception and to 'perform' perception in a museum "is to see what one is looking at, to be absorbed in its aesthetic qualities through emphatic projection"

(p. 240). To uncover whether shifts had occurred in previously held opinions or attitudes, student responses on the pre-visit questionnaire and post-visit reflections were scrutinized. Did the field trip experience provide opportunities for students to do more than just 'look' at objects at MOA? Were they able to use their body and their brain together to 'see' the artefacts and space of MOA in a different way, thus causing a shift in their understandings and opinions?

In the pre-visit Likert-scale questionnaire, students ranked the following options for why a teacher may take students on field trips: application of concepts taught in the classroom, to learn something new, and to give students time to explore their own interests or for socializing. Most students agreed that field trips were used as a way to apply concepts learned in the classroom and to learn something new. The least important purpose, according to students, was giving students time specifically for socializing. Being given time to explore their own interests was also ranked near the bottom. It is interesting that most students did not think that teachers or museum educators gave value to providing self-governed time for students to explore a field trip site on their own. It is possible that the majority of students' past field trip experiences involved traditional museum education strategies such as guided tours and 'scavenger hunt' type worksheets, which minimize opportunities for self-expression, critical inquiry and creativity. Research done by Andrews and Asia (1979) at the Brooklyn Museum led to several recommendations about how to attract and utilize the "mobility and liveliness" (p. 224) of a teenage audience, a group that was thought to be critical to museum vitality due to their curiosity. These recommendations included: problematizing of conventional boundaries and "complex feelings about their relationships to others, and awareness of the society in which they live" (Andrews & Asia, 1979, p. 224). The study went on to conclude that there was "an urgent need among teens and young adults for learning experiences based on direct perception in a setting that validates their ability to think" (p. 232). Based on participant responses on the pre-visit questionnaire, it seems that the recommendations of the Brooklyn Museum study have gone unheeded by some classroom and museum educators.

Post-visit reflections demonstrated new opinions and attitudes in students developing along two main themes: a new understanding of what makes MOA a special and important site to visit; and a realization of what they could learn from a field trip that gave time for independent exploration.

Several students mentioned that they were surprised by the diversity of cultures represented in the galleries of MOA. A few participants noted that they had previously thought that MOA was "*just about Northwest Coast First Nations Art*", but in their explorations were pleased to find objects from "*different places*" in addition to artefacts from British Columbia. In relation to local artists' works, one student thought that there were "*many, many talented First Nations artists and other artists in our area who aren't appreciated and praised enough*" and another began to understand that "*art can be things other than what you draw on a sheet of paper*."

These comments show a change in awareness about MOA's collection and about the form art can take.

Other students discussed how visiting MOA had altered their attitudes about museums themselves. One participant in particular wrote that before visiting MOA they thought the "*museum would be like any other – large glass cases row by row with lengthy explanations that would make anyone yawn*", but they realized their belief had been incorrect as they walked into the open space of The Great Hall and felt the presence of towering totem poles.

This was a field trip that "*actually got me thinking*" and "*more deep thinking*" was the result of being able "*to explore at my own pace and look at more depth at certain pieces I was interested in*" important words of reflection that show how students began to authentically connect with and learn from the field trip. Another participant wrote that at first they didn't understand what the point of the field trip was, but as they explored MOA's environment they "*learned why people go to museums – to learn more about themselves*." It is clear that adolescent students have a desire to be given educational opportunities to make their own decisions about how to invest their time during field trip experiences so as to learn more about their own identities. Each student perceives the world in a unique way. When given a chance to make use of these perceptive qualities combined with their past experiences and ability to think deeply about concepts, shifts in student attitudes about field trips can take place.

Evidence of Self-Identification with the Field Trip Environment

Learning can be seen as a process/product of interactions between personal, sociocultural and physical contexts (Falk & Dierking, 2000, p. 10). Thoughtful encounters with objects, not just words as is so often the case in formal learning environments, "can open doors to a new relationship with nature, with each other, and with ourselves" (Duke, 2010, p. 277). To understand whether students had been able to able to 'see' themselves in the museum and gain understandings of self by examining a chosen artefact, student writings on postcards and in their post-visit reflections were analyzed. The written passage in Figure 3 suggests that the student was beginning to connect personally with the object they were observing when they asked "*I wonder about its history, how it ended up in the hands of its lost owner*…"

As they completed the postcard activity, participants often explained what had attracted them to a specific artefact with some giving details about connections to their past experiences. Links between the physical (the object/space at the museum) and the personal (past memories and experiences) were described, such as "*I feel connected to this chess set since my cousin and I used to play all the time*," the bow and arrow "*remind me of playing video games*" like 'Legend of Zelda' and the Buddha statue caused a reminiscence of memories from time spent "*meditating and chanting*" in a temple (Figures 4–6). Later, as students wrote about their visit to

Figure 3. Student postcard: Connection (front and back)

Figure 4. Student postcard: Self-Identification – Zelda (front)

MOA, one thought it was interesting that paying attention to the feelings they had about objects that caught their eye allowed them to recollect memories.

"*The museum allowed me to dig deeper into myself without anyone watching or pressuring me*." Providing time and space for personal exploration allowed some students to interpret what they observed in very personal and emotional ways. An example of how deeply a student could internalize and feel an emotional connection

to a physical object is seen in Figure 7. The student explained that "*the display case gives a sense of confusion*" that reminded them of "*the time of confusion, pressure and not being able to cope*." By spending time interpreting the masks, this student was reminded that they didn't "*need a mask to fit in with the crowd*" and that it was important to just be themselves.

Figure 5. Student postcard: Self-Identification – Chess (front)

Figure 6. Student postcards: Self Identification – Buddha (front)

As explained in a student's post-visit paragraph, "*Honestly, I think that these types of field trips are better than guided ones because you really get to explore the things that you are interested with and not just the information that the teacher tries to stuff in your brain*." Through this analysis it was made clear that self-determined interactions between inanimate, physical things and students who displayed willingness to wander, question, respond and reflect could lead to moments of transformative experience.

Figure 7. Student postcard: Confusion (front)

REFLECTIONS: LEARNINGS AND CONCLUSION

Did learning in new ways and places occur? Were students able to construct personal and significant understandings by weaving together prior knowledge, past experiences and personal interests by participating in open-ended arts-based activities during their visit to MOA? Did the unique space and place of MOA contribute to knowledge acquisition? Based on words written, images drawn and behaviours observed, students were able to connect with and learn from the field trip experience in personally meaningful ways. The research results should also remind educators to trust the willingness of teenagers to interpret and question information they encounter. Through self-determined investigation and exploration, students gained increased understandings of the role museums can play in society, the diversity of life on the planet, and their own interests in relation to history.

However, it must be noted that the student-generated data analyzed in this research project was just a fragment of a larger educational context that takes into account more traditional, teacher-led classroom-based learning combined with field trips and other student-centred learning experiences (Silverman, 2007, p. 58). It is hoped that through this research other educators can imaginatively place their own practice into research descriptions provided here.

In terms of what museums and museum educators can learn from this research, Fraser (2006) described how "objects and representation were neutralized by their withdrawal from everyday life" (p. 143), which ties into the idea that putting an object in a museum changes its meaning from what it was initially designed to be. It becomes an inanimate object. By humanizing and wondering about an object "it ceases to be a lifeless being and becomes an active enterprise, sharing with participants sensual and emotional experiences embodied in its formal qualities"

(Dudley, 2010, p. 195). The process of imagining what an object smells or tastes like can bring it to life for student visitors. For example, in Figure 10 the student imagines that the mask being observed might smell of old wood and acrylic paint.

The recognition of multiple ways of imagining the world can be used in the creation of knowledge in the museum. Rather than strictly using an information-giving approach, "connections between people and space, past and present times" can be understood "through the sensory threshold of objects" (Golding, 2010, p. 227) and spaces in a museum. Using senses and imagination, rather than relying on contextual information, democratizes the process of meaning-making so that there is no one 'correct' way to arrive at an understanding. Museums provide a social commentary on the communities they exist within and need to continually collaborate with their community and create dialogue that recognizes many voices. Facilitating activities that get students to "think differently [critically] about the objects displayed in a museum" (Trofanenko, 2006, p. 310) may begin to breakdown "the power of the museum over knowledge" (Adams, 2007, p. 438).

The postcard activity designed for this research project took into account these factors of imagination, dialogic process and the need to breathe life into museum artefacts. Once students understand that they can use their cultural backgrounds and expertise to add their own, individual meanings to objects they encounter, the museum experience takes on more relevance to their lives. Another important benefit derived by museums that facilitate student-centred education programs with a focus on self-selected investigation of museum collections is that students will enjoy the experience and wish to return. They will become lifelong museum visitors. This will likely only occur if initial museum going experiences are positive and student agendas are addressed during field trips (Anderson et al., 2008).

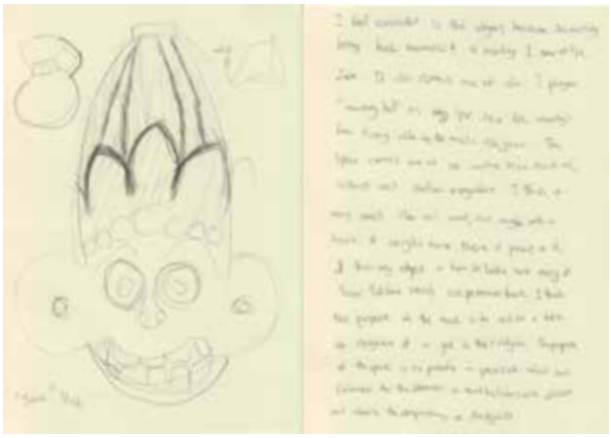

Figure 8. Student postcard: Memories (front and back)

IMPLICATIONS: FUTURE

With an expanded understanding of the value of field trips and museum visits, it is clear that working to encourage learner-focused field trip opportunities can help students develop lifelong learning tools such as practicing real-life research, using creativity for modifying, adapting and transforming information, and using skills of metacognition to gain empowerment through self-regulation and control of their own education (Kelly, 1996, p. 8). Field trips have value that may not be directly tied to prescribed learning outcomes. Being bound to extrinsic evaluations and a "repeated emphasis on the end product leads to shallow and inadequate feeling, for it is the exploratory process which educates" (Yardley, 1970, p. 27).

In our digital age, the knowledge at our fingertips can be "mechanical, disconnected, dead, *sans soufflé*, not animated by the living understanding of our place in the universe" (Codrescu, 1993, p. 130). In this world that is increasingly becoming more two-dimensional and contained within some form of screen, it is vital to provide opportunities for students to pay attention to all the dimensions present in the world outside the display monitor (see Figures 1 and 8). When students have not been given time to develop these skills they often have great difficulty developing their own questions about information they encounter and trusting their own curiosity. How can we create scientific discoveries or meaningful works of art if people lose their ability to question and wonder about things?

The physical process of moving through a new space and sketching and describing what one observes can help reconnect students' brains to their fingertips (see Figure 8). In a similar way, objects in a museum can breathe life as they become incorporated into visitors' personal narratives. Further research needs to be done to discover how to incorporate this emotional investment and the discovery of strong links between meaningful learning and personal identity, into classroom based learning activities. Work could be done to make connections within liminal spaces. For instance, what was understood in the space of MOA and how could it relate to learning in other spaces? How can classroom activities provide opportunities for personal choice and time for individual discoveries? It would also be important to do this type of student-centred field trip activity with many different groups and types of students to discover how and if they were able to connect personally to the museum space. By giving students time, space and opportunity to explore their interests, both inside and outside of the formal classroom, transformative meaning-making can occur. In this study it was found that students were able to make transformative learning experiences for themselves.

