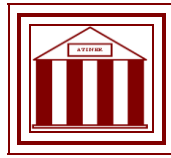


**Athens Institute for Education and Research  
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**The School-Museum Partnership in Brazil:  
What Does Researches Says?**

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## **The School-Museum Partnership in Brazil: What Does Researches Says?**

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### **Abstract**

The literature that discusses school-museum partnership is vast, and aims to establish parameters about the possible ways to accomplish this partnership. However, little has been done in order to approach these scientific productions and discuss their results. Based on these and considering the increasing amount of scientific literature that shows the partnership between these two educational sites, studies called 'State of the Art' are needed. They are descriptive and executing, and are still little found in Brazilian literature. So, this qualitative and quantitative research is defined in two interrelated goals: internationally, comprehend to survey researches that investigate partnership between schools and science museums so as to discuss the pros and cons of this educational cooperation, and nationally, from a 'State of the Art' study, it identifies and describes the main features and trends of master dissertations and doctoral thesis submitted in the period between 1970 and 2010.

**Keywords:** state of the art, partnership museum-school, formal and non-formal education.

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## **Introduction**

Some studies that investigate the intrinsic value of school visits to museum and science centers indicate that participating in the visit has a cognitive gain evident when compared to students who do not participate (Griffin 2004). These places have increasingly become educational sites that are partners and complementary to formal education, enabling the increasing of the scientific knowledge by society.

This article is an inventorial and descriptive study, entitled 'State of the Art', seeking to analyze how the relationship between formal and non-formal education is being discussed in Brazilian researches. Our aim is to survey and identify the main features and trends of master and doctoral theses presented between 1970 and 2010, focusing on the partnership museum-school. Prior to this study, we carried out a survey of foreign articles on the subject, from countries such as Australia, Spain, USA, Finland, France, Israel and Italy. The goal were comprehend and to survey researches that investigate partnership between schools and science museums so as to discuss the pros and cons of this educational cooperation. The methodological approach called State of the Art describes and analyzes the academic production in a given field of knowledge, allowing a better understanding of the production of the searched area, identifying its main trends and results (Ferreira 2002).

## **The Museum-School Partnership**

Usually, the science taught in school is seen by students as outdated and discouraging, so much so that many researchers warn about the necessity to include activities in non-formal education spaces in the topics taught in science classes (Braund and Reiss 2006). It is a fact that the movement of thinking about traditional school integrated to other environments is becoming more and more common in today's society, emerging in different fields of knowledge. This integration is a movement that intertwines the student's education as a citizen, which includes the learning that takes place in different educational media, whether formal, non-formal or informal.

There is no unanimous definition that includes these three educational areas, however, we understand as formal education the one represented by the traditional school, which has a defined didactic and pedagogical structure in which the student advances to the next level when they pass in exams as agreed upon a didactic contract. Non-formal education, which can be represented, for example, by science museums, provides the learner with varied possibilities of choices and is characterized by an education that does not have a previously established didactic contract, and, most often is motivated by the learner's desire to learn. Informal education is reflected by the immediate everyday life, that is, in friendships, in the family and in the different spaces of socialization. However, there is no clear border between these three spheres; it is necessary

to analyze the adopted educational approach, and not only the physical space of each area, to reach a particular definition.

Therefore, we saw a need to reflect on the museum-school partnership: on the one hand, non-formal education spaces can play an important role in the students' teaching and learning process, nurture the curiosity of visitors, and create a sense that seduce and arouse the students' curiosity; on the other hand, formal education can legitimize the public disclosure of science of these spaces before society.

## **Findings and Data Analysis**

### *Formal and Non-Formal Education: An Overview of Research on the International Stage*

The partnership between formal and non-formal education is a delicate one and involves various factors such as organizational (displacement and preparation of students, choice of activities), personal (parents authorization for the visit, anxiety, accompanying teacher) and institutional (scheduling, availability, physical space, school schedule). According to Alderoqui (2006), this relationship oftentimes is confrontational by both the school and the non-formal education spaces. In general, schools claim that the issues addressed in the visits have no connection to what is being studied in the classroom and that teachers do not receive instructions on how to continue to study these issues after the visit is over. We begin, then, our presentation addressing research in the international stage.

