# The Intellectually Accessible Museum

**Working Draft**

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**In partnership with:**
**Trent Centre for Community Based Education**
**The Canadian Canoe Museum**

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Abstract:

The world and its institutions are changing. Museums are changing with it in order to be relevant to the present. Museums are a business, with a "product" to sell, museums are a forum for advanced research, or for "edutainment," museums are an extension of the classroom and museums are an instrument of social change. George Hein mentions the power of museum education to effect political and social change within society, with or without cooperation from the national authorities. One of the key phrases in this changing social responsibility of museums is "ACCESS". This term is used to apply to a wide range of issues, but the bottom line is that museums are working towards making themselves more accessible to a wider section of the public. Currently, the majority of the research and programming being done towards this end addresses physical access to museums and their collections, with little emphasis placed on making the knowledge contained in museums intellectually accessible. The intention of this report is to take a few steps towards addressing this important issue. The main discussion presented explores how a museum and its staff can provide an optimum learning opportunity for individuals with Learning Disabilities, through the interpretive messages and programming. This report does not attempt to discuss related issues, such as low literacy, or more severe developmental handicaps, nor does it make the presumption of being authoritative on the matter. This report merely skims the surface, but hopefully will provide a base for further inquiry.

The first section of the report will discuss the basics of what is meant be Learning Disability. This information will be used to determine how and where traditional museum structures create barriers to learning for individuals with LD. A theoretical discussion of the potential educational philosophy that a museum might adopt in regards to LD will lead the way into concrete suggestions of methods and techniques to remove barriers to learning. This report does not attempt the impossible task of providing solutions for all barriers. It does not even attempt to identify all barriers. Rather, it seeks to address a few of the most obvious issues and, where possible, to suggest solutions, or the theory of solutions, to help guide the way through exploration to the discovery of solutions to remove all carriers to learning.

# Introduction

The world and its institutions are changing. Museums are changing with it in order to be relevant to the present. Museums are a business, with a "product" to sell, museums are a forum for advanced research, or for "edutainment," museums are an extension of the classroom and museums are an instrument of social change. George Hein mentions the power of museum education to effect political and social change within society, with or without cooperation from the national authorities. (Hein, 11) One of the key phrases in this changing social responsibility of museums is "ACCESS." This term is used to apply to a wide range of issues, but the bottom line is that museums are working towards making themselves more accessible to a wider section of the public. Currently, the majority of the research and programming being done towards this end addresses physical access to museums and their collections, with little emphasis placed on making the knowledge contained in museums intellectually accessible. The intention of this report is to take a few steps towards addressing this important issue. The main discussion presented explores how a museum and its staff can provide an optimum learning opportunity for individuals with Learning Disabilities, through the interpretive messages and programming. This report does not attempt to discuss related issues, such as low literacy, or more severe developmental handicaps, nor does if make the presumption of being authoritative on the matter. This report merely skims the surface, but hopefully will provide a base for further inquiry.

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# Methodology

In order to identify barriers to learning, the original plan of methodology included a series of focus groups of individuals of different ages with LD, with a corresponding control group for each. Each group was to be taken on a standard tour of The Canadian Canoe Museum, with a following guided discussion. The intention was through observation and guided discussion to find out first hand from individuals with LD exactly what barriers to learning they encountered within The Canadian Canoe Museum. (Please see appendix 1 for the proposed methodology) However, it soon became apparent that such a strategy would not be feasible. One small class of students, grades four to seven, from a local school did take part in a focus group. (Please see Appendix 2 for the report) This was arranged through the classroom teacher. The other focus groups were to arranged on a volunteer basis through contacts at local high schools, the Special Needs Office at Trent University, and the Learning Disabilities Association of Peterborough. No one volunteered. No one wanted to be put into a group and labeled as "Learning Disabled." This was, although a frustrating setback, a valuable learning experience, which guided the revision of methodology.

The next stop was an extensive literature search. Sources consulted included journals, books, textbooks, websites and correspondence with professionals and institutions within the museum community. As very little has been researched on the relationship between museums and learning disabilities, a wide variety of sources had to be consulted, and relationships developed between them. Sources included works on Learning Disabilities, learning theories, learning in museums, interactive exhibits, and technology, to name a few. Teachers attending a professional development workshop at The Canadian Canoe Museum were also interviewed to determine their views on how museums and formal education could work together. (Please see Appendix 3 for the report)

A focus group of professionals working with individuals with Learning Disabilities of various ages in varying settings was developed. A list, developed from the literature research, of some of the identified barriers and some suggestions for removal of those barriers was provided

to participants ahead of time, in order to have an informed, focused discussion. (Please see appendix 4 for full report)

From the research uncovered in the literature search and the discussion of this research by the focus group, the report was developed.

# What exactly is meant by a "learning disability"?

The U.S. National Joint Committee of Learning Disabilities states that a learning disability "refers to a varied but related group of disorders shown by difficulties in either listening, speaking, reading, writing, reasoning or mathematical abilities. In addition, these disorders must be intrinsic to the individual and are presumed to be due to a central nervous system dysfunction and not another cause such as environmental disadvantage or a developmental handicap."

A person with a learning disability is not "stupid" or unable to learn. They are of average or above average intelligence, but their disability affects how they can learn. And this is a very common problem within society; in a very conservative estimate, learning disabilities affect 10 to 15 per cent of the population. Most professionals suggest that the number can be as much as 2 or 3 times that.

## TYPES OF LEARNING DISABILITIES

There are many different types of Learning Disabilities, and an individual may have one, or any combination. There is no set "list" of all the variations of LD, but they are generally grouped into categories. The categories may vary according to the source being used, but generally they follow the same guidelines. One way to categorize is according to the way the disability manifests itself. For example, the Learning Disabilities Association of Canada defines five categories :

1. Visual problems: poor visual memory, reversals in writing
2. Auditory problems: poor auditory memory, speech problems
3. Motor problems: poor eye-hand coordination
4. Organizational problems: poor ability in organizing time or space
5. Conceptual problems: poor social skills and/or peer relations, difficulty correctly interpreting non-verbal language

These are a few of the characteristics of each category. Another way of categorizing is according to where in the learning process the disability occurs:

Input is the process of putting information in the brain. Visual perception and auditory perception disabilities occur within this step.

Integration is the process of organizing and understanding information. Sequencing, abstraction and organization disabilities occur here.

Memory is used when information is stored to be retrieved later. Any disability occurring in this stage will result in poor memorization skills.

Output is the process by which information must be communicated from the brain to people or translated into action. Disabilities that occur here include language and motor disabilities.

## SOME CHARACTERISTICS OF LEARNING DISABILITIES

Some general characteristics include:

- Major difficulty in focusing attention
- Functional difficulties in visual, auditory, motor, organizational and/or conceptual skills
- Often behave in an immature, narcissistic or egocentric way
- Find school a frightening experience
- May be able to master content but unable to produce answers
- Not natural problem solvers and can become overwhelmed
- Most serious difficulty is in processing language

Processing language and receptive language difficulties is a very common problem among people with LD, and can cause a problem comprehending both written and spoken language. With this

difficulty, an individual may not be able to grasp long or complicated sentences, or may not be able to distinguish between similar words and sounds. Other common difficulties include:

- Understanding and remembering spoken instructions
- Learning and understanding new vocabulary
- Reading and writing
- Expressing their ideas in words
- Understanding sentences
- Summarizing or applying what was read

## LEARNING DISABILITIES AND SOCIAL SKILLS

Many people do not understand their particular disabilities, and they try to mask them through their behaviour, so that it is the behaviour and not the disability that is noticed by others. Also, the nature of the disability itself often leads to difficulties in socializing. Both visual and auditory disabilities make it hard for an individual to discern another person's intention. Visual disorders can make it difficult to distinguish between, for example, a joking with and a disgusted glance. With an auditory disability, an individual may not be able to tell the difference between sarcasm and sincerity, or to recognize other changes in tone of voice.

## ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Many people confuse ADHD with learning disabilities. ADHD is not a learning disability, but is a related disorder that is present in 20 to 25 per cent of those with a learning disability. It is characterized by hyperactivity, distractibility and impulsivity. These symptoms continue into

adulthood for up to 70 per cent of people. Most adults with ADHD are restless, easily distracted, have difficulty sustaining attention and concentrating, and are impulsive and impatient.