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12. EMBODIED TENSIONS

Digging into Agriculture at the BC Farm Museum

INTRODUCTION

Trends in Agriculture

Mainstream awareness of sustainable farming practices, regional diets and local food is increasingly prevalent, both in the media and daily living (Starr, 2010). Surfing the internet, browsing the local bookstore, picking up a magazine or newspaper, or turning on the television on any given day, and you are likely to find stories about sustainable farming or local foods (Walker, 2012). Pay attention to grocery store shelves and restaurant menus, and you will find they commonly feature local, often organic produce (Walker, 2012). Talk to a variety of people, namely "nutritionists, novelists, journalists, foodies, chefs, environmentalists, new urbanists, average suburbanites and college students", and you will find a surprising number of them have some well-established opinions about how we ought to live, eat and produce food in today's world (Walker, 2012, p. 1). This orientation to food and sustainable production is considered "agrarianism" or agrarian philosophy (Thompson, 2010; Thompson, 2008; Major, 2011; Walker, 2012; Esbjornson, 1992; Wizrba, 2003). Agrarianism's current acclaim within the public sphere provides an incredibly useful tool to begin enhancing the exhibition spaces at rural and farm museums.

It is widely established that there is a palpable division between agrarians and industrial farming within contemporary agriculture (Thompson, 2000; Thompson, 2010; Walker, 2012; Major, 2011). Industrial agriculture exists at one end, which includes the majority of large-scale farm producers, chemical, processing and equipment companies, and the major grocery and restaurant outlets (Thompson, 2000, p. 17). At the other end is agrarian agriculture, "a loose network of organic and regional [farmers], chefs, and ordinary food consumers" (Thompson, 2000, p. 17). The purpose of focusing on this tension in a museum exhibition was to unsettle the polarization of agrarian and industrial farmers by showcasing both groups together in one exhibition at the BC Farm Museum in Fort Langley. This fruitful tension provided rich fodder to support visitor learning and a critical questioning of agriculture. To utilize this opportunity through an exhibition, the author employed embodied learning through the five senses because the physical body is germane to farming. The author leveraged storytelling to encourage visitors to make their

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 201–213.

own meanings around agricultural tensions, and to weave a more deeply textured understanding of agriculture. This chapter provides a salient example of how the reflexive process of creating the exhibition became a powerful teaching tool to better understand situations of opposition.

Agrarian Agriculture

Agrarianism concerns itself with how local food systems create a meaningful community of commerce between nature and humans. Thompson (2010) reminds us that many agrarians have strong feelings toward fostering small-scale, traditional, or diversified family-style farms because they see "agriculture as performing a social function above and beyond its capacity to produce food" (p. 30). Agrarianism assumes that these embodied material practices will positively influence social norms, values and institutions, and as such, inscribes agriculture with moral significance (Thompson, 2010, 2008).

Agrarian philosophy is also defined by what it is not: a large, specialized industrial farm (Major, 2011; Walker, 2012; Thompson, 2010; Thompson, 2008). Agrarians criticize industrial farming for its proven ecological atrocities (Esbjornson, 1992), including its damaging effects on long-term soil fertility, its contribution to reduced plant and animal biodiversity (Thompson, 2010), its reliance on fossil fuels (Walker, 2012) and economic dysfunction (Thompson, 2010). Collectively, agrarians argue that these unfavourable features of industrial farming ultimately have alienating effects on modern society in general (Thompson, 2010).

Industrial Agriculture

Industrial farming produces the vast majority of food consumed in North America. In general, industrial farms are characterized by larger tracts of land, perhaps hundreds or even thousands of acres, and by the production of only one or two products (Thompson, 2010). The philosophy inherent to industrial farming is that specialization allows a farmer to become very good at one thing, and is therefore better able to respond to advantages or challenges from the weather and the market (Thompson, 2010). Industrial farming regards agriculture as a sector in the economy, producing food at the lowest possible cost through multiple efficiencies, so that customers may spend the least possible on the product (Thompson, 2010).

The Link

In order to bring another perspective to the differences between industrial and agrarian agriculture, the creation of the exhibition at the BC Farm Museum (http://bcfma.com) explored the possible links within these two types of agriculture in the Fraser Valley of British Columbia. By looking at the recent history of industrial farming in North America, it is clear that farmers began simply as farmers, and that

their politics became divided because of different responses to 20th century 'progress' rather than an intrinsic or fundamental moral difference. Historian Melissa Walker (2006) illuminates the experiences of people who grew up on these pre-industrial family farms in the early 20th century, and who witnessed their family farm's transition into industrial agriculture. Walker's (2006) informants' narratives of life on the farm have a remarkable resemblance to agrarian philosophy, in particular with respect to the dialectic of self-sufficiency and community. As Walker (2006) writes, they describe characteristics of life on the land as embodied by "self-sufficiency, a rural work ethic, persistence through hard times, a commitment to mutual aid, an attachment to the land and the local community, and the relative equality of rural folk" (p. 223).

As the narrators in Walker's (2006) book described the transformation to industrial agriculture, their stories clearly demonstrate the tensions they experienced between "farming as a way of life, and farming as a business" (p. 226). However, it is significant that even as large-scale farmers' perceptions of farming changed with industrialization, they continued to value the agrarian ideology (Walker, 2006, p. 226). This suggested the need to further explore the links within agriculture, in addition to the divide. The BC Farm Museum leveraged this opportunity to generate a deeper dialogue about the spectrum of farming in the Fraser Valley.

What is a Farm Museum?

There are few museums that engage specifically with the history of farming; however, a small collection of farm museums in northeast England provide appropriate case studies for comparison to the BC Farm Museum. Most of these museums were founded in the 1950s, during a period of intense collecting. As MacKay (2000) informs us, the intensity of collecting was driven by many individuals' desire "to find a home for obsolete tools and record obsolete craft processes" (p. 25), and unfortunately many displays today still reflect these aims. "The disorganized and intense nature of this collecting led to many duplicated collecting policies and to stores overfull with large objects in a poor condition" (MacKay, 2000, p. 25).

Catherine Wilson (2003) writes about her examination of farm museums in the counties of Lincolnshire, Cambridgeshire, Norfolk and Suffolk. She describes how these museums "have very considerable collections" (p. 16) without much information about the objects themselves (MacKay, 2000). She observed how there is no prominence given to one particular item over another, but that objects are presented as a whole collection (Wilson, 2003, p. 16), with very little in the way of interpretive signage (p. 10).

Wilson (2003) acknowledges the current mainstream interest in food production and suggests that farm museums have an important opportunity to provide an interface between consumers and farmers, and a new way to engage with issues around food production, through representation, as well as critical public discussion.

The BC Farm Museum

The BC Farm Museum (BCFM) offers a unique place for urban, suburban, and rural visitors to engage with contemporary tensions in farming. As pointed out by Thompson, (2000, 2010), Walker (2012), and Major (2011), the agrarian ideals appeal largely to urban/suburban people, and it is this interest that brings an opportunity for a new kind of engagement with the farm museum. The BCFM is in two inconspicuous buildings located off the main thoroughfare in Fort Langley, British Columbia. The museum is dedicated to the local area's rich farming history and to showcasing a wide range of equipment and machinery once used on British Columbia and Canadian farms. The BCFM opened its doors in 1966 and the collection grew steadily, including a library of archived documents and a workshop for maintaining much of its machinery (Rose, 2012). Since 1990, due to funding cuts, the BCFM and its archives has been managed entirely by a dedicated Board and volunteers, without an Executive Director or any paid staff.

Upon entering the BCFM, the exhibit spaces echoed Wilson's (2003) observations of an extensive collection with limited interpretive text to accompany the artefacts. In general, BCFM Board members and volunteers are retirees. This is significant because some of the curatorial volunteers recall family using many of the artefacts and possess a familiarity with them, which might explain the minimal interpretive text and storytelling about objects. The BCFM is in a fortunate position of having an extensive workshop downstairs where tractor and artefact maintenance is done. This space is the main focus of many volunteers, which also contributes to a limited focus on the curatorial aspects of the main galleries upstairs. As a result, the effectiveness of the museum to steward learning and communicate knowledge about the history of local farming has significant potential.

Figure 1. View of the BC Farm Museum main building (courtesy of the BCFM)

METHODOLOGY

An interpretive methodology (Denzin & Lincoln, 2005) is highly germane to building a new exhibition at BCFM, because the author has been an active participant in the agrarian community for several years and wished to acknowledge her reduced ability to 'be objective' whilst engaging with this topic. This familiarity also provided an advantage because of an intimate understanding of the physicality of farm work, a deep understanding of agrarian philosophy, the experience of being a part of the community of agrarian farmers, and a desire to make this agriculture successful. In short, interpretive methodologies expect and value the hermeneutic nature of understanding. This project embraced this methodology by including several voices (the farmers, the public, BCFM volunteers), several iterations of exhibition designs, written text, and the changes to the overall purpose of this work. The intention has been to allow each voice to be heard, and together weave a nuanced and sophisticated understanding of contemporary agriculture for the readers of this chapter, and for visitors to the BCFM.

Data

The data was collected using three methods: journaling and documenting the process of exhibition creation, interviewing farmers, and the creation of the exhibition itself. Journaling was a critical step in this interpretive research, as it was a record of impressions, challenges, opportunities, and how they changed over time. This research was done through collaborative work with BCFM volunteers, and these relationships played a central role throughout all of the steps toward putting the exhibition together.

Semi-structured interviews were held with four different farmers. These interviews were designed to explore their notions of farming today, and their reflections about how farming has changed over time in the Fraser Valley. There were follow-up interviews with each farmer to show them the drafted exhibit panels and clarify details. Each interview was transcribed in its entirety and provided particularly rich context for analysis. The interviews were a source of primary data, which were mined for themes that might serve to draw parallels between all kinds of farmers, or illustrate the links between agrarian and industrial farming. The transcripts provided the quotes and details about each farm, which made up the interpretive panels in the exhibition.

The process of creating the exhibition was collaborative and iterative, and provided the focus for reflections on the process. The state of the exhibition at different times has provided a continual checkpoint with which to reflect on initial research question: *How can aspects of farming best be learned in a museum exhibition at the BC Farm Museum? Particularly, in a way that suggests that farming remains a vital and relevant profession.* The completed exhibition provides a visual representation of the hours of thought, effort and collaboration, and interpretations that went into the creation of the exhibit.

The nature of interpretive research encourages a constant analysis of data as it is collected. The data was continually analyzed using autoethnography. Autoethnography is the process by which the researcher performs a narrative analysis as it pertains to oneself as a researcher, and the particular context one finds oneself in (McIlveen, 2008). "Autoethnography entails writing about oneself as a researcher–practitioner, […and] is a specific form of critical enquiry that is embedded in theory and practice" (McIlveen, 2008, p. 15). Each data source informed the other as the research process unfolded. Analysis of important events occurred through journal writing, negotiating and building the exhibition itself, and in the recursive sense that the writing itself was both collection and analysis.

EMBODIED LEARNING THEORY AND STORYTELLING AT THE BCFM

Embodied Learning

Farming is, by nature, embodied work and thus involves embodied learning. Yakhlef (2010) describes embodied learning as "grounded in our practical, bodily, emotional experiences" (p. 411), which happens by virtue of the body's interaction with its social and material environment. He suggests that the body is actually the site of learning itself, and can teach us about others' experiences. A farmer's ability to use and learn things through the body and senses literally affects how much money is made in a given year. Dunlap (2011) argues, "a farmhand must develop a sensitivity for the work that cannot be transmitted didactically" (p. 10). Farmers, like many other craft professions, must develop a 'feeling' or sensitivity for how to farm.

Not only is embodied learning appropriate to farming, the museum as an institution inherently provides a unique opportunity to engage with embodied learning as well (Vallance, 2004). Rita Irwin (2003) argues that the spaces of learning "requires an embodied experience, rich with sensory perception" (p. 65), and she requests the reclamation of a bodily way of knowing the world through a story that makes use of embodiment. Scholars support the use of embodied exhibit design in the museum because it supports learners' self-motivated, voluntary interactions with objects, allowing visitors to have unusual latitude to guide their own personally motivated needs and interests (Dierking, Falk, Rennie, Anderson, & Ellenbogen, 2003, p. 110; Falk & Dierking, 2000a; Falk & Dierking, 2000b). A supportive learning environment is one that provides the means for visitors to tailor the museum experience to their own needs and interests (Hein, 1998).