Köptcke (2002), in a survey on the French scene, reinforces some problematic aspects of the partnership between formal and non-formal arena. According to the author, the surveyed teachers expressed a feeling of exclusion from the design process of activities offered to their students. In another study, Köptcke (2003) explained that teachers should see the non-formal education spaces as didactic and pedagogic doors, developing complementary activities to those carried out in classrooms.

A research coordinated by an Italian group (Pilo et al. 2011) emphasized the importance of involving the teacher in the visit activities to non-formal education spaces. For Pilo et al. (2011), the importance of non-formal education spaces, particularly science centers, is to maximize, through their resources, the school's actions. In this sense, the teacher plays a key role on the full development of activities.

Corroborating the findings above, the Israelis Tal and Morag (2007) followed, for three years, school visits to four museums of Natural History in Israel and analyzed the learning process due to the carried out actions. Among the results, they showed that few teachers were involved in the production and approach of the activities studied with students and even less, in assisting the mediator to answer their students' questions. The little learning accomplished by students during the visits was also part of the research findings.

For the Argentinian Marta Dujovne (2006), this approach only makes sense if both institutions work together. According to her, if the non-formal

education spaces, such as science centers, want to reflect on their interaction with the school, they should seek to know the school's expectations when being visited, and how these visits fit on their institutional policy. Based on these, a study by Allard et al (1995) in Montreal, Canada, argues that visits to a non-formal education space should include, besides the moment of visitation, an earlier stage of preparing students in school, and a later stage, in the classroom, work with what was learned during the visit.

The US group CAISE (Center for Advancement of Informal Science Education), when investigating the relationship between formal and non-formal education environments, supports this partnership as a tool to promote science education to society. The disclosure of one of its reports (Bevan et al. 2010) shows that this type of partnership, when well planned, brings gains for both institutions. This closeness can provide the school, among other things, with the acquaintance and the investigation of new instructional materials by teachers, improvement in the students' academic performance, promoting a conceptual understanding of science, besides strengthening the students' positive actions towards science (Bevan et al. 2010, p.14).

For the Finnish Hannu Salmi (2012), non-formal spaces, particularly science museums, have a great socio-cultural and educational potential that can contribute to this formation. The author presents some interconnections, in which he proposes a form of dialogue between the positions of these spaces and their relationship with the triad science-technology-education.

Griffin and Symington (1997) investigated the strategies used by teachers before, during and after the visits to the Australian Museum and the Science Education Centre in Sydney, Australia. According to them, "the teachers were generally able to articulate some purpose for the excursion, however, only half of the teachers were able to give a purpose that could be considered related to the students' learning of content or skills" (Griffin & Symington 1997, p. 768). The authors mention that little effort has been made to connect and correlate the topics studied in class to those developed during the visits.

The Spaniards Guisasola and Morentin (2007), point out that it is difficult to teach completely unknown concepts to students during a visit, so they suggest that it is essential to integrate them to the classroom program in order to maximize the benefits of a visit.

From the works presented, we understood that the approach between formal and non-formal education increases the teachers' possibilities and their teaching strategies. It is essential to work together when planning activities in order to limit improvisations at the visit. These international researches clearly show the importance of reflecting on actions leading to such partnerships, which bring gains to both Institutions, improve student learning, involve several organizational, institutional and personal elements. In addition, visiting students get a clear cognitive gain when compared to non-visiting students.

*"State of the Art" Research on Non-Formal Education: an Analysis from Brazilian Doctoral Theses and Master Dissertations*

So far, we presented an overview of research at the international level, which discussed the approach between formal and non-formal education,

which evidenced the importance, care and obstacles it faces. However, this movement had a direct impact on the Brazilian scene, whether through specific actions such as science fairs or research work, such as master dissertations and doctoral theses. Trying to show how this movement has occurred in the country, we present the 'State of the Art' of Brazilian research on the subject, highlighting the features and trends of the theses and dissertations published between 1970 and 2010.

