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The Museum and the School

Abstract

This paper is a summary of research done by the Groupe de recherche sur l'éducation et les musées (GREM) to develop a teaching model for the use of museums for educational purposes. The background of the study is presented, followed by a description of the basic findings. In the first section, essential characteristics of educational programs relating to the learning process, the use of a theme, and objectives are analyzed. This is followed by a description of some program activities held before, during, and after a museum visit. In conclusion, some of the research methods are discussed.

Résumé

Cet article résume les travaux conduits par le Groupe de recherche sur l'éducation et les musées afin de développer un modèle didactique d'utilisation des musées à des fins éducatives. Les origines de la recherche sont d'abord décrites. Puis, les résultats les plus fondamentaux sont présentés. Premièrement, les caractéristiques essentielles des programmes éducatifs se rapportant à la démarche d'apprentissage, à l'utilisation d'un thème et aux objectifs sont analysées. Par la suite, des activités tenues avant, pendant et après la visite au musée illustrent le modèle. En conclusion, quelques pistes de recherche sont indiquées.

During a ten-year period the authors have directed a research groupe known as the *Groupe de recherche sur l'éducation et les musées* (GREM), or the Research Group on Education and Museums. This project, which has involved university professors, graduate students, curators, educational officials, and teachers, has developed a teaching model for the use of museums for educational purposes. The purpose of this paper is to give an analysis and summary of part of the findings of this research in such a way as to draw some conclusions about the educational collaboration that can apply to museums and schools, in general.

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Background of the Study

Even though the museum (which, along with libraries, is one of the oldest cultural institutions) and schools have existed for a long time, and even if considerable research has been done with, on, and in both of them, very little research has been conducted with the view of linking the two institutions. Terry Zeller (1989), a professor at Northern Illinois University, wrote : “ The absence of a clearly articulated theoretical base still haunts museum educators ” (p. 38). As far back as 1932, Paul Marshall Rea, principal investigator of research funded by the Carnegie Foundation, said : “ ...few methods of juvenile museum education have become universal. There seems to be more interest in devising new small experiments than in the more prosaic work of extending to the whole field such methods as have been found most generally effective ” (p. 25). With these statements in mind, we have attempted to develop a pedagogical model for museums and schools.

Although the research reported here was conducted in several museums, the major focus was on the *Musée David M. Stewart*, a museum which specializes in the colonial history of Canada and Quebec. Located on Ile-Sainte-Hélène between Montreal and Longueuil, in the middle of the St. Lawrence River, it occupied a building erected in 1824 by the English army. It served in turn as a small fort, a barracks, and a prison. In 1760, historians report, the French General, Lévis, burned his flags here rather than surrender them to the English invader. The museum was founded in 1955 by a wealthy philanthropist of Scottish descent, Davis M. Stewart, who focused it mainly on the French, and then the English colonization period of Quebec in the 17th, 18th, and 19th centuries. It has remained true to the orientation requested by its founder (Allard & Boucher, 1988). In the past few years, the museum has become laboratory for experimentation with educational theories and assumptions about the educational relationship of schools and museums.

In cooperation with the Museum's management and a number of school boards, in particular the *Commission des écoles catholiques de Montréal*, the writers have, in recent years, developed, tested, and evaluated educational programs for children at the upper elementary level (age 9-11). The theme of the programs has been the arrival and settlement of the French colonists in the St. Lawrence Valley in the 17th and 18th centuries. The programs involved a day-long activity at the museum. Each activity, preceded by a two-week preparatory phase in the classroom, was completed by a two-week follow-up phase, again in the classroom (Allard & Vadeboncoeur, 1993).

The purpose of this research was to analyze in a school-museum context the four components of a pedagogical situation, noted by Legendre (1988) : purpose, subject, method, and milieu. Each of these was examined independently and in relationship to one another. The focus of this specific

study was on the nature of museum visits (traditional, guided tour, interactive guided tour, visit with a personal guide, or unaccompanied visit); on learning strategies (listening, observation, presentation, hands-on activities, and role-playing); on the preparation phase (intensive preparation, abbreviated preparation); on the follow-up phase (intensive follow-up, abbreviated follow-up, and absence of follow-up); on the duration of the activity at the museum (one day or two); and on the intellectual skills used by student visitors.