Embodied learning is a particularly relevant theory for an exhibition at the BCFM because its subject is intended to deal with emotional and affective elements of value systems as they relate to food production. Specifically, the exhibition sought to engage with the 'agrarian philosophy', which describes an emotional relationship to the land and a moral experience of being human, which is sometimes also steeped in romanticism (Major, 2011; Walker, 2012). As Merriam and Kim (2008) argue, "learning involves not only the mind but the body, the spirit, and the emotions. There

is no separation of the mind from the rest of our being" (p. 76). Embodiment theory recognizes the salience of emotions and suggests that emotions have the power to mediate cognitive processes (Rakic & Chambers, 2011). Attempting to create an emotional connection within the visitor helps create a bridge from one 'body' to another, striving to deepen visitor knowledge and their appreciation of farming, and the tensions within it. Similarly, embodied learning is said to be effective for developing empathy and learning to respect diversity (Kerka, 2002), which is another key component of this exhibition.

For these reasons, the exhibition at the BCFM provided an embodied learning experience for museum visitors through intentional engagement with the body and senses. The BCFM is a unique museum space because nearly every object in the museum is available to touch. For example, the section featuring the industrial corn farmer had a hand-held corn planter with real seed in it. This was intended as a visual and tactile cue to reference the scale of corn growing today, which is indicated in the panel text as planting more than one million seeds each season. The four photo panels in the exhibition visually depicted the contemporary farm and the farmer who runs it. Several hours of recorded farm soundscapes, with birds, voices, cows, and trains in the distance, were playing to provide aural stimulation for the visitors. Finally, outside the entrance/exit to the museum, the BCFM had four garden boxes planted with thematically related crops planted to represent each farmer's operation, for a final embodied example of farming life. The boxes had sweet corn, salad greens, barley and flax growing in them. There was explanatory signage accompanying these crops to help visitors make connections to the display inside the BCFM.

Storytelling

In addition to embodied learning, storytelling was employed as a learning tool. Because of the aforementioned collection methods and curatorial practice, the experience of walking into the BCFM, while unintended, evokes a static picture of farming. This stasis is evoked partly because most of the labels use the past tense to describe objects, and the collection does not include machines from the last few years. Theories from critical museology encourage museums, as far as possible, to evoke a non-linear history to depart from the cultural construction of linear time and thus opens up possibilities for meaning-making (Shelton, 2011). When not limited by a linear concept of history, the BCFM could support a more critical discourse around objects and encourage an increasingly reflexive examination of farming in the contemporary world, bringing renewed relevance to the collections (Shelton, 2011). To address this, the new exhibition told the story of four contemporary farmers in the Fraser Valley through photographs and text on panels, accompanied by a historical object. The historical objects were placed beside contemporary objects with a similar function; for example, the chicken farmer in the exhibit placed the cases that were used to transport eggs around the 1900s beside contemporary egg trays. Each of the panels had a fresh look with colour photographs, present

tense language, and told the story of each farming operation as it functions today. In addition, the live plants in the outdoor space were intended to further augment this notion of conflated timeframes.

There are many studies in museum education discussing the role of narrative, storytelling and the "storyline", recognizing that museums are tasked with creating storylines for visitors (Vallance, 2004). Because visitors bring different personal and cultural knowledge to meaning-making, narratives are particularly useful at the museum because they allow the visitor to create and fill in meanings most significant to them (Vallance, 2004, p. 352). In other words, the storyline that is told by the museum ought to touch as many people personally, and let them select what is most meaningful. Storytelling, then, is significant for this exhibition because it sought to enable visitors to deepen their existing exposure to local farms and local food production. For the 'agrarians' in the audience, this exhibition sought to initiate a deeper, more textured storyline about 'industrial' farmers and to question their assumptions about this group. For people who had heard only snippets about the importance or relevance of local food, they had an opportunity to hear about four farmers who produce in very close proximity to the BCFM, and to generate a dialogue about local farming.

WEAVING TOGETHER TWO PASSIONS

Not only did educational theories inform the exhibit curation, but the process of on-the-ground teamwork during the execution of the exhibit also informed its content significantly. The author approached the exhibit from an academic background, focused on museum education, and after three seasons working in the local farming community. The interest was to anchor the BCFM collection within a modern context, using the mainstream agricultural tension between small-scale organic farming and large-scale industrial farming. The exhibit design focused on leveraging this tension in order to bring a renewed life and significance to these historical agricultural artefacts in the BCFM collection. An assumption inherent to this approach was that the visitors would largely be laypersons regarding the details of farm life.

The approach of the BCFM volunteer staff was largely related to celebrating pioneer times, and providing snap shots of history. The BCFM mission is to acquire and restore "pioneer tools and equipment which represent the evolution and development of the farm, farm life and agriculture in BC over the last 150 years" (Rose, personal documentation, 2012). In general, the volunteer staff's interests lay in maintenance of tractor and other machine's functions, and a focus on the ingenuity of early pioneers to BC.

At the outset, these two frames of reference, focusing a modern interest onto the museum collection (the author) and giving depth to the collection through a lens from the past (BCFM volunteers), were significantly divergent. It was with these two divergent frames of reference that we began the process of building the new exhibition.

Hitting the Wall

The BCFM occupies two large buildings, without many separate galleries. Most of the objects and interpretive tools share the same physical space. Upon entering the building, one is met with nearly every object, all at once. To maximize the visitor experience in the new exhibition, the author proposed including a large wall structure on which to mount the interpretive panels and to house the objects. The rationale behind creating an alcove-like structure was to block out some of the visual noise and create a space for experiencing the exhibition that was also large enough to compete with the big machines (and even an airplane) nearby. A T-shaped wall structure eight feet in height and length (see Figure 2) was proposed. This particular design was chosen because it was straightforward to build and could be made up of assembling sheets of plywood and timbers.

When presented to the museum staff, nearly everyone balked at the size of it. Some thought it was too large to be placed in the entrance area, and others were frustrated because they had worked hard over the years to open up this entrance space, only to fill it up again. The outdoor garden boxes, which were to be the counterpoint to the indoor structure, were generally approved. The technician got to work on the plans for building planter boxes, but because of the dissent about the wall structure, it was delayed.

Initially, when both the author and the BCFM volunteer staff faced such opposition, in theory and in practice, the whole project came to a halt. Both groups did not know how to make the project move forward, and many thought that it would not. Yet the meetings continued. Explanations were shared, and benefits and issues were exchanged. After three months of negotiations, emails and often awkward conversation, the project was nearly abandoned and plans were being made to take it to a different institution. In one last attempt, the author wrote a candid email to the President about the significant potential of the museum, and the opportunity a new exhibit may provide—and something budged. The President wrote:

> I am sorry this has not gone as smoothly as we had hoped, but I can assure you, after thinking about it overnight, that it will go ahead as you would like to see it…I am excited about having a new fresh display with coloured photos and of real live operating farmers.

While the President agreed with the exhibit plans, many of the long-time members and volunteers did not. This became an opportunity for experiencing opposed views: the long-time volunteer staff that worked in the basement workshop were the ones who were going to build the garden boxes and wall structure. The workshop was a large, cold and dimly lit basement. It smelled of oil, gasoline and freshly cut lumber. The cement floor was blackened with oil stains and scattered with wood shavings. It was a large space, with room for scrap wood storage, a woodworking shop and several mechanics' stations. This is where old motors get running again. Every Monday, the author went downstairs to the workshop to discuss the progress

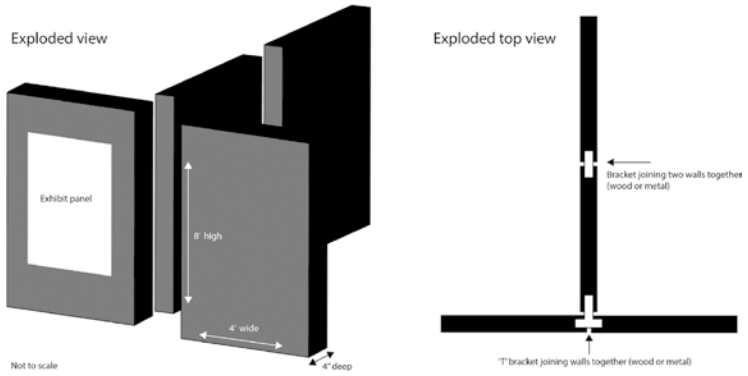

Figure 2. Proposed wall construction of the BC Farm Museum exhibit

of the building plans with the tentative team. When the conversations began, the group brought up concerns about the exhibition plans. They were concerned about vandalism to the garden boxes, and that plans kept changing, preventing their ability get things finished.

And yet, week after week, both groups sat down together downstairs at lunchtime, gathered around the table and ate their bagged lunches. We tried hard to find things in common with each other, and so often ended up chatting about the weather, squirrels and birds, or recent news.

This small gesture was invaluable to keep things moving and to keep the conversations authentic. If these conversations had taken place through the President, or through rumour and hearsay, the humanity in the project would likely have been lost, and the chasm between the viewpoints would have continued to yawn. Without some contact, the lines of communication would have grown weaker and weaker. By staying involved, the group downstairs was in direct communication with the ideas of the new exhibit upstairs and with the people who were on the other end of those new ideas. After two more months of working together, the new museum exhibition was mounted and opened to the public, and many of the initially opposed team attended the opening.

This humble example of working through opposed views became a proxy for how to better understand how to curate an exhibit, which fundamentally explored the nature of opposition. Had the author not become aware of the opportunity present within the strained relationships during the building of the exhibit, much would have been lost. All of the exhibit content was informed from the experience of building the exhibit structure and content. Similarly, in having had the experience of opposing views to build the exhibit and living to tell the story, the bridging of these oppositions became embodied in the exhibit itself—which was its primary goal.

There are several messages about the nature of opposition that came alive in the physical structure of the exhibit. First, all of the farmers were given equal prominence

and placement on the structure. The small-scale farmer was displayed alongside the other three large-scale farmers, and their different farming practices were described alongside one another. Second, the garden boxes tell the story of the living things that farmers tend, and embodied the fact that even large-scale farmers work closely with the land. Third, and most importantly, on each farmer's panel highlights their passion for farming and love of the land. These are subtle points, but together add up to a significant teaching moment because the exhibit contained the essence of two groups, with differing views, coming to a compromise. While the story of two kinds of farmers is beginning to change, their stories are most often told separately, and even in a deprecating manner (Thompson, 2010).

Similarly, the exhibit illustrated the means to bring together historical objects and modern agricultural practices, or the two theoretical approaches of the museum volunteer staff and author, respectively. As previously mentioned, the historical object was explained both in its own right and also in relationship to the contemporary farmer depicted on the wall. Not only did this approach show visitors about the objects themselves, it helped dissolve the strict notions of history, or remembrance, which allowed for new and younger visitors to relate more easily to them.

CONCLUSION

Farming is not just one thing. It is many things, and exists far beyond a binary opposition between agrarian philosophies and industrial methods, or between pioneer and contemporary times. Farming is a textured patchwork of diverse, complicated, colourful, passionate elements that weave together a dynamic way of life, and a profession that affects everyone. Through an embodied experience with the nature of opposition, the exhibition at the BC Farm Museum touched on the complex textures and contexts of farming, and sought to break down opposition. Farmers care deeply about their work and are committed to similar goals, which include feeding people, building an awareness of where food comes from, caring for living things, and working hard. While they have different means and different methods, they do share common themes that ought to be celebrated. If we all want changes in the food system and public understandings of where food comes from, all farmers ought to begin finding ways to work together to do so.

Embodied learning was an essential element to learning in this exhibit, but also to the creation of the exhibit itself. As farmers work outside, in all weather, and with animals and plants, incorporating physical and sensual elements to the exhibit was necessary for telling the story about the farm, and as a starting point for relating to farmers. In another way, embodied learning was embedded within the exhibit itself because of the important process that unfolded as the exhibit was taking shape. Further studies like this, which take up the embodied experience during data collection, could have great implications for better understanding our theoretical models as they apply to the chaos of the physical world.