# Barriers Museums Present to People With LD

- Museums are traditionally seen as highly intellectual, institutions and therefore very intimidating to someone not confident with their learning abilities.
- Individuals with LD do not usually deal well with unfamiliar settings and activities. Not being comfortable within the learning environment will affect the ability to learn.
- Many people with LD have serious trouble with concepts and abstract ideas. They are very black and white thinkers. This is a particular problem in history museums, as most historical concepts do not translate into visual explanations.
- Easy distraction is a barrier to learning for many people with LD. In school methods rely on taking away non-relevant materials, but this is obviously not an option in a gallery full of "stuff"
- There are strategies and aids to help an individual compensate for a particular learning disability, drawing on their own strengths. As effective as these strategies may be, they are developed through a long process, in consultation with professionals, and take time to learn. When a visitor walks through the doors, the museum has no way of knowing how to use these strategies, or of helping the visitor use them.
- Lectures, text panels, labels, docent tours, etc., are examples of DIRECT INSTRUCTION, which is largely facilitator-centred. These techniques do not take into account the needs of the learner.
- Sequencing disorders also affect an individual's concept of time
- Visual processing disorders, as well as affecting reading abilities, causes difficulties seeing a specific image within a competing background, or seeing the difference between 2 objects. This will affect viewing exhibits and artifacts
- Auditory processing disorders will make it hard for individuals to follow tours, whether audio or led by an interpreter, to hear any audio/visual exhibit components, narrative or theatre.

- Both visual auditory processing disorders can lead to language comprehension difficulties. This in turn will cause difficulty in understanding new vocabulary, concentrating during lectures or tours, and also will affect reading comprehension. Understanding and remembering spoken instructions will be problem, as will expressing ideas with words. Many people with a language comprehension difficulty also experience some social skills deficit, as they are not very skilled at using and understanding language.

# Barrier Free Museums

Although museums are a place of informal or free-choice learning, they have had a long relationship with formal education. Teachers today want museums to be a resource for schools, and to serve as an extension of the classroom, where what is learned in textbooks can be brought to life. (Please see Appendix 3) Educational reformers, such as Howard Gardner, are calling on formal education to model itself more on the learning that takes place in museums; "Modeling the fresh and engaging approach of children's museums, the school creates an atmosphere in which children feel free to explore novel stimuli and unfamiliar situations." (Gardner, 75) Museums are a natural environment to draw on the different intelligences, to explore, to discover. Museums cannot force visitors to learn specified outcomes, but they can provide the opportunity to learn. Museums should subscribe to a holistic, learner-centred educational theory, in which a learner's whole person, including strengths and weaknesses, are taken into account.

Museums should heed the cry of educational reformers. The old practice of labeling, of putting special students in a "special place," of having differential standards, has not been effective and educators are trying to move away from this. (Schools in Transition, 1996) Rather, the tools and techniques which have been developed for individuals with learning disabilities should be made available to the general population, to ensure that the diverse learning needs of every individual are met. Learning will take place in museums. Rather than trying to motivate people to learn, museums should instead remove as many barriers to learning as possible, and allow visitors to learn in their own style by drawing on their own strengths. Jerome Bruner suggests that you can teach anything to anybody at any age, if you make it relevant to their world at that moment and present it in a way that they can learn. (Lazear, 7)

Not only can museums provide the "real thing" but they can make the real thing accessible to everybody, and they can provide an opportunity for every visitor to shine, to explore and to discover through the ways they learn best. Museums can provide a chance to return to learning that is non-threatening. When growing up, school is the first place people learn about success and failure. For those who don't learn in the way schools teach, education can be a

terrible thing. Museums have a chance to show these people that learning is fun, and that everyone can learn. Gardner cites museums as a major factor in the potential for educational reform. (Gardner, 1993) Hein refers to them as agents of social change. (Hein, 2000) Museums have an opportunity to lead the way and to help create a system of education that removes barriers to learning.

# Techniques for a Barrier Free Museum

## I SHOULD HAVE THE OPTION...

The single most important way that a museum can remove barriers to learning is by providing options. Visitors should have the opportunity to explore and learn in the way they feel most comfortable. There are interpretive techniques that work best for certain learning disabilities, however the emphasis should be on providing for learning styles, rather than on learning abilities. Therefore, a museum should provide as many ways to access information as possible, and ensure that these ways are as accessible to as many visitors as possible. The purpose of interpretation is to engage the audience, and create a meaningful and educational experience. It is a commonly known fact that not all people will find all activities either meaningful or educational. A museum must cater to many different learning styles by offering many different interpretive styles. The styles offered should reflect the interpretive missions and goals of the museum. What styles work best for each museum will vary, and this is something which should be established through careful consideration, planning, experimentation and evaluation. A museum must never consider its interpretation program "finished" but must constantly evolve. However, basic outlines of the styles of interpretation which best suit the museum and accomplish its interpretive goals should be established within an interpretation policy or mandate, in order to ensure that the goals are followed.

There is no formal system for deciding which styles work best. A museum must know its audience and program for them. Audience research is a logical place to begin. Who are your visitors? Why are they coming to the museum? At this point, a museum should also question who is ***not*** coming to the museum, and why, in order to develop outreach to these groups. All members of the museum's community should be taken into consideration when planning an interpretive program. They should also be a part of the planning and evaluation process. Focus groups and advisory committees, composed of a variety of people from the community, should help plan and evaluate a museum's programs, in order to ensure that what the museum intends to

say is heard that way by a variety of people. This is a process of experimentation. And even if a museum finds a style that works, that communicates what they want to say, they should keep trying to find styles that work even better. This should be a never-ending process.
Some possible suggestions, which will address a variety of learning styles, include:

## ADVANCE ORGANIZERS

An unfamiliar situation can be in itself a barrier to learning. People are better able to learn when they know what to expect and the environment is somewhat predictable and secure. Advanced organizers, which give visitors an idea of what they will encounter, have been demonstrated to increase learning in museums. (Hein, 138) They can take one of three general formats: conceptual organizers present the intellectual structure of the exhibits. Koran and Koran speculate that by providing key concepts or generalizations, a museum may increase interest and learning. (Koran and Koran, Individual Differences, 1988) This format may be well received by some visitors, but it also may prove to be extremely intimidating to many people, and make the museum appear to be forcing formal expected learning outcomes.

An overview organizer simply provides information on what can be seen, done or learned. This may take the form of brochures or other printed materials and should follow recommended guidelines to ensure legibility and comprehension. This information can also be provided by a verbal orientation, as provision of this information both audibly and visually will make it more accessible to all visitors.

Topographic organizers are simplified maps. These are a great aid for visual learners, and a guided flow through the exhibits makes most people more comfortable, provided that it isn't rigidly structured. The Smithsonian Institution Guidelines, "Accessible Exhibit Design" states that "an exhibition that reveals its topic through an obvious story line, theme or repeated element offers landmarks, repetition and a connecting thread to follow a complex presentation."

## ADVANCE INFORMATION FOR SCHOOL GROUPS

Pre-visit packages for school programs are highly recommended for preparing students for their visit. The class can have a better idea of what to expect, and some of the barriers that an unfamiliar setting creates can be removed. New vocabulary can be explained in advance, and pre-visit activities can get some of the interpretive messages into their minds so that they will engage more readily with the exhibits and interpreters or educators. At the pre-visit stage, the museum educator can also be in contact with the classroom teacher to determine if there are any students who will need special considerations above and beyond the provision for different learning styles. In this way special provisions can be provided as discretely as possible.

## LAYERED LEVELS OF INFORMATION

It is imperative to provide layers of information, so that a visitor can access as much or as little as he or she wishes. The layers should be presented as "here's more information if you would like it" rather than presented as basic to advanced levels.

Many text panels already subscribe to this, as the visitor can quickly scan titles and labels or read varying amounts of text. However, since not every visitor can comprehend the text, layers of information need to be provided in alternate ways. Talking labels and information stations at exhibits are highly recommended as visitors can decide whether or not to activate the device to hear more information, and can stop listening at any time if they have heard enough or are no longer interested. If several audio devices are developed for an exhibit, it might be a good idea to invest in individual earphones. Many sources of audio information sounding off at the same time are more likely to create confusion than comprehension!

Random access audio guides are a natural means of providing layers of information, as they can be programmed to provide more detailed information at the touch of a button, or by punching in another code number. Computer interactives are also a natural approach, as they can be another layer of information in themselves, or the programs can be designed to provide layers of information. At the most basic and inexpensive level, a museum can offer access to or recommendations of books or films, or to other local or national sources, such as clubs and organizations, or other museums.