The experience was assessed in specific as well as general terms by means of several qualitative and quantitative information-gathering tools, such as formal and informal observations, formal and informal discussions, and cognitive and affective questionnaires made up of closed and open-ended questions. Observation grids were developed and validated for measurement of intellectual skills and aesthetic responses. In addition the researchers developed a cognitive questionnaire to deal with facts, events, and certain concepts (e. g., century, migration) as well as intellectual and technical skills; and, lastly, an affective questionnaire was developed to deal with attitudes towards the museum and the social sciences (Allard & Boucher, 1991c). These different, complementary instruments enabled the researchers to observe the progress of the educational program, while the data collected were useful in analyzing various factors and in developing a preliminary synthesis.

The comments which follow will identify the major similarities and differences among the various studies conducted to date. Following this are some proposals which may become guidelines or working hypotheses. These are based on comparisons between the results obtained by students in the affective and intellectual pretests and posttests and have been confirmed by formal and informal interviews, given by various participants, and by formal and informal observations developed by the researchers involved. The basic findings of this study are described here.

Results of the Study

All school groups participating in the educational programs of this study, or in similar programs, made significant progress at two levels: cognitive (facts, concepts, skills) and affective (attitudes towards the museum). This is the first generalization that can be deduced from the collected data, which were subjected to statistical and qualitative analysis. In summary, the museum can be a place of learning and development.

The results of the various types of visits to the museum reveal that, for most of the groups involved, the more the activities require active participation by the student-visitors, the greater the progress in terms of both the cognitive level of

development and attitudes towards the museum. While all student-visitors made progress, those who participated in an activity in which they used a personal guide and were required to reply individually (or as part of a team) to questions, for which the answers could be found in the museum, obtained better results than those who were offered a traditional guided tour (Boucher & Allard, 1988). In other words, the greater the student involvement, the greater their progress.

As with pedagogy in general, there is no particular activity that guarantees academic success (Legendre, 1988), and the same holds true for museum pedagogy (Berry & Mayer, 1989; Lamarche, 1986). The personal guide cannot be relied upon solely as a means of certain success in presenting it to students. Even if there is no certain formula for success in learning, it is important to recognize the existence of trends that may give direction to thinking and the organization of action. In that sense, then, more active participation by the student leads to better results in learning, and thus is one of those trends. In visiting museums, the type of visit selected, as well as the learning strategies and teaching methods used, should definitely take this trend into account. In addition, though, there must be recognition of the specific conditions in which these trends could be used. The layout of a museum, the age of the students, and the skills of the instructors are all factors that influence choice (Allard & Boucher, 1991c). So, while some activities may lend themselves to student participation, the conditions under which they operate should also be taken into account (Falk, 1983).

Third, it was noted that students who participated in educational programs that included a follow-up phase to the museum visit made better progress in terms of both cognitive skills and attitudes toward the museum than those who took part in programs with no follow-up component (Allard & Boucher, 1991a). Does this indicate symbiosis or complementarity between schools and museums? This question remains unanswered.

Finally, a large majority of the groups observed showed no significant change in attitude toward any specific school subject regardless of the type of visit and the type of preparation and follow-up (Allard, 1993).

Characteristics of Educational Programs

An analysis of the various educational programs in museums, developed, tested, and evaluated by this research team, reveals positive results in terms of the student-advisor. As a result the following proposals have been made :

The learning process

This research supports the belief that museum visits can mean more to students than a recreational venture or an end-of-year reward. visits can also offer more than book knowledge (Falk & Balling, 1982) and, furthermore, enable students to “learn how to learn” in the museum, a novel learning environment. By providing students with the necessary tools they need to use the various educational methods available (exhibits, labels, displays) and by training them how to process intellectually the various data, their understanding of the items displayed can be increased.

Museum visits can motivate students to begin a learning process similar to that followed quite naturally by a person doing research, in other words, seeking answers to one's own questions (Dibella & Steele, 1981). This is the type of learning process that is favoured in the “curricula” suggested by the Quebec Ministry of Education (1981), especially in the social sciences. The process, which may be adapted to students of different ages, draws on inductive reasoning, and develops in a flexible and dynamic framework that requires student participation. It involves four steps : development of questions, data gathering, analysis of data, and synthesis of data.