The experience of mounting an exhibition at the BC Farm Museum was a proxy for how to better understand presenting a way beyond the fundamental gaps between agrarian and industrial farmers to the public. The BCFM method of expressing knowledge about farming is to do so using history and historical content, while the author's was one of using contemporary stories to address the same history. The BCFM method of museum education differed from the author's goals and academic training. To an extent, a large degree of demographic difference separated the author and the staff at the BCFM. And yet, both parties wanted to share—and did share—knowledge about farming and its relevance, to our visitors. Similarly, further research, which takes up the experience of opposition, and finds new ways to share this experience in the museum, will make important contributions to visitor learning with other environmental topics, but also related social and economic issues.

The object of the exhibition was to explore the tension between agrarian and industrial farmers, and question the belief of the two being fundamentally different. Inherent to that questioning was a desire to see the similarities, which are so often hidden. This initial motivation actually informed the *process* of creating an exhibition and even used the process as a teaching tool, enabling the message of the exhibition to come alive in the physical structure itself. These precious struggles have allowed for the embodied experience, of tensions and differences, to be actually *felt*. This experience allowed for an experiment in weaving together dissimilar passions into an interesting new expression. Without a doubt, discovering and representing the dynamic texture of agriculture will always be a work in progress.

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13. ECOLOGIES OF YOUTH ART APPRENTICESHIP

A Case Study of the Burnaby Art Gallery's Artist Apprenticeship Project

INTRODUCTION

The roles of museums and galleries in educating children and youth are growing as these institutions supplement the learning occurring in schools. The youth art apprenticeship movement seeks to engage youth in art education, career skills development, and more (Charland, 2005). While the majority of art education research has focused on mapping the history of the field and integrating art education concepts into curriculum creation, the effects of the resulting learning experiences on students begs for further examination.

The Burnaby Art Gallery's Artist Apprenticeship Project provides a valuable case study of students' experiences in an artist apprenticeship program. The Burnaby Art Gallery (www.burnabyartgallery.ca/) provides fine art education programs for children, adults, schools and community groups in the Metro Vancouver region. The Artist Apprenticeship Project is an annual work experience program that provides Burnaby senior secondary-level students with the hands-on experience of creating an art exhibition. With the help of an artist-mentor, students learn about contemporary art practice through discussions and activities at the art gallery, and off-site field trips to artist-run centres. Students work to conceptualize and create their own artwork and collaborate in the development of a month-long exhibition.

This qualitative research case study, which was undertaken in 2012, provided student participants with a unique voice and an opportunity to reflect on their learning process and to make recommendations to improve future programming. This research adds to the existing body of knowledge about the successes and challenges of this type of pedagogy in practice, with the potential to aid in the further development and improvement of future youth art education programs.

LITERATURE REVIEW

Artist Apprenticeship as a Learning Model

Apprenticeship can be defined as "a relationship between a so-called master who possesses knowledge in a trade, and a novice who seeks to gain knowledge"

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 215–230.

(Charland, 2005, p. 40). Contemporary apprenticeship models have greater social goals in mind, including the economic health of a nation, career skills, and social benefits (Charland, 2005). Apprenticeship programs can create a positive learning context and address adolescents' developmental needs, beginning "to fill a cultural void for this age period" (Halpern, 2009, pp. 1–2).

The youth art apprenticeship movement "is growing, borrowing from the past to reconceptualise cultural dissemination and the social role of art education" (Charland, 2005, p. 46). In the youth apprenticeship model, students are encouraged to develop specific skills ranging from the development of a work ethic, a professional portfolio, as well as a feeling of self-efficacy (Charland, 2005) and forging identity (Halpern, 2009).

An apprenticeship program can also promote the civic engagement of young people by providing opportunities to become meaningfully engaged in the community (Serido, Borden, & Perkins, 2011). Service learning is a form of pedagogy, "centred on service," that links course content to critical self-reflection for the acquisition of values and skills (Innella, 2010, p. 46). Innella's (2010) case study engaged college students in the active construction of knowledge in a museum setting (creating an exhibition), as well as in the passing on of that knowledge to children (through an educational program). Such programs can provide opportunities for youth to act on issues meaningful to them and have impact on their lives (Villarrual et al., 2003, as cited in Serido, Borden, & Perkins, 2011).

The experiential learning model emphasizes the process of learning by doing (Halpern, 2009). Hickman (2010) expresses the significance of hands-on, art-based experiences not only in the learning process, but also as an essential human form of expression.

> The value of art education lies…in its potential to surprise, to break down barriers to thinking. Its very structures and working methods enable individuals to develop their understanding of themselves and the world around them. Through making, experimenting with materials and critically engaging with a range of visual forms, people celebrate their humanity. (p. 158)

Hickman goes on to state that while art is understood to be an integral part of human development, the specific theories and applied practices of art education of youth and adolescents continue to be debated.

Halpern (2009) posits that pedagogy should be integrally tied to production, viewing production and learning as curricula in themselves. He points to a gap in the formal education system that results in the fragmentation of knowledge and experience, and a separation of knowledge from doing. Similarly, Hickman (2010) champions shifting the focus of art education from learning about art to actually making art. He finds that current art education literature gives little attention to the process of art making, with few references to the importance of artistic practice. Hickman (2010) believes that art making should be prioritized in the art education of adolescents.

Research studies have highlighted the disconnection between museums and galleries and the adolescent demographic (Andrews & Asia, 1979; Lemerise, 1995; Mason & McCarthy, 2006). Youth visitation to museums makes up a small number of visitors overall, and is disproportional to the population (Australian Museums Online, 2005; Xanthoudaki, 1998, as cited in Mason & McCarthy, 2006). The reasons given to explain this trend include an apparent disharmony between the culture of museums and the culture and identity of young people (Mason & McCarthy, 2006). Museums have increasingly been called upon to support communities through education and other social services (Lemerise, 1995), providing opportunities for "learning experiences based on direct perception in a setting that validates [teens'] ability to think" (Andrews & Asia, 1979, p. 232). In turn, adolescents have the potential to become "invaluable contributors" to society through their participation in museums and art galleries (Lemerise, 1995, p. 405).

The physical environment of a place can significantly influence learning (Falk & Dierking, 1992, as cited in Schofield, 2003; Halpern, 2009; Burgess & Addison, 2007). Using an environmental theme to generate art projects can encourage students to improvise with the available resources and come up with alternative approaches to find practical solutions to problems (Charland, 2005). In the process of intervening in museums and galleries, both artists and students must negotiate the use and feeling of the space, which can itself be an important part of the learning process (Schofield, 2003).

An alternative physical space can also motivate learning through the disruption of patterns (Burgess & Addison, 2007). The artist apprenticeship model can provide students with an immersion in art in a variety of external or 'in-between spaces' (Burgess & Addison, 2007), such as those encountered on or between field trips or fieldwork in the community.

The socio-cultural context of a learning environment and its emergent practical problems play a significant role in the acquisition and understanding of knowledge (Lave & Wegner, 1991; Rogoff, 1991, as cited in Charland, 2005). Learners can "negotiate workplace culture and decipher social relationships and organizational structures" (Charland, 2005, p. 41). In addition to developing interpersonal skills and sensibilities (Halpern, 2009), this process of dialogue can transform the attitudes, practices and values of participants (Friere, 1990, as cited in Burgess & Addison, 2007).

A youth art apprenticeship program must include partnerships among society's educational institutions (Lemerise, 1996). Collaboration among school boards, art galleries, teachers, curators, artists and other creative practitioners can encourage the development of relevant, meaningful art education programs for youth (Irwin & Kindler, 1999; Griffiths & Woolf, 2009). Such partnerships can create positive, reflexive learning experiences for students (Guile & Young, 1999); as well as develop communities of practice (Guile & Young, 1999; Burgess & Addison, 2007; Charland, 2005) in which all participants benefit from sharing knowledge and experience.

Among the most important components of apprenticeship is the fostering of close relationships between youth and adult mentors (Hamilton, 1990; Halpern, 2009). In contrast to the instructor or teacher role of formal education contexts, in apprenticeship education the adult ideally takes on the role of "experienced collaborator" (Larson & Hansen, 2005, p. 16, as cited in Halpern, 2009).

Serido, Borden, and Perkins (2011) explore the benefits of positive relationships between youth and caring adults on a young person's positive development. In their research study, the promotion of youth voice was found to be a key factor in providing meaningful learning experiences to students. They posit that a positive adult mentor and role model can ensure that youth are respected for their ideas and opinions and feel free to state them. A successful youth art apprenticeship program can provide adolescent participants with a sense of ownership that encourages civic engagement with their community (Serido, Borden, & Perkins, 2011).

RESEARCH DESIGN

Research Questions

The Artist Apprenticeship Project provided an opportunity for the creation of a research case study to closely examine the student experience of art education. Evaluating the program itself would provide information that could be used for improving the program for subsequent years, and would potentially inform the wider field of youth art education. The following research questions framed the study:

- What were the most meaningful personal and group learning experiences in the Artist Apprenticeship Project from the perspectives of student participants?
- How can the Artist Apprenticeship Project, and other future art apprenticeship programs, be improved to contribute to secondary school students' development as artists and as citizens of their community?

Theoretical Framework

The theoretical framework of this study emerged from a combination of the cognitive theories and educational philosophies of constructivism and co-constructivism and the method of education called constructionism. Piaget's constructivist theory of learning examines how individuals construct new knowledge with the help of prior knowledge, emotions and abilities. Learning is thus conceived of as an ongoing process of adaptation (Innella, 2010). This study encouraged the research participants to examine and reflect on their meaning-making process. The theory of co-constructivism conceives of learning as a social process in which language and dialogue play significant roles (Burgess & Addison, 2007). The social interactions within the group of research participants in this study revealed collaborative meaning-making. Constructionism emphasizes

the importance of learning by making tangible things (Ackermann, 2001). The knowledge constructed through the process of hands-on, applied experiences, such as physically manipulating materials in the creation of artwork, was closely examined in the study.

Research Methodology

This study was designed as a qualitative research study, taking an inductive approach in order to develop theories or interpretations (Bryman, Teevan, & Bell, 2009). As a phenomenological study, it examined lived experience of participants (Van Manen, 1990), with the goal of extracting and analyzing rich, descriptive data (Van Manen, 1997, as cited in Ajjawi & Higgs, 2007). The study format aimed to explain, describe, illustrate and enlighten (Yin, 2009) the students' learning experiences within a specific context. It aimed to give voice to the views of the participants and allow for multi-perspectival analysis (Tellis, 1997). The study also utilized the phenomenographic methodology, allowing the research to focus on "the different ways in which people think about the world" (Ornek, 2008). As an empirical study, it was based on observation and experiences that were categorized and compared with the aim of understanding collective meaning.

Sample/Participants

Nine out of the twelve Artist Apprenticeship Project students agreed to participate in the research study. Students were in grades eleven and twelve and came from different schools within the Burnaby School District. All students were enrolled in at least one art class, with subjects including drawing and painting, photography, textiles, 3D sculpture, carpentry, graphics/media arts and art history.

Methods of Data Collection

Research data consisted of observations, field notes, a questionnaire, a focus group discussion and photographs. A multiple staged process was followed so that each data set could be used to inform later data collection. For example, questionnaires and observations were used to shape interview questions, which in turn were later adapted for the focus group discussion. Specific details of each method are detailed as follows.

a. *Observation* – The researcher primarily took on the role of observer-as-participant, but also shifted to participant-observer when appropriate. Observations examined the activities taking place, which included the participants' dialogue, their behaviour and interpersonal interactions. Field notes were taken during or shortly after observation sessions. These notes included purely observational data, as well as some preliminary analytical notes (including emergent themes and concepts).

b. *Questionnaire* – A questionnaire was administered to each student subject near the end of the program. The objective of the questionnaire was to establish students' perceptions of their previous knowledge about art concepts and how they have (or have not) developed or changed. The students' written responses provided qualitative data about their reactions to their experiences.

c. *Focus group discussion* – A group discussion took place at the end-point of the program to further explore student understanding of their learning. This discussion allowed students to provide expanded, in-depth feedback about their experiences in the program, as well as to brainstorm suggestions on program improvement. The focus group discussion was audio-recorded and detailed notes were taken.

d. *Photography* – Photographs were taken of students involved in program activities that included off-site gallery visits, art making and discussions. The final exhibition and individual artworks were also photographed. The photographs functioned both as data, as well as to serve as memory enhancers throughout the data analysis process.