## CONCEPTS

Abstract concepts are a major obstacle facing many museum visitors. The best strategy is to make concepts as concrete as possible. Set out the facts on which the abstract concepts are based, and provide more in depth conceptualizing in further layers of information. Of course, it is impossible to avoid abstract concepts completely within a museum. There have been many studies conducted in the education field on the most effective ways to explain concepts, and some of these strategies can be applied to a museum setting. The most important strategy is to present the concepts in different ways. Not only will this cater to different learning styles, but a concept will never be understood at a deeper level by a learner unless they are exposed to it more than once. Refer back to the concept, and build upon it as the visitor progresses through the exhibits. It is best to explain concepts in terms that the visitor will be familiar with. For example, at the Canadian Canoe Museum, one of the main interpretive messages is that the canoe and Canada's waterways were essential in trade and consequently in developing the country. To explain this, the waterways are compared to highways, and canoes to transport trucks. This is a very concrete image that most visitors understand.

Studies have shown that concepts are best understood when the learner's background knowledge has been activated, relationships among concepts are highlighted, and the concept is described by both examples and non-examples. (Bos, 1992) Drake et al. suggest that visualization and guided imagery may be an effective way of explaining concepts. In this case, the learner will be talked through a concept to make fuller use of the senses and emotions to make personal meaning of the idea. The example the researchers give to illustrate this strategy is the water cycle; learners are told to imagine that they are a single drop of water, and are taken through all of the steps and processes involved in the water cycle. This has the potential to be an effective and memorable learning experience, but it also has just as much potential to be silly. This may be a more recommended strategy to use with children, as they are usually less reluctant to engage their

imagination. And, as with every interpretive activity, a visitor should never be coerced into participating. All learning experiences should be optional.

A further warning in explaining abstract concepts is to use metaphors with caution. Gammon explains that both adults and children tend to take everything in museums extremely literally, and so the use of metaphors should be carefully evaluated to make sure that they say to the visitors what they are really meant to say.

## TEXT AND LABELS

Text will never be accessible to all visitors. Therefore the goal should be to make it as accessible as possible, and to provide a variety of alternative ways of getting the information that is contained in the text panels. Some guidelines to follow when producing text include:

- Use clear language. Avoid synonyms – pick a term and stick with it consistently.
- Keep sentences short. Have only one main idea per sentence and use simple punctuation. Avoid semi-colons, colons, hyphens or sentences broken up by too many commas.
- Use active verbs and personal language (you, we) as it encourages dialogue and adds to the visitors' sense of belonging.
- Use the number and not the word.
- Provide a hierarchy of layered information.
- Clear contrast between type and background is important. Never impose type over graphics.
- Labels should not use a reflective surface.
- Right justification should not be used. Hyphenation of words at the end of a line reduces legibility and reading speed, and fitting text into an unusual shape, or around a picture is not recommended.
- Fancy typefaces should not be used. Clear typefaces such as Ariel or Univers are recommended.
- A mixture of upper and lower case letters is easier to read. Avoid block capitals, italics or underlining.
- Paragraphs should be well spaced and 50 to 55 characters is a good line length.
- Bullets and boxes. Use bullet points and fact boxes to make the main points clear.
- Labels in cases should relate clearly to objects by a logical, consistent numbering or mapping system.

- A minimum type size of 28 to 36 points is suitable for most exhibition labels, but main texts on introductory labels should be considerable larger, around 48 point.
- There should be consistent location of labels. It is also helpful to keep the layout consistent throughout the text panels.

(Adapted from Access in Mind and Am I Making Myself Clear: Mencap's Guidelines for Accessible Writing.

Increasing the number of words decreases the number of readers.

Sandra Bicknell and Peter Mann
(Quoted in Access in Mind)

There are several methods to entice text-wary visitors to look more in depth at the text. Hirschi and Screven suggest that the use of questions can motivate visitors to look more closely at the text, labels and objects, in order to work out the answers. In this case they feel the best questions to ask are the ones that the visitors ask themselves. Gammon expands on this idea, and suggests several "tricks" he has found to help visitors engage with the text. One is to ask what appears to be an easy question, but one the visitor is certain to get wrong. Then there is a powerful incentive to find out why they got it wrong. Labels that direct visitors' attention to parts of the exhibit through open-ended prompting questions can be effective and can also promote discussion among groups of visitors.

Several reading strategies developed as an instructional aids for people with LD could be useful in promoting comprehension of text. They could be integrated into the text panels themselves, provided as a text supplement, or used by interpreters to guide listening activities as well as interaction with the exhibits. These strategies include:

- KWL, which stands for what we **K**now already, what we **W**ant to find out, and what we **L**earned. The basic strategy is to activate background knowledge, and give the learner a focus in reading, to find the answer to identified questions. "What we know already" and

## PROVISION OF MAPS AND DIAGRAMS

Following on the theme of providing information in a variety of ways, maps and diagrams are an excellent way of communicating information with a minimum of text, and of translating abstract concepts into concrete visuals. Diagrams can be used rather than written instruction to explain how to run interactives, so that the interactives themselves are more accessible. Diagrams can also be used to explain unfamiliar vocabulary. For example, it was recommended that the Canadian Canoe Museum provide a diagram illustrating the various parts of the canoe, so that when these parts are mentioned in passing in the text, the visitor will have a visual of to what the text is referring.

Scruggs et al suggest that maps with symbols depicting concepts (mnemonics) may be an extremely effective way of communicating factual information as well as accompanying text related to events in the mapped territory because maps can be encoded both spatially and verbally. This mnemonic reconstruction can aid those visitors who have difficulty relating verbal and visual information. As helpful as this strategy is, studies show that it is insufficient when the verbal information is abstract and unfamiliar. Mnemonic maps will only be effective if the visitor is first made familiar with the subject matter, and the information is made concrete, not abstract.

There are several other warnings to keep in mind when using maps or diagrams to illustrate concepts, including the fact that many people will have difficulty "reading" the map. The maps and diagrams have to be kept simple or visitors will experience what is called "word blindness," meaning that they are staring at the panel without seeing what is actually on the panel. Maps and diagrams should never be a stand-alone source of information. Any important themes or facts should be presented in other ways as well, to take into account more learning styles.

"what we want to find out" are brainstormed before reading, and "what we learned" is summarized after. One suggestion made for working with this strategy is to show a learner a picture. Next name the topic of what you are about to read, and then brainstorm connections between the picture and the topic. This is one way to pique interest in a topic before it is discussed.

- DRTA – Directed Reading and Thinking Activity.

This strategy is very similar to KWL. It involves 3 steps: 1. Predict, 2. Read and 3. Prove. First, facilitators display a picture or read a few sentences from one section of text, or information. Learners then try to guess (predict) what that section of information will be about. The second and third steps are carried out concurrently. After guessing what the information is about, learners read the applicable passage carefully, trying to find evidence to support their predictions.

Of course, if the text doesn't work any other way of presenting it, or promoting interaction with it, will still not be effective. In order to make sure text is accessible to a wide range of people, a wide range of people should evaluate the text! Ann Rayner suggests that "Curators should have the last word on accuracy of content, and educators the last word on legibility, readability and comprehension. (Rayner, 55.) This is a very valid idea, but a museum should also consider having its text evaluated by "outsiders," by people who are not familiar with either the subject matter or "museumese."

## AUDIO/VISUAL COMPONENTS

Audio visual components can play many effective roles in the museum. They can serve as an advance organizer, they can be a different way of obtaining the information contained in the text, or they can provide another layer of information. They can even be a way of prompting the visitor to look more closely at the exhibits in order to answer questions raised in the video, possibly using the directed reading and thinking activities presented above. They can also provide narrative, and bring human stories into the exhibits.

As wonderful as video components are, there are 2 main problems visitors have with them. One, not being able to hear audio output, and two, joining the video part way through. (Gammon, 1999) The first problem can be addressed, at the most basic level, by ensuring that the audio output is of sufficient quality and volume. Other possible solutions include the provision of headsets (which will also address the issue of noise control within the exhibits themselves) or closed-captioning. This last suggestion not only helps those with hearing impairments, but also provides both a visual and an auditory means of obtaining information, which will address the issue of learning styles.

As for visitors joining the video part way through, there are also several possible solutions. The video itself can be structured so that visitors are constantly reminded of the theme and key messages, so that anyone joining part way through can quickly get an idea of what is being discussed. This may get monotonous for those who do watch the video all the way through, and if the video is not an in-house production, this suggestion is probably not useful. For longer videos, set viewing times can be arranged, and prominently displayed at both the front entrance, and at the video itself, so that visitors will be assured that they will have a chance to see the video all the way through.

## INTERACTIVE COMPONENTS

Experience and experimentation are vital to learning. But, as Dewey points out, not every experience is educative. An exhibit designer cannot simply place something with moveable parts into the exhibit and claim that it is therefore interactive. An activity must not only be "hands-on" it must also be "minds-on." (Hein, 2) People need to engage with the exhibits in order to have a positive and effective learning experience. According to Dale's Cone of Experience, people generally remember only 10 per cent of what they read and 20 per cent of what they hear, but they will remember 90 per cent of what they do. It only makes sense for museums to provide interactives.