The development of a question is the first step in the learning process (Martinello, Kennedy, Kromer, Hepter, & Russo, 1986). In this step, students are essentially invited to observe an object or activity, question their reactions, express their initial perceptions, ask questions, and, as much as possible, develop hypotheses. The activity begins with a situation closely related to a student's interests and concerns. This, then, leads to questions. Since the students are in the process of becoming researchers, they must define a problem or question. This question development phase takes place in the classroom where students formulate the questions they will try to answer at the museum. It will also prepare their approach to data gathering.

The second step of the process, data gathering, takes place at the museum. In this phase, students gather data as a means of seeking answers to their questions. At the museum, they can see and sometimes touch objects that reflect certain aspects of another environment or another time. The concrete nature of this exercise is likely to help them (Lawton, Felton, & Henry, 1976). At the museum, students are shown how to use human and material objects to gather the data they require.

Once students have completed their research at the museum, they must sort and analyse the data they have gathered in order to reach conclusions (Younger, 1985). This is the third step in the process and the beginning of the follow-up activities in classe. By decoding, classifying, and comparing

information, students are encouraged to interpret and identify relationships amongst the data they have gathered. They can answer their own questions, verify their hypotheses, and develop new conclusions.

The new conclusions are the focus of the fourth and final phase of the learning process, and they complete the circle of the educational project. During synthesis, students reorganize their data and present others with conclusions based on their research (Michaud, 1991).

The process proposed in this paper integrates, both synchronically and diachronically, fine series of interacting factors. It is based on an intellectual process (development of questions, data gathering, analysis and synthesis) of the object (interrogation, observation, appropriation) involving three steps (before, during, and after the museum visit), three points in time (before, during, and after the museum visit), and two locations (school and museum).

Table 1

A school museum process

Before	- School	- Preparation	- Development of questions	- Integration of object
<hr/>				
During	- Museum	- Completion	- Data gathering and analysis	- Observation of object
<hr/>				
After	- School	- Follow-up	- Analysis and synthesis	- Appropriation of object

Of course, in practice, the development of questions carries over into the completion phase and continues at the museum : analysis is refined after the museum visit; and synthesis begins at the museum. This schematic diagram (see Table 1) should not restrict the dynamics of the real-life situation. It does, however, give a visual presentation of a process that begins and continues at certain levels, and brings together various elements of a learning situation that goes beyond the narrow confines of either the school or museum.

The use of a theme

The educational programs developed as part of this research are not limited to integrating an activity into a holistic process. They are also based on a theme that flows from matching the collection of a specific museum with the school

curriculum. The resulting program, then, is not designed for every school group, but for a specific group. For example, the theme of the educational program at the *Musée David M. Stewart* was developed for ten-year-old children because the collection corresponded to the school curriculum of that age group (Allard et Boucher, 1988). It is therefore the curriculum content that determines the choice of theme, taking into account the museum's collection.

Objectives of the educational programs

The education programs proposed by this research team were designed to achieve both varied and limited objectives. Learning is too often limited to simply the knowledge of facts — knowledge that is then evaluated in terms of the student's capacity to memorize. But knowledge also includes the development of concepts and skills (Martin, Falk, & Balling, 1981). Traditionally, educational programs at museums involved nothing more than a transmission of facts, events, and dates (Alexander, 1982). The program used at the *Musée David M. Stewart* broadened the scope of objectives by having the students acquire some facts about the settlement of the first colonists in the St. Lawrence Valley, and to develop concepts about words such as migration and century, as well as skills that included reading a time-line and a map. The program was designed to appeal to the students' intellect holistically and was not concerned with merely evaluating information provided by the museum guide or educator and the students' capacity to memorize facts (Allard & Boucher, 1988). This open approach to learning helps students and instructors achieve objectives that are not only cognitive in nature, but also affective, particularly in terms of attitudes, and has a liberating effect on the creative capacities of all participants. Such an approach maximizes the influence of the student-visitor on the development of the educational program.

The multiplication of objectives, should not lead to an uncontrolled growth of concepts. Indeed, they should be limited. A museum guide normally tries to provide visitors with the greatest amount of information in the shortest possible time. The retention of such information is very poor, if not insignificant, and usually anecdotal and incidental information distracts the visitor's attention. It is essential that the conceptual content of information should be adapted to the student visitor's capacity to understand, because their capacity will determine the nature and quality of information transmitted and taught (Martinello, Kennedy, Kromer, Hepter, & Russo, 1986).