RESULTS AND DISCUSSION

The strategy chosen for data analysis was grounded theory, which allowed for the development of theory out of the data. It took an "iterative or recursive approach" (Bryman et al., 2009, p. 252), in which data collection and analysis occurred together and referred to each other. Triangulation of data enabled the researcher to utilize several sources of data to crosscheck each other (Bryman et al., 2009). The analytical process involved re-reading field notes, transcribing audio data, and reviewing photographs. The strategy of open coding was utilized, in which "process stays very close to the data and yields the concepts later grouped and turned into categories" (Bryman et al., 2009, p. 253). Interpretations of the data helped shape the emergent codes and the labeling of categories and themes, which were arranged semi-chronologically. Direct quotes from the students are set in italics to highlight their importance to the analysis.

First Impressions and Expectations

When asked what their expectations had been at the start of the Artist Apprenticeship Project, students had differing interpretations of the concept of apprenticeship. While some thought that students would collaborate together on one art piece, many thought they would be shadowing an artist and assisting in creating his/her work. One common expectation was that students would be learning about different art materials and techniques. One student thought that student artwork was going to be judged and was relieved to find out that this was not the case. A few students noted that they had

no prior expectations. Some of these expectations suggest potential opportunities for changes in the program itself, either in naming and publicity or in content.

Motivations

When asked what prompted them to apply for the Artist Apprenticeship Project, students' responses varied. Many of the students were encouraged by a teacher or career advisor to apply for the program in order to complete graduation requirements for work experience hours. While this was a motivation for many students, many were also motivated by factors involving art education. One student wrote about wanting the *"opportunity to discover what it's like to be a professional artist"*, with others wanting to learn more generally about the art world and community. Working with an artist was another motivation, as was the *"opportunity to get a piece of my work in a gallery."* Another student wrote that she was seeking help to prepare her to study fine arts in university.

Impressions of Formal Art Education

Student discussion emphasized a discrepancy between how each subject is perceived and valued in the formal education system and also among the students themselves. Some students thought of art as an *"easy"* subject, saying they *"take art just to chill"* and be around friends. Regarding her art class, one student wrote, *"I love it."* Students expressed the pressure they experienced as a result of having to achieve high academic marks at school. One student wrote, *"I like art a lot but I put my academic courses as my priorities."* Another disagreed: *"Art is not comparable to other subjects and to me it is not easier, it is an even more intense work. Normal subjects like math are of course important, but art teaches you how to develop, work in a group, fulfill a task/life skills."* Another student echoed this thought, writing, *"Art to me is when I'm able to be myself or be able to express how I feel."*

Behind the Scenes at the Burnaby Art Gallery

Students had the opportunity to meet with several Burnaby Art Gallery staff to hear about their roles in the workings of a gallery. The Assistant Curator and the Public Programmer spoke with the students about their educational background and about their job responsibilities. Students agreed that they found the talks helpful, with one saying that curatorship sounded *"so cool"*.

A meeting with the Exhibit Preparator of the gallery was also a highlight. Students saw the preparation work involved in putting together an art exhibition, including the framing process. Students said they enjoyed the *"backstage of the gallery"* and reflected on how the experience *"changes so much the way you see a gallery"*.

Their interest in artwork choice, placement, installation and lighting was expressed through eager discussion on this occasion and in subsequent sessions.

Gallery Visits

Students visited seven off-site art spaces, including public galleries, private collections, commercial galleries and artist-run galleries. When asked what program activities they felt they benefitted from the most, *"field trips"* (to the art galleries and artist studio*)* was a very common response. One student said that she *"got a lot of ideas from [the gallery visits]"*. Another said that the visits helped her understand *"what a gallery should or could look like"*. One student wrote*, "I felt that these off-site visits were very precious, it showed me the difference between art as a hobby and art as a career."* Another wrote, *"I enjoyed visiting all the private galleries because around there is when I finally started to appreciate modern art."*

However, a couple of students wrote that while they enjoyed the visits, they did not find the field trips very beneficial to their learning. One student commented that the galleries themselves were inspiring, but that the curators' and artists' conversations in the galleries were often unhelpful and uninteresting. This suggests that interactions between students and gallery staff did not fulfill their potential.

Changes in Gallery Visitation

Almost all participants noted that at the beginning of the program, they did not visit art galleries often (once or twice a year on average), but would like to if given the opportunity. One student echoed most others when she wrote, *"I rarely visit art galleries because I was ignorant of many existing galleries in Vancouver."* Interestingly, the two students who were on exchange programs from abroad had different gallery visitation patterns; they visited museums more frequently. One of these students was concerned about the cost of admission to art galleries in Vancouver. *"It's SO expensive,*" she wrote*, "especially for students."* This suggests a difference in cultural value and interest in art galleries and museums in different parts of the world.

Upon reflection at the end of the program, student interest in and motivation to visit galleries increased substantially. One student wrote, *"I enjoy and appreciate the gallery experience much more after knowing how much goes into everything."* Another student wrote, *"Now that I know of their existence and location, I am motivated to check their websites and also visit the galleries."*

Artist Studio Visit

Students visited the studio of a Vancouver-based artist who was currently exhibiting a show at the Burnaby Art Gallery. The students viewed and discussed the exhibited

artwork in advance of the off-site studio visit. At the artist's studio, students viewed more of the artist's work and engaged in dialogue with her about her artistic process. They made specific references to her exhibited work, and asked about how she came up with ideas. Students' connection between previously learned knowledge and this new knowledge was significant, and consistent with the constructivist-learning model. Further discussion included the artist's education and career, issues about how art is valued, the importance of the art community, and the business of art (e.g. working with commercial galleries vs. artist-run centre models). In the discussion with this artist, it was clear that students were grappling with the idea of art as a viable career.

In reflecting on their visit, several of the students wrote that they enjoyed seeing the studio and asking questions about what being an artist is like. Two students wrote in their questionnaire that the one activity that they felt benefitted them the most was this visit to the artist's studio.

Art Concept Development

Students expressed difficulty in engaging with the assigned theme of '*Ecologies*'. One student said, *"I think ecologies was a title where you try to grasp its meaning, but it just becomes more confusing."* However, most felt that they became *"excited by the theme after it was clear."* Said one student, *"At the beginning, I thought I knew exactly what ecology was…but then [the instructor] showed us a lot of pictures and I just saw so many different types of ecology, it kind of opened my mind. Oh my goodness, so many things can be ecology…[even] muscle builders!"* This particular instance reveals a deeper engagement with the topic and a growth in understanding.

Another noted challenge throughout the concept development phase was choosing a specific idea to pursue. One student commented, *"Some of us had a lot of ideas and had trouble picking one. And other people really did not know or they could not think of an idea that they actually liked."* One student noted that her greatest challenge was *"believing in myself," and "believing what you're doing is going to be potentially good"*.

Art Making

The process of creating art was enjoyable to some, but proved challenging to others. A very common concern was the lack of time allotted within the program to create their artwork. Time constraints resulting from schoolwork and extracurricular activities were reasons given for why most students didn't create art as much as they would like to. Two students wrote that they worked from home in order to complete their work. One student stated, with agreement from others, *"If I had more time I would've done a lot more."* One student did point out that in studio *"I feel more inspired"*.

Most students felt that they benefitted from the opportunity to create artwork. Yet two students had different views about art making. *"I like talking about art more*

than doing it itself," said one. The other student felt that she benefitted least from the art-making time, *"because all I did was do my own work. I didn't really experience anything new (but it was still fun)."*

A common challenge in the art making process was expressed by one student: *"Being able to say it's done, it's finished, I like it the way it is, is really difficult…I think through the Artist Apprenticeship Project, I learned how to accept a project and say it's done, it's the way it is."*

The Exhibition

Despite admitting to being nervous at first about the concept of an exhibition, students agreed that, *"it's the root of this program"*. One student noted, *"I think the Gallery gave us a definite goal, a definite feeling to have to make it good or have to make it resemble yourself."* Another student added, *"Just to have your artwork in a real gallery and learn how it works and how to arrange it was really interesting."* Another student added, *"I think the formality [of the gallery] kind of gives it a special feeling. It's not like you're drawing at home. It's something that's special, different."*

Several students felt that displaying their artwork to the public was a very personal experience. *"I feel more comfortable showing artworks now,"* said one student. Another student emphasized the importance of having an exhibition with names beside their work. For him, this was the first time showing works in a gallery. *"People know it's my work,"* he said, and that showing your work *"builds up your confidence [in] your work…it feels accomplished… finally, I'm an artist!"* From inviting family, friends and school colleagues to the gallery exhibition opening, to talking about the art with them, students felt that they had actively engaged others in their experience.

The following (Figures 1–4) are photographs of artwork and artist statements from the student art exhibition, *Artist Apprenticeship Project: Ecologies.*

Figure 1. The ultimate sophistication – I used the technique [of] quilling due to its simplicity. Ecologies depend upon simple concepts and relations, which together form a great web of interdependency

Figure 2. A wish of harmony – I want to show how all things interact with each other, are different but have something in common. [Notice] how the different kinds of paint and other mediums [are] working together and influencing each other

Figure 3. Untitled – Trees are such ordinary objects that we don't really see them for what they are. We often ignore the uniqueness of these trees and the importance of their roles in our lives. Throughout my project I have developed an appreciation for these ignored trees. Out of all these trees I drew, none of them are alike and they all have their own 'personalities'

Change in Knowledge of Artistic Concepts and Techniques

Student responses revealed careful reflections and awareness of their learning, including shifts in their artistic process, as well as understandings and connection to art. Some students chose to experiment with new art materials and techniques. One student noted that it was *"a really good opportunity for something that we've wanted to try but haven't had the opportunity in school"*. One student reflected, *"I have learned a lot more about how to get ideas, not [to] object to the first thing that comes to mind, but see how I could make it work. It taught me how to think more creatively."*

"I learned more about the emotion that you put in when creating artwork," said one student, *"That it isn't all about nice smooth lines and pretty drawings."* Another student reflected on viewing art in galleries differently: *"Before, I would just read the info tag to see the material. Now I wonder why he/she used that paper, that colour, that material, why was it framed that way, the lighting, position in the museum…"* One student reflected, *"I have come to realize that art does not necessarily require paint on canvas, it can be blood splattered on fabric or a real-stuffed shark in a large tank… I've learned that art is anything that will leave a strong impression."*

Figure 4. The host – The idea behind this work is the connections between everything. My idea was the fictional cycle of life that I made up, in which when a person dies his heart/soul comes out with wings to find a new host to start a new life

Artist Mentorship

According to several students, the guidance and support of an instructor who was also an artist was the most beneficial part of the program. One student wrote, *"Having an artist there, helping us and giving advice was amazing and very helpful. He tried to get us to think outside the box and be more creative with our work."* Another student most enjoyed the discussions with the artist-instructor, saying, *"[H]e was always inspiring me to go for a different side, not the obvious."*

Students agreed that the instructor gave good direction, guided them, and was *"positive"* in his constructive criticism. Some of the students agreed that the instructor was *"different from [a] school teacher,"* with one student commenting, *"I like how he actually tells you what he thinks."* Another student shared, *"My first 'final' idea just didn't come out the way I was expecting and this turned me down a little. One day my real-final-project idea just popped into my head, but I wasn't quite sure about it. [The instructor] really liked and supported me so much, [which] made a huge difference!"*

Peer Learning

Several students reflected that the most crucial part of their learning was the result of working in a group setting. Meeting other artists from other schools was cited as a highlight by one student, who wrote, *"Working with them was a blast. We had so much fun working together, while we talked, sang, danced, and shared food."* Another student agreed, writing, *"I actually think our group just got really lucky that we all kind of just found a way to cooperate with each other."*