Mechanical interactives are extremely popular. However, there are several things to keep in mind when planning on mechanical interactives. They are expensive. They break. Often. And they must be very well planned and tested in order to be effective. The last thing they should do is confuse or frustrate visitors. The Science Museum, London, outlines several key questions to ask when doing evaluation of interactives:

- Can visitors operate the exhibit
- Do visitors interpret the exhibit in the way that the exhibit developers want them to
- Do they understand the messages it is trying to communicate
- Is their attention caught and held for long enough to communicate the messages
- Do they enjoy using the exhibit? Are they motivated to think about and learn from the exhibit
- Do they finish interaction feeling more confident

(Gammon, ILR no. 38)

Several lessons learned are also outlined:

- Good communication between exhibits and visitors is key. Feedback is important, whether it be visual, audio, tactile or any combination.

- An exhibit must respond to the visitor's input within the first few seconds
- Visitors need to understand what each control does and which control causes which effect
- Beware of features that look like controls but do not operate anything.
- Reset mechanisms often cause confusion
- Don't be a slave to accuracy. If the visitor can't understand how to operate the mechanism, than there is no point in having it in the exhibit.
- The design of the exhibit should suggest to visitors what they should do. The instructions should merely be a back-up system. Anything more than about 20 words will be ignored.
- Labeling must be clear and concise, with a strong incentive to read it.
- Labels must be placed as close as possible to the exhibit and must be in line of sight as the visitor operates the controls.

For more detailed information, see "Everything We Currently Know About Making Visitor-Friendly Mechanical Interactive Exhibits Part 1 of 2" by Ben Gammon, in The Informal Learning Review, no. 38 (September-October 1999)

An additional point to consider is that mechanical interactives usually only provide one way of doing something, one way of thinking about it, and relate to only one specific aspect of the exhibit. Also, they usually draw only on specific skills and intelligences.

The theory of Multiple Intelligences has been used to create interactive kits, which can be used in museums. Project Spectrum, a partnership between Harvard University and the Boston Childrens' Museum involved the development of theme-based kits, drawing on all of the intelligences, to be used at home and in the museum as well as at school. This idea of kits containing activities to explore a theme through different intelligences could translate well to the "Back-pack" programs already successfully in place at many museums. These are literally backpacks, containing five or six hands-on activities for families to use in the galleries. The backpacks usually follow one of two formats: they can be for a particular gallery, and the

activities can be done in any order, or they can be for a linear tour of several galleries, where activities are completed in specified order. This method is an excellent way of providing meaningful, hands-on interaction with the exhibits, with a minimum of staff/volunteer work. Activities should be designed to be reusable, to limit the amount of maintenance required.

In the focus group conducted at The Canadian Canoe Museum (Please see Appendix 4) concerns were voiced about the idea of backpacks. Concerns included:

- The amount of space taken up by people stopping to do the activities
- For families with children, they have a lot to carry around and keep track of as it is
- Replacing lost materials could be costly

These are all valid concerns, and ones that would need to be addressed according to the resources and restrictions of each individual museum.

One way to address these concerns, which was suggested by the focus group, would be to incorporate similar activities into permanent stations throughout the exhibits. Ideas for these stations could be drawn from science centres and children's museums, which are designed around such hands-on learning experiences.

If permanent stations are not an option, due to space, financial or other restraints, activity carts may also be able to provide alternative activities, or layers of information. These are mobile carts designed to be used by interpreters in the exhibits, providing hands-on artifacts and activities. These carts are an effective way to illustrate certain key objectives of the interpretation program. For example, the National Air and Space Museum, Smithsonian Institute, uses one of their carts to explain the social side of air transportation, as experienced by passengers, pilots and flight attendants. It contains such objects as 1940's style hats, pilot's leather helmet, goggles and silk scarves, modern pilot uniform, copies of old maps, airplane models, etc. Such carts are particularly useful for sites with static displays with little hands-on interaction built in. But of course, these have their own space considerations, and are more costly, as they require staffing.

## COMPUTER INTERACTIVES

The essential question is, do visitors like using computer interactives. Gammon found little evidence of technophobia. In fact almost ¾ of the visitors questioned had at least some experience of using networked computers. People had varying levels of interest in the computers; Gammon and the London Science Museum identified 3 distinct behaviours exhibited by visitors at computers:

- Purposeful: people carefully and thoughtfully searching through the software looking for something specific
- Exploratory: people flicking through pages looking carefully to find out what is there
- Playing: people (usually children) rapidly moving through the different screens at random to see what happens

Not every visitor will be comfortable using computers. Male (1994) suggested that people with learning disabilities do not need the additional burden of trying to learn the program or complicated technology. However, several years later Brown-Chidsley and Boscardin (1999), Ann Rayner (1998) and the focus group conducted at The Canadian Canoe Museum (2001) all suggest that although computer interactives may provide some frustration, the majority of visitors are quite comfortable using computers. Level of comfort or interaction with computers is not affected by learning abilities as much as it is by unfamiliarity with computers.

Computers are an effective learning tool because they can incorporate many different media, such as audio, video, graphics and animation as well as text. It should not replace the experience of the real thing, but should enhance that experience. In that way information is conveyed through a variety of learning styles. Computers can also provide important layers of information.

The most important reason to provide computers is that they provide a flexible method of obtaining information while the user remains in control. Flexibility and control is key in retaining visitor attention. This idea is stated quite nicely in Access in Mind:

> "The learner should always have control over what is being learned. Visitors should be able to investigate material how they want to, not how we want them to." (Rayner, 82)

Guidelines should be followed in order to ensure that the computers are as accessible as possible:

- Use a variety of media – sound, graphics, symbols, in addition to text - to relay information. This is especially important when providing instructions on how to use the interactive.
- Follow the same text guidelines as you would when developing text and labels. Keep language clear and consistent. Text should be kept to around 30 to 60 words per screen. Additional text should be put on a following screen with a "next" or "more button," and avoid using scroll bars.
- Important instructions or information should appear in the middle of the screen, and should stand out well from the background
- Design the station so that about 3 people can group around the screen. This will work towards promoting discussion in the group.
- Throughout the program provide instructions on how to proceed, go back, get around within the program, etc.
- Tracker balls or touch screens are easier to maneuver than a mouse for many people. It should be placed centrally, so that it can be used by both right and left handed people.
- Design the program to allow people time to react, especially if a decision needs to be made.

Adapted from Access in Mind and "Visitors Use of Computer Exhibits: Findings from 5 Grueling Years of Watching Visitors Getting it Wrong, Part 2 of 2"

There are, of course, drawbacks to computer interactives. There is the concern that many people are not comfortable using them, although more and more people are using computers everyday, so this is not the most pressing concern. Computers are expensive in both time and money, require intensive and extensive evaluation to make sure that they are being used and understood in the way that they were meant to, they can usually be used by just one person at a time, and they break. Often.

Computers have one more role in museums – connections to the internet.

> The Internet and the World Wide Web, by giving us a new medium for digital Communication, have forever transformed the relationship between museums And their audience.
>
> J. W. Hoopes, as quoted in "Learning in Museums: the Internet as a research and data-gathering tool"

Virtual collections and tours put the learner in control, so that their experience is not defined by the structure of the museum. They can offer layers of information that may not be possible within the museum structure itself, and by the very nature of the learning environment, may be able to cater for different learning styles. Of course, there is still some debate about how effective a learning environment virtual museums actually are. Visitors will not see the "real thing" and therefore that emotional impact will be lost. Despite the cautions, virtual museums are a valid member of the museum community, and the potential for this resource is endless.