Program Activities

Activities preceding the museum visit

Various types of activities for preparing students for a museum were tried in this study. Three categories of preparatory activities were found to be effective as a result of experiments. They deal with basic knowledge required to understand the activity, the theme to be studied, and museum outing itself, respectively (Allard & Boucher, 1991c).

The first category of activities relates to basic needs, that is, the basic knowledge students require to be able to derive maximum benefit from a museum visit. First, they should have mastered the basic school program knowledge before dealing with the proposed theme. Second, students should have mastered the basic skills relating to the museum activity, namely, the knowledge needed to interpret and understand exhibit labels, interpret a plan, and analyze an item from different perspectives. At the very least, such basic information can be given in the form of preliminary remarks and not the focus of activities (see examples 1 and 2).

Example 1

Title : *My Life*

Outline : *The theme at the museum is the lifestyle of the New France colonists. To carry out this project and evoke the past, these students must be able to move back in time. As a prerequisite, they must be able to remember their own past, to identify certain events in their lives and place these events on a time line.*

Objective : *The purpose of this project is to determine if the students are capable of (a) identifying the main events in their own lives ; (b) placing these events in chronological order; and (c) situating these events on a time line.*

Example 2

Title : *Objects That Have A History*

Outline : *This project familiarizes the students with ways to 'interrogate' an object. This skill is required for the museum activities. First of all, the students make a list of questions that can be asked about an object. Then, starting with an old object or a representation, they proceed to describe the object in detail along with the various events surrounding it. These data are then used to set up a time line.*

Objective : *The purpose of this project is to make the student aware that a historic object or document is a trace of the past that cannot reveal anything unless it is questioned.*

The second category of activities, which are designed to provide an introduction to the theme, clarify the guidelines of the study. They act as a link between the objectives of the school program and those of the museum activity. They also help the students understand the need to visit the museum in order to continue the learning process. These activities correspond to an exploratory phase. In the classroom, students perform initial research on questions related to the theme. The activities should awaken the students' curiosity and interest so that they will want to pursue their data gathering at the museum (see example 3).

Example 3

Title : *Where Do We Come From*

Outline : *This preparatory project introduces the theme La couverture du chemin qui marche. At first, the student is asked to reflect upon the arrival of immigrants to Canada and to do a brief interview with an immigrant. Secondly, the student is introduced to the hypothesis that originally almost all Canadian and Québécois ancestors were themselves immigrants. This hypothesis leads into a question period about the arrival of the first colonists to Québec, their settlement, and their lifestyle.*

Objective : *The purpose of this project is to bring the student to formulate hypotheses on the arrival, the settling, and the lifestyle of the first immigrants.*

The last category of activities to be planned prior to the museum visit concern the technical organization of the museum outing and are designed to prepare students for the data gathering process. Preparation for the outing may begin with a discussion of the definition of a museum and its major functions, and continue with a presentation of the museum and its collections (see example 4).

Example 4

Title : *The Museum*

Outline : *During this activity, the students prepare for the visit to the museum. After being questioned on what a museum is and what its main functions are, the students realize it is there that they will find the answers to their questions about the first settlers. A document is issued describing the collections and the activities at the museum. An itinerary to be followed from the school is prepared on a map of the city.*

Objective : *The purpose of this project is to familiarize the students with the museum to be visited.*

The museum visit

Although the visit to the museum can be handled in several ways, the most appropriate strategy will depend on the age of the students, the theme selected for study, and the human and material resources available. It is necessary to take into account several pedagogical principles should be taken into account, these being :

Plan the museum activities. When a school group goes to a museum, original activities suited to the museum should be planned and one should avoid repeating those that can be carried out in the classroom. That does not mean that every educational strategy used in school should be banished from the museum. Some strategies are not confined to either schools or the museums; it is a matter of adapting them by using the resources of the museum, and not asking the museum to take the school's place or vice versa.

Encourage data gathering. The visit to the museum is part of the data gathering phase. If the visit is seen as an integral part of a process that involves a preparatory and a follow-up phase, the information gathered at the museum can be used by the students when they return to class.

Encourage data gathering. Studies have shown that people retain only 20% of what they hear as compared to 90% of what they say while doing something (Cloutier, 1974). For the museum visit, strategies that involve every aspect of the student as an individual should be used. If they are to benefit from the experience, they should participate as fully as possible.