Most students felt that helping each other and talking about ideas together benefitted their own artistic process. One student said, *"It's pretty good to discuss our ideas with others…to complete our thoughts."* Another added, *"I think it was important to have each other. It's so cool when someone comes and looks at your work as is like 'wow, that's so cool."* One student wrote, *"I think I grew more because I got to see different perspectives from the other students."*

Change in Post-Secondary Education or Career Plans

While the Artist Apprenticeship Project did not directly influence the immediate post-secondary education or career plans of participants, it did spark awareness and interest in future opportunities. One student wrote that the program *"hasn't played much of a role other than excite me and tell me about the art programs at [a local university]."* One student planning on studying drawing and painting at a local university wrote that the Artist Apprenticeship Project *"has confirmed that this is what I want to do with my life."* Another student wrote, *"Artist Apprenticeship gave me a solid idea/decision to pursue a career in the arts."*

Some students who chose not to pursue a career in the arts still said the program contributed to their thinking about future careers. One student wrote, *"This program has shown me the difference between art as a hobby and art as a career…[It has] confirmed my doubts about becoming an artist and I consider this a gain. I will not stray away from fine arts completely, but simply apply it to a different purpose."* Another student agreed, stating, *"[The program] did help me not to be an artist (in a good way!) and I got more interested [in] curators' work." Another reflected, "[M]y understanding of a job in the arts changed. I understand how many jobs in our life are influenced by the arts."*

CONCLUSIONS AND IMPLICATIONS

Experiential and Place-Based Learning

This study supports the existing body of knowledge in revealing student learning through connecting physically, mentally and emotionally to art (Chin, 2011). Students' reflections on their experiences showed that the learning resulted in crucial "firsthand, personal knowledge" (Crawford, 2009, p. 36). Furthermore, Van Moer, De Mette, and Elias (2008) argue that "experiences felt as obstacles for interpretation are extremely

suitable to stimulate, deepen, and improve visitors' engagement in the inquiry cycle" (p. 43). Through experiencing art, creating art and talking about art, students engaged with and expressed ideas, and found new and creative ways of overcoming obstacles, resulting in growth in a variety of areas of arts production and exhibition.

The humanistic geographer Yi-Fu Tuan (1975) writes in his seminal article, "Place: An Experiential Perspective", that "place is a centre of meaning constructed by experience" (p. 153). The site-specific nature of the Artist Apprenticeship Project allowed students to view, discuss and create art in a community art gallery. Their 'behind the scenes' look at the building and dialogue with staff gave students a thorough view of how an art gallery works and what careers are available to them. The off-site visits to artist-run centres and to an artist's studio provided experiences that allowed students to create meanings tied to both physical and mental places of learning. This study revealed the benefits of informal learning in taking students out of the classroom and into a gallery setting that became a place for them to connect, share and grow in new and challenging ways.

The Burnaby Art Gallery could further utilize its facility and collection in order to more critically engage students in the place and in art. An excellent model, outlined by Schofield (2003), is that of 'gallery intervention,' in which students work closely with the art and with the physical, aesthetic, and historical aspects of place. In carefully studying these aspects of the Burnaby Art Gallery, students could create a deeper dialogue with the space and with the art, and more broadly with gallery visitors. This could encourage students to feel more empowered in contributing their own voice, their knowledge, and opinions to the art community.

Civic Engagement of Youth

Civic engagement entails youth being meaningfully engaged in their community, contributing to democratic decision-making, and having a voice (Serido et al., 2011). This study highlighted both the strengths and shortcomings of the Artist Apprenticeship Project in addressing the need for engaging teens in the art community. Students' feedback illustrated that they developed and strengthened relationships with their peers, Burnaby Art Gallery staff, the art community (artists, galleries, etc.) and visiting friends, families, and public. Positive relationships with adult artist-mentors empowered youth and strengthened their voice. While the program provided opportunities for students to gain valuable skills and experience, more work can be done to promote the civic engagement of the teen participants so that they are empowered to contribute positively to their community.

The Artist Apprenticeship Project could be improved if re-framed as a service-learning program, benefiting the participants, the host organization and the greater community. In order to increase the students' sense of citizenship and ownership, they should be encouraged to contribute more of what they have learned back to the community. Facilitating discussions and tours could help participating students benefit from engaging in conversations about art with other youth (Witmer & Borst,

1999; Innella, 2010). As an extension of the program, students could produce educational material and give guided tours of their exhibition to their secondary school peers as well as to elementary school students.

Collaborative Partnerships

The growth of individuals and the growth of their communities are inter-related, and more importantly, interdependent. In the practice of youth art apprenticeship, a variety of key players must collaborate and work together to spark and support life-long student interest in art. This feedback system involves knowledge sharing between museums and art galleries, community organisations, artists, schools, students, their families and the general public. This research study contributed data showing the many benefits that have resulted from collaborative partnerships in the City of Burnaby. The Burnaby Art Gallery's Artist Apprenticeship program works together with the Burnaby School District, its careers advisors and teachers, to provide this work experience program to secondary school students. Future research examining the attributes of successful collaborative partnerships among community institutions in youth art education would further benefit the museum field.

Further work can be done to better link the academic, art and career worlds by developing and sustaining its collaborative partnerships. Museums can foster the growth of communities of practice (Wenger, 2009; Herne, 2006; Burgess & Addison, 2007), which "have the potential to generate new forms of engagement, shared, repertoire, and joint enterprise" (Herne, 2006, p. 1). At the Burnaby Art Gallery, engagement of the participating students could continue beyond the program through new and existing gallery programming opportunities. The Gallery could focus resources on offering more professional development opportunities for school teachers, who would in turn be better equipped and inspired to engage their students in art education. Community organizations such as art galleries, museums, libraries, and community centres can be invited to share their expertise in the form of workshops, serve as host venues for future exhibitions, and promote joint youth outreach programming.

As a community-based art gallery, the Burnaby Art Gallery is well situated to play a significant role in the art education of youth in Burnaby. This research study supports the growing field of youth art education by outlining the benefits and challenges of a youth artist apprenticeship model. It is hoped that more art galleries and museums will benefit from these findings, and utilize them to create or improve their own engaging outreach education programs for adolescents.

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14. CREATING MEANINGFUL EXPERIENCES IN ART MUSEUMS

A Study of Museum Educators' Perceptions of Meaningful Engagement with Works of Art

INTRODUCTION

Searching for Meaning in an Early Encounter with an Artwork

I am stirred by an early childhood memory of a school field trip to an art gallery with my grade one classmates. My experience with a particular painting I saw on this visit has stayed with me ever since, and I often find myself reflecting on the nature of this and other early encounters with art. The painting was the subject of a guided group discussion, facilitated by an arts educator at the museum. It depicted a youthful male figure with large wings suspended in flight, against a light blue sky with billowing clouds, and rays of sunlight that appeared from the top left corner of the canvas. Though other details of the painting have since escaped my memory, I vividly recall sitting in front of this painting in the presence of my classmates. A museum educator directed our gaze to various elements of the painting, allowing each of us to interpret the piece for ourselves. I remember an overwhelming sentiment that different parts of the painting evoked a familiar narrative that rested somewhere on the tip of my tongue. Eventually, I associated this painting with the myth of Icarus and Daedalus, which I remembered from a storybook my mother read to my sisters and me when we were young.

I have searched for this painting in hopes of understanding why the memory of a work of art I know very little about has stayed with me since my childhood. Over time, it became clear to me that my affection for this painting was not fostered by interesting facts or information about it. In spite of this, it made a lasting impression that stayed with me throughout my studies in art history in Toronto, as well as later in Rome. The gravitation towards representations of this mythological scene in churches, museums, and ancient buildings, as well as in my own personal life, remained consistent.

What is the significance of different lines of meaning and personal connections I have since associated with the myth of Icarus and Daedalus, and what place, if any, do they have in museums? For example, a note I once received, which read: "I don't want our love to be like Icarus, who flew too close to the sun?" Is the acknowledgment

D. Anderson et al. (Eds.), Research Informing the Practice of Museum Educators, 231–245.

of our personal experiences and responses to artworks relevant in museums? Questions such as these have served me as entry points to this study's discussion of meaningful art viewing experiences. Particularly, the role that information plays in both guiding and/or limiting our perception of artworks. While I am convinced that what little I know about this painting is not a measure of the impression it made on me, I wonder if further knowledge about the artist, period, style or movement would enable the formation of even deeper meanings and personal metaphors. In my early encounter with a work of art that I have outlined here, how did the way in which the museum educator presented the painting affect my interpretation of it? How much information, if any, is ultimately needed to engage with works of art in meaningful ways?

Teaching in Art Museums

Researchers have observed that until fairly recently, teaching in art museums focused less on the past experiences and knowledge visitors bring with them to museums, and more on content about the artworks (Ebitz, 2005; Mayer, 2005). Despite significant changes in art museum education over the last few decades, some museums still subscribe to the belief that this more traditional focus on information about collections and artworks should continue to guide the practice of museum educators (Barrett, 2000; Van Moer, De Mette, & Elias, 2008; Williams, 2010). The main criticism of the delivery of programs and tours is that this focus ultimately disregards the knowledge, personal insights, and experiences of visitors. Indeed, many believe that meaningful experiences in art museums are contingent on the individual and personal interpretation of works of art by visitors (Barrett, 2000; Burnham & Kai-Kee, 2005; Hubard, 2011; Hubard, 2007; Vallance, 2004; Williams, 2010).

Research has shown that the most memorable experiences visitors report from museums are usually of an affective nature, and that connecting personally with museum objects and collections can contribute to meaningful learning experiences (Anderson, Storksdieck, & Spock 2007; Falk & Dierking, 2000). Art museum educators have always been well positioned to facilitate these experiences for the public; whether through designing, implementing, or delivering public tours and programs, they have the potential to engage visitors in meaningful discussions about works of art. Nevertheless, group investigations of artworks continue to pose significant challenges to museum educators. Researchers have remarked that the breadth of art historical and exhibit content knowledge educators possess offers no guarantee of an enriching museum experience for visitors (Barrett, 2000; Burnham & Kai-Kee, 2005; Hubard, 2007). Some go even further, noting that sharing too much information can detract from the process of personal meaning-making in museums (Armstrong, 2000; Williams, 2010; Hubard, 2007).

Philosopher John Armstrong (2000) explained that while information does not necessarily lead to impoverished engagement with works of art, a preoccupation

with it "can be a way of avoiding a more personal relationship with the object" (p. 14). In *Move Closer: An Intimate Philosophy of Art*, he goes on to remark that "external considerations can be so absorbing that they draw our attention away from the very thing that they are supposed to serve: We end up knowing about the picture, but not knowing it" (p. 14). Indeed, many believe that visitors' engagement with an artwork might end at common facts and knowledge if they are not invited to engage with the piece on a more personal level. Hubard (2007) observed that when visitors are not invited to share their first impressions and personal reactions to works of art, many are left with the feeling that their participation is irrelevant, and that "other people have already defined what is important and significant" (p. 18).

Still others assert that works of art require at least a degree of background information to appreciate them fully (Armstrong, 2000; Barrett, 2000; Burnham & Kai-Kee, 2005; Hubard, 2007). It cannot be denied that acknowledging certain aspects of an artwork, such as its present or historical significance, influence on other artists, and contributions to an artistic movement, style or school, adds valuable layers of meaning. As Armstrong (2000) remarked, "information is important for the appreciation of art [because of] its capacity to change how we see things" (p. 20). Understanding what constitutes 'meaningful' engagement with art, and the role that factual and contextual information about artworks play in shaping meaningful experiences in art museums, therefore remains as pertinent a question now as ever.