## AUDIO TOURS

> In terms of learning disabilities, you have to have a variety of sources of information, so the audio tour is almost a given.
> Focus group, Canadian Canoe Museum, January 2001

Audio tours provide one other way to give more information than can be written on a label. They can offer several layers of information, and can allow those who cannot obtain information from labels and panels, for whatever reason, to learn. There is some evidence that the use of audio tours encourages a longer stay by visitors. Elizabeth (Beau) Vallance of the St. Louis Art Museum conducted a small study of visitor responses to a random-access audio tour developed to accompany a special exhibition at the Seattle Art Museum, of "Angels of the Vatican." As the study was rather small in response numbers, Vallance warns that the results may not be statistically accurate, but they do provide some interesting information. On average, those who used audio tours stayed in the exhibits significantly longer. A longer visit doesn't necessarily mean a better visit, but there is some evidence that time spent in the exhibits is a predictor of learning. (Falk, 1983)

The most pressing concern expressed about the use of audio tours is the subsequent isolation between visitors. There have been several methods suggested to deal with this enforced isolation. At several points during the visit, for example, when the audio tours are handed out, during the instructions and randomly throughout the tour, it should be emphasized that the visitor should feel free to pause the tour at any time, whether to stop for discussion, or to browse other areas not included in the tour. A "pause button" can be included in the equipment to make this an easy option. In order to stop complete isolation altogether, sites can choose to use headphones/earpieces for just one ear, so that visitors can still hear what is going on around them. Systems can also be used in which several individuals can plug their earpiece into the same piece of equipment, so that they are hearing the exact same thing at the exact same time. Other systems suggested are the use of "solid state" equipment, such as wants, telephone receiver styles, etc. Another option is the use of low output portable ghetto blasters, which are cheap and do not

involve expensive contracts with companies. However, these can be disturbing to other visitors and if several are in use at the same time in the same gallery, it can lead to extreme cacophony.

An audio guide can be made into an interactive activity. The narrator can suggest activities to stop and try, can talk the visitor through guided imagery, can add in narrative and personal stories, and can make the use directed reading and thinking techniques. All it takes is a little imagination, and a lot of evaluation to make an effective and interactive audio tour.

There are two basic styles of audio tours – linear and random access. For both, it is important to provide detailed, clear instructions and an orientation. Provide directional information, and information about the surroundings to help the visitor feel at ease and familiar with the setting. Include such descriptions as the lay out of the gallery and any important structural information, such as a change in floor level or upcoming stairs. Also, as with everything else, make sure the language is clear and consistent. It was also suggested to modify the equipment so that it is colour-coded, rather than printing the words "play" and "stop" on the buttons. Colours should be easily identifiable, such as red for "stop," green for "go," and yellow to return to the beginning of the message.

**Linear**

The linear style is generally found on cassette tapes, and is the "original" – the ancestor of the random access style developed with new technology. Just because the linear style is older does not mean that it is obsolete- it has its own pros and cons, just as the random access does. The standard audio tour takes visitors from a set starting point, through a fixed route. Although it allows the visitor to rewind and listen to points already covered, the narrator's instructions ensure that all tour takers follow the same route and hear about the same objects. A major consequence of this style of tour is crowd management – traffic jams can occur at selected listening points. Also, this kind of dictated tour ensures that every visitor hears the exact same amount of information, regardless of their background, interest and attention span. It does not provide layers of information.

## INTERPRETERS

Mechanical interactives, audiovisual, computers and audio guides are all very effective ways of providing information to people, through a variety of media, catering to a variety of learning styles. But human interaction is an important part of the learning process, and museums should attempt to provide some forms of live interpretation. There are many ways of providing this....

### The "Wal-Mart Greeter"

People need to feel welcomed when they walk through the door of an unfamiliar place. There is no need to be aggressive when people walk through the door, and insist upon talking with them. This behaviour will intimidate many people, but a visitor needs to know that they are welcome, and that there is somebody there to provide information if they need it. Such a front-line person can also provide the service of advance organizer.

### Tours

There are two main styles of tour:

Lecture Method:

An interpreter orally presents predetermined information to a passive audience. The lecturer may call attention to specific objects of interest, but there is no interaction between visitor and interpreter. Such an interpreter is traditionally given the title of "docent" and this is a style of interpretation that has been widely used by both museums and art galleries. Some people do feel more comfortable both giving and taking this style of tour. However, not many people actually learn in this style, and many people do not have the attention span for such a tour. Lectures are not a recommended teaching style if the subject matter provides opportunity for forming opinion, is the content is complex, abstract or detailed, or if the content deals with feelings and attitudes. (Lang et al, 1995)

Discussion Method:

Interpreters lead the visitors around the site, bringing attention to predetermined objects and ideas, but at the same time they interact verbally with the visitors, asking questions and sharing points of view, in order to lead visitors to discover key ideas for themselves. Interpreters can introduce the reading strategies discussed above, in order to stimulate listening and thinking. This style is a compromise between the traditional docent-lead tour, and other styles of interactive interpretation. A discussion tour is generally well-received by both visitors and interpretive staff, and can be used for scheduled group tours, or can be offered at various times throughout the day.

**Roving Interpretation:**

Interpreters are stationed at various points throughout the galleries, and are available to answer any questions the guests may have, or to direct guests to other sources of information. The interpreters should be easily identifiable with some indication that they are open and receptive to questions. This is a way of providing interaction between staff and visitors without a formal tour or demonstration and can provide information to many people with few interpreters.

**Demonstrations/Artisans:**

Interpreters describe and explain a process by actually performing the steps involved. This can be done as a demonstration, during which the artisan describes the process to an audience, or the artisan can be working on the project within access to the public, and the visitor is encouraged to stop and ask questions or observe. This is an excellent way of providing visual interpretation, and is always well received by visitors. A word of warning is that it is sometimes difficult to find skilled artisans, depending upon the project, and it can be costly in terms of materials and labour.

**Visitor Participation/Hands-On Activities:**

This style works with the artisan/demonstration activities. In a controlled situation, either during a demonstration, after, or while an artisan is working, a visitor is invited to be physically involved in the process, performing one or more of the steps. This is an especially effective style of kinesthetic/tactile learners, who need to actually try things to understand, but it is also an engaging and interactive practice for most visitors. This method of seeing parts of a work in progress may be frustrating to some learners, who need to see a tangible end results in order to understand the whole process. This issue might be addressed by having smaller, quickly completed activities, rather than on-going long-term artisan projects. Or perhaps a complementary activity, developed for the visitors themselves to complete, can be developed. This could result in a tangible end product that the learner can take away, can show, can use to prove their competence. Of course, this could be extremely costly in terms of labour and materials, and would need to be well thought out and evaluated.

**Theatre:**

Amateur or professional actors perform a scripted play in the galleries, or in a theatre within the museum. Styles include original stories, oral histories, or reenactments of actual events. Live theatre has many pros and cons. It is a way of personalizing the exhibits, and of bringing the stories to life. This is essential in engaging a visitor on a deeper emotional level. It is also a way of providing a lot of information without creating visitor fatigue. Research has suggested that the optimum length for any written label is 80 words. Beyond that most people stop reading. But "Running the Risk," a play at the Canadian Museum of Civilization, holds visitors of all ages for 35 minutes of intense concentration. This equals approximately 4000 words, which is 50 times the length of any acceptable written text. (See The Language of Live Interpretation) Anyone considering a theatre program, however, should take precautions to ensure that the material presented is the same academic standard as is presented in the exhibits. Also, by its very nature,

live theatre cannot be subjective. Visitors tend to take things in museums very literally, so care should be taken to emphasize that what is being presented is only one view, and not the whole story.

Theatre programs are extremely expensive and time consuming. A museum might consider filming a theatre production, so it can be played on video in the exhibits, rather than having the actors on staff. For more discussion on the use of live theatre in museums, refer to The Language of Live Interpretation, which is a collection of papers presented after an international conference on the subject at the Canadian Museum of Civilization.

**First Person Interpretation:**

The interpreter assumes the identity of a person living in another time, and interacts with the visitors as that character. As with live theatre, there are both pros and cons to this style of interpretation. Again, this is a way of providing a personal level to the interpretation, and of interacting with the visitors. However, this method is very hard to pull off well. The amount of research and memorization involved in order to ensure authenticity is overwhelming to many interpreters. Also, this is a style that makes many visitors uncomfortable, as they do not understand the rules of engagement. In order to avoid surprise and intimidation, it should be prominently advertised before the visitor enters the gallery that there will be first person interpreters in the galleries. That way, visitors will know what to expect, and that they can approach the interpreters, or avoid them, as they wish.

**Third Person Costumed Interpretation:**

Interpreters were authentic period costume, but do not assume the identity of a character. The costume is used as a tool in providing information and interpretation, but does not change the identity of the interpreter. This style is often used in conjunction with the demonstrations and artisans. This method, while still engaging the visitor and providing a visual element, is much easier to accomplish effectively. A costumed interpreter can act as a roving interpreter, and can

provide many of the same services, such a further layer of information, providing direction to other sources of information, etc.

**Narrative:**

An interpreter relates a story based upon documentary evidence, such as a diary entry, letter, newspaper account, or "oral history." Or, the interpreter relates legend or folklore. This style can easily and effectively be combined with the tour, or with costumed interpretation, to create a dynamic and informative method. Of course, the narratives do not have to be supplied by a live interpreter, although this is probably more effective. Narrative can be recorded and played back. Stories have long been considered an effective way of engaging the audience, and of making the learner actually interested in learning.