Make the visit " fun ". Play is the principal activity of very young children and is still important for school-age children. A museum visit which incorporates play activities will catch the students' interest and stimulate their motivation.

Plan some free time. Museum activities are often of short duration and some people believe students should always be kept busy. This is true to some degree, but time should always be set aside to allow the students to explore and to discover the museum on their own. They will then linger to examine objects that have not been included in the educational program activities.

In this research, these principles have been respected through the use of the individual guidebook approach. Upon arrival at the museum, the children are welcomed by a museum educator who explains to them the various regulations. The children are invited on a tour of the museum and each are given a guidebook containing questions. The children then, either in groups or individually, tour the museum looking for the answers. After an initial period of

excitement, the children become quiet and visit at their own rhythm as they become accustomed to the museum. They stop to observe exhibits, not only to find answers, but out of personal interest (Allard & Boucher, 1988). The individual guidebook is structured along the lines of the principles previously outlined, thus, the project, begun in the classroom, encourages the gathering of data, stimulates student participation and interests, and allows for free time.

Among the museum using the individual guidebook approach are the *Musée historique d'Alma* Harvey & Larouche, 1990) and the *Musée J. Armand Bombardier*, located in Valcourt (Létourneau & Standish, 1991). The results obtained in their experience confirm those of this research.

Activities after the museum visit

Once the students have visited the museum, the data gathering is finished. To complete their learning process and derive every possible benefit from the museum visit, students should, when returning to class, begin to analyse and synthesize the information they have collected, thus integrating the knowledge. the museum visit becomes part of a continuous and permanent learning and educational process.

Analysis should provide students with an opportunity to compare and classify their data. After a brief review of the activities, they sort the data and set aside information that is uncertain or unrelated to the research. They then compare the data and identify obvious similarities and differences in various elements. The final step is to develop associations that can be grouped together and to categorize them by similar elements (example 5).

Example 5

Procedure : *Briefly go over the activities at the museum. Begin a group/class discussion : What were the projects about? What have you retained from this visit to the museum? What did you like best, least? Did the activities help you to obtain the information needed to answer your question?*

In regard to the subject of research, identify the similarities and the differences between the three periods of time : 20th century, approximately 100 years ago, 17th century. For these three periods, identify the effects of the means of lighting and heating of the effect kitchen utensils had on people's lifestyle.

The analyzed data then become part of a coherent whole that allows the students to discover the answers to the research questions and to draw conclusions. this is the synthesis phase, during which students develop conclusions based on their research, prepare their reports, and, lastly, present their findings. In addition to helping students absorb the knowledge they acquired at the museum, the process of synthesizing and presenting results

may also bring new issues to light and encourage students to pursue new research paths or plan new experiences.

Example 6

Procedure : *Sketch out a comparison chart. Invite a representative from each group to come and describe the results of their research to the class.*

After each group has expressed their views, point out the main characteristics of the lifestyle in the 17th century.

Organize an exhibit of life Autour du foyer (in the home) in the 17th century. Each group prepares an information both according to their subject of research. The booth should present illustrated texts and comparison charts produced by the students. Invite the other classes in the school to visit the exhibits. During this time the students inform and answer the visitors' questions.

Conclusion

The study at Ile-Sainte-Hélène led to similar studies in other museums with students at various levels. The results thus far obtained validate and reinforce the researchers' hypotheses and proposals (Blais, 1990; Boucher, 1986; Dauphin, 1985; Du Sablon, 1989; Harvey & Larouche, 1990; Lavoie, 1991; Letourneau & Standish, 1991; Michaud, 1991; Paquin & Ribes, 1991; Pelletier, 1991; Philibert, 1986; Toupin, 1991; Wetzl-Fairchild, 1992). The details of the experiments and their risks and difficulties, whether epistemological, methodological, or operational, were too lengthy to present here.

What can be concluded at this stage of the research? GREM has developed one of the first educational models that combines schools and museums for learning purposes. The model needs revision and should be tested in other museums besides *Musée David M. Stewart*. Other models are being considered for development, among them being one on the concepts to be learned in museums, another embracing the intellectual abilities required for using a museum, a third on grasping historical perspectives, and a fourth one on the role of the different staff involved in schools and museums. Finally, a new model on the use of microcomputers in the museum is being initiated with teenage students. These studies can be useful for laying the fundamental bases of educational approaches useful not only in the museum but for other educational sites outside the school.

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