Research Question

Caught between the public's thirst for knowledge and information, and the greater goal of cultivating visitors' appreciation for art, museum educators are often unsure how to encourage and honour personally meaningful responses to artworks. This study sought to expand our understanding of good teaching practices in museums, with regard to whether sharing information about art pieces limits possibilities for personal responses, or ultimately enriches visitors' encounters with works of art. By interviewing educators in art museums about their perceptions of their roles, experiences with facilitating discussions about works of art, and thoughts on what constitutes 'meaningful' engagement with art, the study aimed to answer the following research question: *What is the role of museum educators in facilitated visitor experiences in art museums, and how does the sharing of factual and contextual information about an artwork impact visitors' personal responses to art?*

METHODOLOGY

The Study Objectives

Art museum educators have always played a vital role in the contextualization of artworks in art museums. Recently, however, the amount of information they need

to know and share about collections in order to facilitate meaningful experiences for visitors has been brought into question. This research study focused on one aspect of museum educators' work at the centre of this debate, the facilitation of group investigations of works of art. Ten practicing art museum educators in North American museums were interviewed about how they perceive their interpretative role on tours and in guided discussions about works of art. In her study of tailored educational interactions with visitors in art museums, Neill (2010) remarked that there has been little research to date that "seeks to understand the nature of the interpretation given on museum tours, solely through the eyes of those performing it" (p. 69). This study thus contributes to the effort of making the voice of museum educators central to our developing understanding of meaningful experiences in art museums. Moreover, it explores what is understood as 'meaningful' engagement with art by assessing the value museum educators place on various aspects of group experiences of art. These aspects include contextual information provided during guided tours and gallery programs, as well as the life experiences and personal connections visitors bring to art.

Conceptual Framework

Constructivist learning theory provided an epistemological framework for this study in respect of how visitors build meanings through art museum experiences. It supports the belief that museum visitors are active participants in the process of meaning-making, and therefore has applications in the context of guided discussions and group investigations of works of art.

Theories and strategies used today to facilitate interpretation in art museums largely draw from constructivist principles of learning and teaching. In a broad sense, constructivism views learning as an active process in which learners construct meaning from the phenomena they encounter (Hein, 2005). Piaget, Vygotsky, Dewey, and other early proponents of constructivism rejected prevailing views of learning as a passive process, in favour of active meaning-making and interpretation by the learner (Hein, 2005). According to Falk, Moussouri, & Coulson (1998), constructivism manifests itself in museums with the view "that each individual brings varied prior experiences and knowledge into a learning situation and that these shape how that individual perceives and processes what he or she experiences" (p. 109). Therefore, visitors construct knowledge by making connections between their lives and the objects and information they encounter in exhibits (Hein, 2005).

Since interpretation is influenced by visitors' prior knowledge and life experiences, interactions with objects and artifacts in museums, as well as with museum educators, can result in different meanings being constructed by visitors (Mayer, 2005). Hein (2005) remarked that constructivists view personally generated meanings as valid interpretations, including instances when such interpretations do not correspond with the 'official' narratives and meanings presented by museums or

artists. Mayer (2005) shared this view when she described the learning conditions set by constructivism in art museums as follows:

> what is learned must be confirmed not through external criteria of the discipline, such as art history, but through the visitor's own sense-making mechanism," to the effect that, "even in the most overtly didactic exhibition, the knowledge visitors walk away with is personally, not curatorially, generated." (p. 14)

Museum Educators' Responses

Semi-structured, online interviews were conducted and a qualitative evaluation of responses was undertaken to determine existing perceptions of meaningful learning experiences in art museums from the perspective of art museum educators. A case study comprising a total of ten practicing art museum educators formed a sample of participants (Stake, 1995). Participants were selected based on a) their current occupation as art museum educators, and b) their expression of interest to participate in the study after having received an invitation through online list serves. Interviews were a one-time commitment and focused on the professional practice of art museum educators. Participants received a guiding set of questions prior to the interview, which allowed them to reflect in advance on the general themes of the study.

A semi-structured interview format with a standard set of questions was intentionally selected for this study in order to facilitate the collection of rich, qualitative data. Semi-structured interviews also made it possible for additional questions to be posed in relation to visitors' responses, and for conversations to unfold around certain topics. These interviews afforded the opportunity to investigate how museum educators interpret their role in art museums, and to explore the nature of the interpretation performed in facilitated discussions and group investigations of works of art. Participants were asked the same questions in roughly the same order as they appeared in the document they received beforehand. A few minor changes to the original set of questions were made following initial interviews, to ensure that certain questions and concepts were articulated and understood more clearly. On occasion, participants were asked to clarify certain meanings, and to provide further information about and insights into their experiences as practicing art museum educators. Where appropriate, they were encouraged to provide more than one perspective or answer to a question, all of which were recorded. Museum educators were also free to decline answering any of the included questions. The core interview questions included:

- How do you think members of the public perceive your role as an art museum educator?
- How does your knowledge of an artwork, or lack thereof, impact your decision to include or exclude it in/from gallery tours and programs?
- In what ways does knowing a lot about pieces or exhibits affect guided discussions and group investigations of works of art?

- How would you lead a group discussion about a work of art that you are not familiar with, or know very little about?
- How often do you invite visitors to explore personal connections to works of art, and what kinds of questions would you ask visitors to encourage personal meaning-making?
- In your view, does an interpretation of a piece need to match the artist's intent for the artwork? If not, do you think personal interpretations of works of art can pose problems?
- In your view, what might a 'meaningful' experience with a work of art look like?
- In your opinion, does information about pieces more often hinder, or promote meaningful engagement with art?

Demographics

Six of the ten museum educators interviewed work in Canadian art museums, while the remaining four work in the United States. The gender, academic backgrounds and professional experiences of many participants were noted, though these characteristics did not produce any notable trends in the data. On the other hand, the types of art museums and galleries where the educators were employed had an effect on their answers. Seven of the ten participants indicated that they work as educators in large art museums, while the rest described working with smaller and mid-sized collections. Many of them applied the term 'encyclopedic' to these large museums to describe the vast collections and exhibits housed therein that represent a wide variety of themes and subjects, cultures, movements and historical periods. The term 'encyclopedic' was appropriated from participants to describe their experiences in these museums, in the findings section of this study.

Qualitative Evaluation and Analysis of Interviews

Interviews were transcribed and subsequently coded using emergent categories that formed around similar themes, concepts and ideas which participants addressed in their responses (Corbin & Strauss, 2008). The categories included: a) educator awareness of visitors' perceptions of their role in art galleries and museums; b) educator assessments of 'meaningful' experiences in art museums; c) educator valuation of information about pieces and exhibits in the creation of meaningful experiences; and d) educator views on balancing personal meaning-making with contextual information in facilitated observations of works of art. A second level of coding was then undertaken to determine sub-themes in each of these larger thematic categories and to uncover differences and similarities in participants' responses.

Finally, an illustrative technique was used, whereby illustrative response samples were selected from participants' interviews to represent main themes and categories that emerged from the study (Curtis, 2011). Each of the larger thematic categories in the findings section therefore begins with a quote extracted from an interview with

a participant. These quotes were chosen based on their ability to summarize, both succinctly and eloquently, the general sentiment expressed by educators on a topic or theme. Selecting these quotes involved a process of reviewing participants' answers that were coded under the aforementioned thematic categories, and choosing those that resonated most deeply with the themes in that category.

OUTCOMES

(Un)Changing Perceptions of the Role of Art Museum Educators

> I think that a lot of visitors still have this way of thinking that I am a walking encyclopedia about every single piece on display.

Museum educators expressed the view that visitors' perceptions of their role are largely shaped by the expectation that educators will be imparting information. Several educators noted that visitors expect them to know everything about the works of art on display, and expect their role to consist primarily in sharing this knowledge and information during tours, guided discussions, and group investigations of works of art. Such perceptions posed problems for a few museum educators, who commented on the difficulty of knowing everything about every piece on display in an art museum. This sentiment was especially strong among museum educators who work in large 'encyclopedic' art museums, where their efforts to facilitate more open-ended experiences are often thwarted by visitors' perceptions of their role as 'art experts'. These educators critiqued the notion of expertise in art, noting that their role is often conflated with that of an expert, which they cannot be in every art piece.

When perceptions of their role enforce the expectation that museum educators hold key information to all the art pieces on display, several educators mentioned that they engage in a process of deconstructing this view. Some of the interviewed museum educators commented on the importance of visitors leaving the museum with more questions than answers; these educators believe the most effective way to ensure this outcome is by unsettling visitors' expectations for tours based on content-delivery. Some museum educators do this by prefacing guided discussions with the disclaimer that visitors' expectations for a tour may not be met, as a way to encourage more open dialogue, conversations, questioning and personal engagement with art. As one educator put it, "Visitors are more willing to have that kind of dialogue when the tour has been introduced that way". Another museum educator remarked that it is not only important to establish from the start that a tour is going to be open-ended and dialogue-based, but also to explain to visitors that art does not always function in the ways they might assume. That is, works of art cannot always produce the answers visitors are expecting to receive. By being transparent with visitors, some museum educators have been able to replace the image of themselves as the purveyors of information with the understanding that they are co-explorers of artworks with the visitors themselves.

Unpacking Meaningful Experiences in Art Museums

> At the end of the day, my goal is not to be able to have a visitor list facts about a work of art, but to develop a personal connection with it.

Museum educators' perceptions and understandings of meaningful experiences in art museums were remarkably similar. Most educators cited connecting and engaging personally with works of art as a key ingredient in meaningful art viewing experiences. They also agreed on certain definitive criteria in the creation of meaningful museum experiences. Most expressed the view that the context behind artworks is not a prerequisite for personal connections. In fact, all of the interviewed museum educators agreed that the skill of questioning is at the core of creating meaningful, visitor-centred experiences in a museum setting, and that the act of asking questions is much more important than the answers that are given. They shared a common valuation of open-ended questions, posed by educators and visitors alike, as a building block to discussions wherein visitors are active participants in the analysis of artworks, bringing a variety of perspectives and ideas to the table that, in some cases, even the educators themselves had not previously considered.

Information and Meaning-Making

> In contextualizing art, we give it a deeper importance and meaning.

The importance educators placed on facilitating personally meaningful experiences in art museums was matched by the value they attributed to contextual information during tours and gallery programs. Many museum educators said that they feel a responsibility to acquire deeper knowledge about works of art, not so that they are able to pass every single piece of information along to visitors, but so they can speak from an informed point of view. Interviewed educators ultimately could not deny the importance of contextualizing pieces in time and place in order to give them deeper significance and meaning. A few commented that sharing information enables visitors to engage with art on a deeper level, beyond first impressions and reactions, as well as to access meanings they had not previously considered.

Educators also expressed the concern that accepting personal interpretations and meanings indiscriminately, without sharing relevant information with visitors, can spread misinformation about certain pieces. Many feel that they have a responsibility to not let visitors walk away from art pieces with wrong information, especially when the ideas or issues addressed in them are historically or culturally sensitive. In instances when there is visible dissonance between personal interpretations and an artist's intent for an art piece, several museum educators feel that it is important to interject and offer visitors additional context. As paraphrased from one museum educator, initial reactions and observations should be seen as forming the first chapter of a story that has just begun to unfold.

Finding the Right Balance

> It's not so much pearls of wisdom that you are giving to the group, it's bits of sand that they can then make into pearls.

Museum educators found a balanced approach between visitor contributions and the provision of information during guided discussions to be the most effective in encouraging meaningful engagement with works of art. Many remarked that this is a delicate balance, as it requires restraint on the part of educators who may know a plethora of information about certain pieces in a gallery. One educator identified this skill as the art of being able to insert "precious droplets of information" at the right time. Other interviewed educators also noted that there is an art to selecting the information to share with visitors at key junctures of a conversation. If done correctly, this process encourages further discussion rather than stifling conversation by shifting into "lecture mode". A few educators further commented that there is a significant difference between the skillsets of having substantial knowledge about a work of art and choosing what information to convey to visitors at the appropriate time.

Several educators believe that visitors often enter art museums feeling as though they are not equipped with enough background knowledge to be able to discuss art. In such cases, inserting carefully selected pieces of information into guided investigations of artworks can provide a jumping-off point for group discussion and personal connections. A few educators also believe that this practice can serve to lead conversations away from swift conclusions about artworks, such as simply recognizing who created one piece or another, or from stalled moments where visitors feel they do not have anything to contribute. Interviewed museum educators recognized the following as a fundamental educational skill: showing restraint in how much information one shares in order to encourage inquiry, rather than presenting one's own expertise and knowledge to others.