## TRAINING

A live interpreter can be trained to respond to visitor need sin a way that an audio guide or computer cannot. It is very important to train interpreters so that not only do they have extensive knowledge on the exhibits, but also that they know how to communicate this knowledge effectively. An interpreter must have fairly extensive knowledge of what he/she is trying to interpret. An interpreter must also have knowledge of how to interpret the artifacts or exhibits. Training must be provided on all of these elements, in order for an interpreter to be able to perform his/her job. Every visitor deserves the right information, delivered in a way that they can understand. It will never be possible for an interpreter to match every learning style of every visitor, but if the interpreter is trained to understand his/her own learning style preferences teaching styles, it will help them address those styles they tend to avoid.

Staff, and volunteers, should be trained to work with all members of the public. Although the most intensive training should be given to the interpretive staff and volunteers, a form of sensitivity or customer service training should be given to everybody within the museum, including everybody from the maintenance staff, to the management. In this way, everyone within the museum will be aware of and sensitive to various needs, and will make the site that much more committed to providing access to all.

Such training is an identified need within the museum community, but most sites within Ontario, when training, only briefly touch upon the topic of sensitivity, and within most Volunteer and Interpretation manuals and handbooks, the "Special Needs" section merely informs where to locate wheelchairs and elevators. It is understood that most museums are strained for resources, and that this is not usually an area of staff expertise. There are ways to provide some training, at little effort and cost to the site. There are many community organizations, which have staff who are trained in such matters. Partnerships can be developed, in which trained professionals can provide this sensitivity and awareness training. However, people who work in this sector are just as overworked as museum professionals, and their time is not readily available.

Another possible solution would be to make use of the tonnes of resources already developed on how to work with Special Needs groups. These include videos, training programs already in existence, manuals, etc. These are in the hands of personnel departments and community organizations, and are available. This is one way to at least provide some awareness and sensitivity in museum staff and volunteers, but this material is not specific to museums and their activities, and is therefore limited in its usefulness. Such materials will not help an interpreter actually work with the exhibits, the artifacts and the visitors, to communicate the interpretive messages of the museum.

Many educational institutions have training systems or manuals to help guide instruction to a more diverse population. These materials cover not only sensitivity, but also provide strategies for reading comprehension, explaining concepts, catering to learning styles and strengths, and so on. These materials will be more useful in training museum staff and volunteers to communicate and to remove barriers to learning, but they are still not complete. But with various sources of training compiled, a fairly complete system could be established.

## CONCLUSION

It must be kept in mind that most of what is done to aid specific groups also aids the general public, and creates a more meaningful visit for all. But providing access to specific members of the public should not be restricted to segregated programs. By doing just this, groups are alienated, and forced into the role of "the other" rather than being embraced and welcomed into the museum community. All effort should be taken to incorporate all people into the general interpretation program and to remove as many barriers as possible to learning.

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# Appendix 1

# THE INTELLECTUALLY ACCESSIBLE MUSEUM

## PROJECT OUTLINE

**Purpose:**

Due to a changing social climate and the changing nature of museums, museums are working towards making themselves more accessible to a wider section of the public. Currently, the majority of the research and programming being done towards this end addresses physical access to museums and their collections, with little emphasis placed on making the knowledge contained in museums intellectually accessible. This research will help address this oversight. The purpose of this project is to work in collaboration with community members and the museum community to research the key issues concerning learning in museums and its ability to provide optimum learning opportunities for individuals with a Learning Disability. The research will result in new interpretive strategies/techniques for the Canadian Canoe Museum, as well as a manual for other heritage sites to use in making their own sites more intellectually accessible. The Trent Centre for Community Based Education and The Canadian Canoe Museum are working together to make museum learning more effective for individuals with Learning Disabilities, and in doing so, will help make museum learning more effective for everyone.

**Focus Question:**

How can a museum and its interpretive staff provide an optimum learning opportunity for individuals with Learning Disabilities, through the interpretive messages and programs.

**Core Questions:**

- What is the educational role of the museum
- How do people learn, both inside and out of the museum
- How do people with a learning disability learn
- What problems are created by the relationship of the above three questions
- What is currently known/being done in museums to address these issues
- How can information/strategies being developed in the field of Special Needs education be applied specifically to museums

**Research Methodology:**

- Literature searches
- Interviews/correspondence with professionals in both the museum and learning disability fields, including on-line discussion and forums
- Analysis of primary materials gathered from other sites and programs
- Primary data to be gathered through focus group research, to be outlined in further detail below

**Focus Group Research:**

There will be four categories, with two focus groups in each – one group of individuals with Learning Disabilities, and one control group. The four categories will be:

- Elementary school-aged students
- Secondary school-aged students
- Post-secondary students
- General adult population

Two sessions will be held. The first will take place between November 20 and 30, 2000. The main questions to be addressed will include:

1. How participants feel museums aid/fail them as learners
2. How well participants interact with/learn from exhibits and interpreters
3. How participants feel the museum can improve their access to information

The session will take place in 3 parts: First an introduction and open-ended question regarding museums in general, and how they address question one. Part 2 will include a tour of a selected gallery with an interpreter, with observation on question two. For part 3 participants will return to the boardroom, to continue open-ended questioning to determine some solutions for question number 3.

The second session will take place in late February, 2001. It will include a tour of the same gallery, using new techniques and strategies which will have been developed in response to the information gained in session one. The tour will be followed by a focus group discussion evaluating the new techniques and strategies.

- Research Evaluation Report for session one, including:
    - Abstract
    - Introduction
    - Methods
    - Results
    - Conclusions
    - Bibliography
- Research report examining the core questions
- Development of new strategies/techniques to convey the interpretive messages of a selected gallery/galleries of The Canadian Canoe Museum. These strategies/techniques will be evaluated in Session two, with alterations made accordingly.
- Using The Canadian Canoe Museum as a case study, the development of a manual to aid other sites/interpreters to make their own interpretive programs more intellectually accessible to all individuals

N.B. All research will be conducted in accordance with the Trent University Ethics of Research Policy.

**INFORMED CONSENT**
**Research of the Trent Centre for Community-Based Education and Haliburton U-Links**

Please provide the subject with a brief description of the nature and purpose of the research and the anticipated products, the researcher's name, address, phone number, and related information.

1. Research title: The Intellectually Accessible Museum

2a. Interviewee's name:_____

3a. Name of researcher: Heather MacDonald

3b. Telephone number and email address: (705) 749-9725 heamaderyn@hotmail.com

4. Date of research activity: January 11, 2001
5a. Faculty Supervisor: Dale Standen 5b. Telephone number: 748-1011

I, the undersigned, voluntarily agree that the researcher may use the information and quotations from our interview, and afterwards store them, subject to the following conditions:

- ☐ No conditions
- ☐ That my anonymity be guaranteed
- ☐ That I be given the opportunity to see and comment on a rough draft of the research product, before the final copy is submitted
- ☐ Other conditions (please specify)

_____

Form of interaction between the researcher and interviewee (e.g. taped interview, questionnaire, focus group, etc.)
Focus Group

_____ _____
(Signature of person giving consent) (Date)

_____ _____
(Signature of the researcher) (Date)

# Appendix 2

**Date of Research:** November 24, 2000
**Location of Research:** The Canadian Canoe Museum, Peterborough
**Researcher:** Heather MacDonald

**Introduction:**
The Canadian Canoe Museum and the Trent Centre for Community Based Education are working together and with the community to research the key issues concerning learning in museums and their ability to provide optimum learning opportunities for individuals with a Learning Disability. This case study was conducted to supplement research addressing the relationship between learning disabilities and museums, and also to question students first hand on what they think about museum education and how museums can best serve their needs.

**Methodology:**

Local schools were contacted to find an interested teacher. A Learning and Lifeskills class from Prince of Wales Elementary School was chosen. This class was composed of eight partially integrated students, in grades 4 to 7, with various learning disabilities. After arrival and introductions students were taken on a tour by a CCM interpreter. This interpreter had no previous training with learning disabilities, as is consistent with most museum interpreters. Some restraints were created by the fact that the museum is under construction and the exhibits are not yet complete. Text is not in place and with most classes in the future, education programs rather than tours will be the norm. However, all interpretive messages are the same whether on a tour or a program, and the interpreter did her best to make the tour interactive, as she does with all tours.

(Part 1) While on tour, the researcher accompanied the group, and recorded observations of actions, emotions and interests under the broad headings of "signs of interest" and "signs of boredom." Following a brief washroom break, students were reassembled in the board room for a semi-structured discussion. (Part 2) The teacher and parent volunteers remained in the room with the students. Ideally, no authority figures should be present, but due to the sometimes unpredictable behaviour of some of the participants, it was decided to include the chaperones in

the discussion. The teacher acted as a mediator between students and the facilitator, to make sure everyone understood what the other was trying to say. The researcher acted as facilitator, and the interpreter acted as a scribe, in addition to recording the session. Seven broad questions, with smaller probing questions were posed to the students. The seven broad questions were:

- Do you have a favourite museum, and what makes it your favourite?
- What was your favourite thing at the Canadian Canoe Museum and why?
- Were there any parts of the tour that you didn't like, or that bored you?
- Did you find out about anything today that you didn't know about before?
- What is the most interesting thing you found out about today?
- Did Jen (interpreter) explain things well to you? Did she give you enough information, or not enough information?
- What suggestions do you have to make this the best museum to visit?

Following the discussion the researcher and scribe compiled and compared notes and observations.

**Results and Discussion:**

Part 1. Behaviour was not a problem. The children were active and needed careful attention, but they were not misbehaving. There was a definite time limit to how long the interpreter could hold their attention. At each stop the interpreter could talk for 3 to 4 minutes before the students walked away. Once one student wandered away, the others soon followed. Overall, after 30 to 35 minutes the students became completely uninterested and asked if the tour was over yet, and could they please have a break.

The same 2 students sat back and remained unimpressed throughout the tour. They only showed signs of interest when they were allowed to interact with the exhibits. All of the students remained interested longer when they were actually touching and holding things. When the

interpreter was discussing the Aboriginal Trade exhibit, she provided props for the children to handle. At this point, even the two consistently unimpressed students joined in. The students were asked to spread out and pretend to trade their objects. The intention was to illustrate that desirable objects could travel great distances, and pass through many hands, through trade. The students did this enthusiastically, but as soon as they were spread out and moving farther away they were less able to concentrate on the interpreter, and concentrated more on the objects than on what she was trying to tell them about trade. At least some of the children absorbed and understood the point of the exercise, as one boy, when returning a prop stated that he really liked the prop and joked with the interpreter that he would trade her something for it.

Objects, although they interested the students, proved to be distracting, and competition for the interpreter. As soon as the interpreter allowed the students to touch birch bark building supplies, they pushed in to get their hands on as much as possible. The interpreter had difficulty regaining their attention, but finally did so by discussing with them the props themselves.

The students were definitely listening throughout the tour, and thinking about what was being discussed. There were constantly hands raised to ask questions, and comments such as "Sweet!" "this is so cool!" "I want to live here!" were overheard. The children exhibited very concrete thinking patterns. For example, one student noticed that the birch bark canoes were in worse shape than the dugout canoes and looked older. On that basis he would not believe the interpreter that the birch bark were in fact newer. Another student, when asked how much he thought the fur trade canoe could carry, thought for a moment then asked, first how much did the canoe itself weigh? These students were interested enough to ask questions, to think about questions, and to apply information to their own lives.

Part 2. It was often hard to keep the discussion on track. When asked about favourite museums, the students who did respond mentioned such non-traditional museums as the Ontario Science Centre, car museums, the Sports Hall of Fame, the Wax Museum, and the Hershey Factory!

Reasons given for these choices all emphasized their interactiveness and the students own interest in the subject matter. Descriptions used included "cool stuff" and "you get to play with stuff."

When asked about their tour at the Canadian Canoe Museum, everyone indicated that they had fund, they liked looking at the boats and everyone had picked out a favourite boat. It was mentioned by several students that their favourite part of the tour was the trading activity. When asked if there was anything they didn't like, the first thing mentioned was that the place wasn't finished.

One student brought up the fact that there should be canoe to touch and to get in. It didn't have to be real, it just had to look real. The same child went on enthusiastically to describe a "canoe activity" he would like which sounded suspiciously like an amusement part ride. All of the students agreed that would be just great!

The students had many suggestions for hands-on activities and they were much more interested in discussing these than in discussing what they had learned. However, they did have great suggestions on how to illustrate things through doing them, such as learning to paddle, to snowshoe, to actually cook and try the food that the voyageurs ate…

**Conclusions:**

These students are very interested and enthusiastic about the museum. Certain things have to be followed to maintain their interest:

- Follow the time limits – 3 to 4 minutes per subject, for a maximum of 30 to 40 minutes without a break.
- Hands-on activities! However, the objects and activities must complement, not compete with what the interpreter is saying
- Concrete facts, rather than abstract thoughts.

In a real setting, these students will be integrated and therefore these factors must be kept in mind when creating education programs. This case study of course only outlines group settings, and research on walk-in visitors is advised.

# Appendix 3

# THE INTELLECTUALLY ACCESSIBLE MUSEUM

**Date of Research:** December 8, 2000
**Location of Research:** The Canadian Canoe Museum, Peterborough
**Researcher:** Heather MacDonald

**Introduction:**

The Canadian Canoe Museum and the Trent Centre for Community Based Education are working together, and with the community, to research the key issues concerning learning in museums and their ability to provide optimum learning opportunities for individuals with a Learning Disability. Part of this project is to examine the role museums play in education. This particular research addresses how teachers feel about museums as learning environments. The research was conducted to simply gain an idea of how some educators use/would like to use museums, and is in no way meant to be universal, or authoritative.

**Methodology:**

An Ontario Secondary School Teachers Federation Professional Development Day was held at the Canadian Canoe Museum, to discuss museum offerings for Secondary Teachers. That opportunity was taken to approach teachers for their opinions on the wider concept of learning in museums. A semi-structured interview method was used. Three general questions were developed:

- What is the role of museums in the field of education?
- Does this role relate/interact with what you as an educator are trying to do in the classroom?
- How can museums best fulfill the specified role?

These questions were printed on interview recording sheets, with room for responses. Teachers were randomly approached during breaks and transition periods, provided with information about the research project, and asked to participate. Each interview recording sheet was numbered, with a corresponding number on an Informed Consent form. Interviewees were asked to sign the consent form, with the assurance that confidentiality would be respected. Interviews were

conducted informally, and the three questions were posed in order. The interviewer wrote responses down on the recording sheet as accurately as possible. Out of approximately one hundred teachers in attendance, ten were approached to be interviewed; eight accepted, two declined. Those that declined gave as a reason tight time restrictions. Eight teachers out of one hundred are not a correct representation, however there were tight time restrictions in place. The responses of each interviewee were viewed together, and then the responses were divided under the heading of each question, in order to examine trends and commonalties.

**Results and Discussion:**

By far the biggest response on the role of the museum was the idea of the museum as an extension of the classroom. The museum is a resource for teachers and is there to supplement and augment the curriculum. The idea that museums can only address the traditional areas such as History, did appear, as did the idea that museums fulfill the "field trip requirement". It is obvious that the interviewed teachers want museums to have a place in the learning process. It is also obvious that museums can not be a "stand-alone" learning environment, with learning for learning's sake. Teachers want museums to help them out with the curriculum requirements only. Museums are definitely a part of the learning experience, but teachers want them to hold a very structured part, a part developed in partnership or consultation with teachers.

**What is the role of museums in the field of education?**

- Add historical perspective and relevance
- Strengthen an existing program in the schools
- Resource – especially for history teachers

- Learn skills
- Learn cultural heritage
- Brings history to life – makes it 3-D
- Preserve cultural diversity
- Significant educational tool
- They add a whole new dimension to education
- Create a visual
- Allows students to "live decades in an hour"
- Students can see what they hear about
- Offer potentially a short term enriched environment to support the curriculum
- Augment curriculum and enrich programs
- To supplement school programs
- There is a difference between curriculum and knowledge: curriculum can change at a whim and is driven by business interests. Museums are intellectual, separate from formal education. Nobody tells them what to teach. Museums can continue presenting knowledge. The curriculum doesn't address important things like where we came from.
- Provides professionals with a facility as a resource
- It should not be a place to "dump" students
- Should be a place of ongoing collaboration

**How does this role relate/interact with what you as an educator are trying to do in the classroom?**

- Museums are not something that pertain to my subject area. (Math and Phys Ed)
- In the classroom it is hard for students to conceptualize. The museum makes learning hands-on and practical.