Many of the interviewed educators shared the view that offering too much information can shut down possible moments for exploration, and potential opportunities for collaborative meaning-making. The solution for most of them is not to share everything one knows about an art piece with visitors, but instead to choose information selectively with the goal of adding more depth to conversations about art where it is needed. Educators described conveying information about an artwork, while also supporting visitors to bring their own meanings, experiences, interests, and observations to the work, as a 'fine balance'. For most of these educators, a meaningful experience in an art museum can be defined as when someone walks away with at least some kernels of relevant information about the object itself and an understanding of how that object relates to them. Museum educators play an important role in facilitating such experiences, and in maintaining this fine balance when discussing works of art. One educator offered a favourite quote: "It's not so much pearls of wisdom that you are giving to the group, it's bits of sand that they can then make into pearls." This metaphor perhaps best conveys the balanced approach that art museum educators strive for in their practice.

DISCUSSION

Modeling Life-Long Learning for Visitors

Interviews with museum educators revealed that many visitors continue to view this position as filled by content experts on the artworks displayed in museums. Despite efforts to challenge such perceptions of their role, a few admitted they are guilty of providing lecture-style tours to visitors who enter art museums expecting such programs. Ultimately, however, the real or perceived pressure some educators feel to live up to the expectation that they are experts can severely limit the possibility for personal meaning-making and interpretation. Furthermore, cumbersome notions of expertise cannot be countered by challenging visitors' perceptions alone. A shift in educators' own self-image is also required; from viewing themselves as experts, to recognizing that they too are learners who construct their knowledge alongside visitors. Indeed, constructivism not only places learners at the centre of interpretation and meaning-making, but also situates an educator's disposition towards life-long learning at the heart of good teaching practice. In museums, this disposition manifests itself in an educator's willingness to co-explore works of art with visitors, and to value the knowledge gained from these interactions.

Constructivist Views of Meaningful Learning Experiences

Educators interviewed as part of this study described meaningful experiences in art museums in opposition to program delivery methods that are based on the transfer of information. Their descriptions of fruitful engagement with artworks aligned closely with constructivist principles of learning and teaching; they agreed that the goal of guided tours and programs should not be to elucidate the meanings of artworks for visitors, but instead to engage visitors in a collaborative process of meaning-making. The most important tenet of constructivist learning theory – the ability to connect learning to prior knowledge and life experiences – occupies a central place in the practice of museum educators. Many of those interviewed commented on the importance of asking visitors open-ended questions that enable connections to be made between their lives and the works of art they encounter in museums. Indeed, meaningful engagement with artworks is often examined and described through a constructivist lens. As Barrett (2000) remarked, "To interpret is to make meaningful connections between what we see and experience in a work of art to what else we have seen and experienced" (p. 7). Therefore, the active participation of visitors in the analysis of artworks is a key component of meaningful art viewing experiences. Visitors' contributions have the potential to generate a variety of perspectives and ideas about works of art, which in some cases even the educators themselves have not previously considered. Burnham and Kai-Kee (2005) noted that when meaning-

making is a collaborative enterprise, visitors and educators alike can cultivate a greater appreciation for works of art, and for "the infinite possibilities of meaning that accumulate around them" (p. 76).

The Role of Information in Guided Tours and Programs

Interviewed museum educators cited personal engagement as a key ingredient in meaningful art viewing experiences. However, their responses also reflected Armstrong's (2000) understanding of the "solid importance of information when it comes to understanding a work of art" (p. 14). In fact, several educators remarked that withholding information through the application of interpretive methods such as VTS (Visual Thinking Strategies) could ultimately do visitors a disservice (Landorf, 2006; Rice & Yenawine, 2002; Yenawine, 1999). Hubard (2007) shared this view, and took note that "Despite the importance of personal meaning, audiences deserve to participate in the larger tradition of human ideas" (p. 22). Vallance (2004) also touched on the idea of global context, highlighting "true stories behind museum artifacts [which] can help viewers to understand why an object is special in social, historical, and formal terms; the artistic processes behind it; and the cultural meanings it embodies" (p. 7). Hubard's (2007) statement also calls on museums to practice increased transparency with visitors by revealing the institution's role in presenting the stories of displayed works.

In the complete absence of information, Barrett (2000) validly pointed out that interpretation "runs the risk of being overly idiosyncratic or too personal" (p. 11). Indeed, interviewed educators remarked that tipping the scale too far in this direction could lead to circular conversations or stalled moments where visitors feel they have run out of things to say. While all the educators in this study believe visitors appreciate open-ended discussions based on their own personal observations and responses, several have observed visitors who have walked away from pieces dissatisfied when they have not obtained further contextual information. The museum educators also agreed that personal meaning-making should not be exclusively highlighted at the complete expense of exposing visitors to interpretations and perspectives they did not previously know or consider. For this reason, educators should ideally be as informed as possible about a work to address visitors' questions, clarify meanings, and build further on their observations and comments. As Burnham and Kai-Kee (2005) remarked, "Deep knowledge of artworks is a part of good gallery teaching" (p. 71). The more educators know about an artwork, the more they are able to elevate conversations to a higher plane, where visitors' observations, thoughts and personal reflections are folded into existing meanings and interpretations of a piece (Burnham & Kai-Kee, 2005). It cannot be denied, therefore, that information forms an important component of appreciating and understanding art, helping visitors to engage with pieces on a deeper level, beyond their first impressions and initial observations.

A Balanced Approach

Museum educators who participated in this study observed that the answer to meaningful engagement with artworks ultimately rests in a balanced approach between personal responses and the provision of information during guided discussions. Barrett (2000) made similar observations, noting that "Personal, individual interpretations can and should be informed by knowledge of the artwork from other persons and sources" (p. 11). Indeed, several researchers believe that communal and personal interpretations of artworks are not mutually exclusive ideas (Armstrong, 2000; Barrett, 2000; Burnham & Kai-Kee, 2005; Hubard, 2007; Hubard, 2011). In fact, this belief contributes to current art theories, which acknowledge scholarly research, as well as individual and personal responses to works of art, as contributors to the formation of interpretations (Ebitz, 2005). Armstrong (2000) remarked that the reductive tendency to focus on either one or the other offers little more than the choice between "either extraneous knowledge with impoverished visual engagement or keen personal sensitivity pursued in ignorance" (p. 15). Only when the two are harmoniously combined can meaningful engagement with a work of art unfold (Armstrong, 2000).

As several researchers have remarked, information is not the problem; what matters is the style in which an educator approaches information about artworks, and ultimately, what viewers do with such information (Armstrong, 2000; Barrett, 2000; Burnham & Kai-Kee, 2005; Hubard, 2007; Hubard, 2011). Interviewed educators listed several important outcomes of sharing contextual information with visitors, including changing, developing, and further guiding visitors' perceptions. However, they also noted that information can have the effect of shutting down possible moments for collaborative meaning-making and bringing personal reflection and engagement to a halt. Armstrong (2000) notes that the tendency to immediately resort to information about artworks is often driven by the feeling that expressions of taste and personal opinions are comparatively superficial. Yet, as educators and researchers have noted, such expressions are actually valid entry points into the discussion of an art piece (Armstrong, 2000; Barrett, 2000; Hubard, 2011; Williams, 2010). In order for information to be used more productively, Hubard (2007) remarked that contextual facts should only be shared with visitors at moments in a conversation when it is apparent that a "line of investigation cannot go further without new knowledge" (p. 20). She cautioned educators not to "[determine] what visitors are meant to gain from a particular work ahead of time", as this can severely detract from the process of discovering and constructing meanings from the artwork (Hubard, 2011, p. 176).

Burnham and Kai-Kee (2005) noted that meaningful, guided conversations in art museums ultimately depend on an educator's sensitivity and skills of perception. With each group of visitors, the dialogue differs, and educators are required to take the unique variables of each situation into account when they provide art historical information (Burnham & Kai-Kee, 2005). Identifying the right moments to share

information with visitors requires alertness to the diversity of perspectives, ideas, experiences and observations. There is no one-size-fits-all approach to facilitating discussions in art museums. Hubard (2007) remarked that sharing information too early can shut down opportunities for personal meaning-making; while leaving it for the end of a discussion prevents new knowledge from being used to enrich visitors' understanding of a piece. The ability to weave information at key moments throughout a conversation ultimately requires practice, skill and experience in "advancing some ideas and saving others to be brought back later" (Burnham & Kai-Kee, 2005, p. 70). This back-and-forth between personal interpretations and contextual facts and information about artworks is indeed a fine balance worth pursuing in the creation of meaningful experiences in art museums.

CONCLUSION AND IMPLICATIONS

In recent years, the question of how much information to share with visitors about artworks has surfaced as an important one in an ongoing discussion about what constitutes meaningful experiences in art museums. Art museum educators who participated in this study all subscribe to Burnham and Kai-Kee's (2005) view that teaching in museums involves more than just the transfer of information. Increasingly, the art museums where they work also support this view; interviewed educators described their involvement in guided tours and programs that place visitors at the centre of interpretation and meaning-making. While changes in the practice of art museum educators represent a step in the right direction for interviewed educators, such change also comes with its own set of challenges. Museum educators now grapple with the questions of whether or not they should provide context for artworks at all; if needed, how much context they should provide; and finally, how context and information should be delivered.

This research study afforded the opportunity to explore these questions and discuss their implications for our developing understanding of meaningful experiences in art museums. Interviews with museum educators offered a glimpse into how they perceive their role in guided tours and programs, and the various ways they interpret the (mis)uses of information in interactions with works of art. The role that contextual facts and information play in meaningful art viewing experiences continues to be questioned and debated by researchers and educators alike. Some have noted that information can forestall personal responses to a piece, while others have remarked that it can take away from the spirit of collective meaning-making in group investigations of artworks (Armstrong, 2000; Barrett, 2000; Burnham & Kai-Kee, 2005; Hubard, 2007). These researchers have also written about the important role that information plays in appreciating and understanding works of art. Like many before it, this study painted a not quite black-and-white picture of this issue, exposing the over-simplification of an either/or approach. As many educators mentioned, meaningful engagement with works of art develops from the marriage of contextual information and personal interpretations.

In Barrett's (2000) words, "A work of art is an expressive object made by a person, and unlike a tree or a rock,… it is always about something. Thus, unlike trees and rocks, artworks call for interpretations" (p. 7). The views shared by many of the interviewed educators align with Barrett's (2000) belief that "to interpret is to make meaningful connections between what we see and experience in a work of art to what else we have seen and experienced" (p. 7). Yet, while participants in this study all agree on the importance of encouraging visitors to form individual and personal interpretations of works of art, several educators noted that certain art pieces call for less open-ended, and more historically and culturally sensitive interpretations. Indeed, another limitation to this study, besides that of a small number of participants, is linked to the generalization of its findings to all types of artworks. Further research is needed to assess the risk of 'presentism', a phenomenon when art pieces from different time periods and places are subjected to personal and individual interpretations. Distinctions should be made between contemporary, historical and controversial works of art to identify instances when more contextual information is needed to support and guide visitors in the formation of meaningful interpretations of artworks, as well as instances in which information interferes with this process.

I began this research by recounting one of my earliest memories in an art museum – a school field trip with my grade one classmates. Though the details of a painting that was the subject of a guided group discussion have mostly escaped my memory, my encounter with this piece remains vivid. I remember what I experienced in the presence of this artwork, the thoughts and feelings I brought to it, and the connection I was able to make to a story that was read to me as a child. The painting revealed itself slowly to me: the important scene it depicted from the myth of Icarus and Daedalus was not narrated at the outset, but gradually constructed itself from details to which the educator drew our attention. I now realize that none of this was accidental, but a part of the creative practice of educators that makes teaching in museums truly an art form. If one looks closely enough, they might just find a metaphor in the myth of Icarus and Daedalus for the art educator. Avoiding the hubris that caused Icarus to fly too close to the sun can ultimately be seen as an exercise in humility, in acknowledging our limits, and in being open to finding a balance between *sharing* and *creating* knowledge with visitors in art museums.

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