- A classroom is four walls and hearsay. A museum is a larger classroom where students can almost live it, or experience it
- "supports directly"
- classes need one field trip a semester – museums provide that and it ties in directly to the curriculum
- a good visit can bring the students back in their own time
- with the new curriculum there is the culminating activity method of curriculum development; the culminating activity becomes an assessment tool; museum visits can be a culminating activity the ideal is always to have students learn experientially. A museum is somewhere between classroom learning/ reading and experiential learning – it can stage or imitate experiences, although it isn't the real thing
- traditionally, on museum visits, kids read a few labels then horsed around. To be an effective learning experience, the visit needs to be integrated with what the class is doing

**How can museums best fulfill their specified role?**

- Be user-friendly to young people – it can influence their like or dislike of museums
- Interactive exhibits
- In-classroom workshops or school visits would be great
- Be as authentic as possible – the real thing to scale
- Organizers have to look at concrete links to schools in curriculum –many links, not just the obvious ones like history
- Have to have someone on board who understands the curriculum
- By being a link, not just an add-on
- Keep it fun
- Work with the teacher well in advance, be interactive and experiential
- Follow up on the visit
- Place the visit in a meaningful context in which students can place their own experience

**Summary:**

Museums have a lot of expectations to live up to here. However, it must be remembered that this is just a sampling. A more comprehensive study would examine more teachers from various situations. It would also be interesting, and provide a more comprehensive result, to place the teachers' responses in the context of what educators today are experiencing, and to explore more in depth the meaning behind their responses. However, the purpose of this research was to provide a glance into teachers' perceptions, and not to produce an authoritative work.

# Appendix 4

**Date of Research:** January 11, 2001
**Location of Research:** The Canadian Canoe Museum, Peterborough
**Researcher:** Heather MacDonald

**Introduction:**
The Canadian Canoe Museum and the Trent Centre for Community Based Education are working together, and with the community to research the key issues concerning learning in museums and their ability to provide optimum learning opportunities for individuals with a learning disability. This part of the research was conducted to discuss and evaluate the findings of the researcher to date.

**Methodology:**

Professionals working with the LD community, within both schools and community organizations were contacted via phone, in person and by letter to introduce the researcher and to solicit participants. Respondents were then provided with an information package (Please see attachment) which outlined the agenda for the evening and presented the specific issues to be evaluated and discussed.

When participants arrived on the specified evening, they were asked to sign an informed consent form, in accordance with the Trent University Ethics Committee. Introductions were made and then a brief tour of the facilities was conducted by Dawn McColl, Collections Manager/Conservator, and Jen Burnard, Interpreter. Following the tour participants assembled in the board room for the discussion. The session was facilitated by the researcher and was recorded by Dawn McColl and Jen Burnard, as well as being recorded on audio tape.

The session took the form of a guided discussion without a set structure. Afterwards, the audio tape was transcribed and compared with the notes taken by the scribes. Notes were reorganized under the various topics in order to facilitate comprehension.

The largest constraint to this research was attracting enough participants. Although many people expressed keen interest in the project, many people were simply too busy to participate.

- There should be something that talks about the parts of the canoe. People who have never been in a boat don't know the parts.
- Dugout canoe? Someone with LD might assume that you dig it out of the ground. They have no concept of "dugout canoe." The museum needs to explain the idea, and the steps involved.
- A CD ROM audio guide with a choice of levels of information is a good idea. "Press button for more information if you want it" as opposed to presenting it as a higher level of information.
- Experiential learning and physical activities are how people with LD prove their competence to the world. They will however be a little more unorganized and will forget things. They need to see an end result. They need something tangible, something to take home, to show. Oh, and watch out for the tools.
- People with LD will ask questions that no one else will think to ask. Even though they are black and white thinkers, they are diverse thinkers.
- Often these kids aren't very confident in terms of engaging in things. Sometimes they are very reluctant to participate.
- While listening, many people need something in their hands to play with. Engage the hands and engage the mind.
- It is really important to have activities available to all visitors – hear stories, make things, etc.
- You have to give permission to touch. People always need to be reassured that they can touch.
- In terms of learning disabilities, you have to have a variety of sources of information, so the audio guide is almost a given.
- Provide lots of ways to provide information, so the visitor can pick and choose.
- FM Amplifiers. In school, some students are really uptight about using them because they don't want to look different. 8 out of 10 students will reject them.

- Kids are completely computer savvy. Even severely learning disabled students are highly motivated and confident with computers. The computer doesn't criticize if they get something wrong.
- There should be footsteps on the ground or arrows or something to guide people around. People are more comfortable with a guided flow through the exhibits.

**Conclusions:**

By far the biggest concern expressed was about the text. The participants were quite adamant that the text needs to be evaluated by outsiders, by visitors not familiar with the content of the text. And it needs to be made clearer. As for ways to get around the level of the text, providing a lot of choices was one the most recommended strategies, specifically an audio tour was very highly recommended.

This was just an initial look into The Canadian Canoe Museum's exhibits and interpretive program. At the time of the focus groups, neither the exhibits nor the programming was in place. Evaluation should continue after these are in place, and should continue on a regular basis.

**THE INTELLECTUALLY ACCESSIBLE MUSEUM**
**FOCUS GROUP MEETING**

Date: Thursday, January 11
Time: 7:00 pm until 9:00 pm
Location: The Canadian Canoe Museum
910 Monaghan Road (across from the Evinrude Centre)

I would like to thank you again for your interest in helping with this timely and important project. As promised, I have included more information about the specific issues to be discussed at the focus group. Discussion need not be limited to these topics, but they have been provided as a starting point. Please feel free to raise any other issues that you feel need to be addressed.

The activities for the evening will include a brief tour, approximately 30 minutes, of the exhibits in development. This will not be a typical interpretive/educational tour, but will be an orientation to the museum, and the learning spaces in development. Following the tour, approximately 1 to 1.5 hours will be used to discuss the issues outlined in the accompanying information. The focus group will be composed of 6 – 8 community members who work with individuals with Learning Disabilities. Also present will be Jen Burnard, a volunteer and interpretor at the museum, Dawn McColl, the Collections Manager, and myself. I should warn you in advance that the discussion will be recorded in writing, and will be recorded on audio tape. Also, because the research is being conducted through Trent University, it must comply with their research ethics committee, which requires signed consent forms from all participants. If you have any concerns about this, or about anything else, please don't hesitate to contact me. I can be reached by email at heamaderyn@hotmail.com, or by phone at 749-9725. I look forward to seeing you again at the focus group meeting.
Sincerely,

Heather MacDonald

- What should the nature of the educational role of museums be in regards to individuals with Learning Disabilities? What should museums attempt to provide?
- What differences/problems do you see between how museums are organized, how they present information, and how individuals with LD learn?
- What educational theories will best accommodate individuals with LD? For example, realism, in which exhibits are displayed by the nature of the artifact, with no room for interpretation or meaning-making, or idealism, which allows for meaning to be made by the viewer, and will provide multiple perspectives to allow the visitor to draw various conclusions.
- It has been suggested that an advance orientation to the museum will help a visitor feel more at ease, and better prepared to learn. Do you agree? What kind of advance orientation would be most effective: conceptual, which provides information about the conceptual structure of the exhibits; overview, stating what can be seen, done, or learned, or; topographic, which provides simplified maps. What format, or combination of formats, would be most useful, for example: oral instructions, video/audio tapes, pamplets/booklets, panels, etc.
- What advantages or disadvantages do you see in the various kinds of museum experiences, such as guided tours, self-guided tours (whether structured or unstructured) or audio guide tours
- Overstimulation and distraction are proven barriers to learning. A museum by its very nature provides both. How might this be addressed?
- A museum often has complex messages it wishes to express. Please find attached a sample of the stated interpretive messages and text from one of the Canadian Canoe Museum's exhibits. Is this information intellectually accessible to an individual with LD?
- What do you think about the following suggestions for compensatory aides for various Learning Disabilites?
    - audio guides, with either a set linear route, or random, with information provided at the touch of a button
    - FM amplifiers, for guided tours, or school group education programs
    - provision of a list of new vocabulary

- large print version of text, either in full, or an overview
- a backpack activity pack program, in which backpacks with various props and activities are provided, to be used within the exhibits
- text supplements, such as activities to gain information from the exhibit without necessarily using the text panels, visual depictions to illustrate key concepts, timelines, whether verbal or pictoral, etc.

- How should these aides be marketed and made available in order to make sure anyone feels comfortable making use of them?
- Can reading strategies, such as Adjunt questioning, or Directed Reading and Thinking Activity, be applied to either guided, or self-guided tours, as a way to promote interaction with the text, or to gain more from what the tour guide is saying?
- In this age of classroom integration, how can a museum educator best accommodate individuals within a class who have a Learning Disability? For example, should there be prior communication between the classroom teach and the museum educator to identify students who may need special considerations? Would pre-visit materials, such as orientation material and new vocabulary be helpful?