Martins (2006), at the University of São Paulo's Zoology Museum, analyzed the relationship between the intentions and the practices of museum educators and school teachers. Based on Allard and Boucher's ideas (1991) on the moments of a visit (before, during and after), the dissertation sought to confront the teachers' expectations of teachers and museum educators with their practice at a particular time: the school visit to the museum. The researcher concluded that teachers and museum educators have similar expectations about the educational potential of museums exhibitions.

Sápiras (2007) focused her study to school visits to the Institute Butantan Biological Museum (IBM), Sao Paulo, adopting five categories as her empirical evidence: perceptive discussion, conceptual discussion, connective conversation, strategic conversation, and emotional conversation (Allen 2002 *apud* Sápiras 2007). Her subjects were students from the sixth to the ninth grade. The visits focused on the IBM snakes terrace. Sápiras (2007) stated that the conceptual conversations category was more frequent than the others, which she credited to the monitors' participation. Among her findings, she reveals that Allen's categories really helped in understanding the way students apprehended the new information presented at the visit, thus, opening new possibilities of studies related to the learning processes in museums and to the schools perception.

Porto (2008) focused on the impact of visits to museum exhibitions as motivation to the 'Learning Science' project. He developed and took to a public school in Taguatinga city, a region in Midwest Brazil, a museum exhibition on Optics. This was a study in which the museum went to the school, different from those presented so far. The objective was to observe the behavior of High School students when visiting the exhibition and to discuss the concepts involved. Three were the moments discussed in the qualitative research, from a case study perspective: before and after the visit, and the moment in the classroom with the teacher who collaborated with the work. The author emphasizes that the partnership museum-school, in this case the museum exhibition going to school, had a very positive influence on the educational process.

Bertelli (2010) worked on the museum-school relationship in order to find possible identities in the institutional discourse, in which she analyzed the identities, images and roles played by museums, focusing on the institutional discourses about this relationship. She sought, through an interview with the coordinator of the education sector of a science museum in the city of Belo Horizonte, Minas Gerais state, as well as through document analysis, to map the points of curricular proposals in which the work with museums is highlighted and, on the other hand, the museum's view about this approach to

formal education. As for the museums, she shows that the emphasis is on their social and educational aspects and on the search for closer ties with visitors. She also adds that the curricular proposals ignore the museum's educational identity.

With the question, "What knowledge and strategies can contribute to science popularization acts coming from the praxis of an emancipatory pedagogical political project?" Vasconcellos (2008) conducted a doctoral research in which she discussed and reflected upon the act of popularizing science by the Museum of Life (ML) and neighboring public schools, both located in a socioeconomically disadvantaged neighborhood of the city of Rio de Janeiro. For the author, the approach between school-museum should aim at the development of actions and reflections that seek answers to the needs and collective interests. Summing up, Vasconcellos (2008) believes that a reflection-action on the approach school-museum towards "the construction of new cultural hegemony" is essential for a "more equitable and responsible society."

Bejarano (1994) analyzed the activities offered by the Campinas Dynamic Museum of Sciences (CDMS) in order to evaluate the influences shared by the school-museum relationship. The author interviewed representatives of the CDMS technical and teaching staff, whom he called protagonists, and teachers who used their services, whom he called users. As a result, he points out that most teachers seek the museum with the aim of having practical/experimental activities with their students, which are difficult to achieve in the traditional school. In addition, other teachers extend the activities experienced during the visit, contextualizing it with the reality of their school. Some teachers also revealed, after the visit, they noticed the restricted dimension of their Sciences textbook and even admitted finding conceptual errors in them.

Having as one of its goals to survey the universe of museums related to geological science in Brazil, Lopes (1988) conducted a research on the interface education-geology-museology. The research aimed at presenting/studying moments in the history of museums in order to identify the origins of the geological science. As results, the author mentions that museological practices are "impregnated with methodologies" of the traditional school. As promotion for this finding, the researcher carried out a diagnosis of Brazilian museums related to Geology determining, among other factors, which museums are these, their working and acting conditions as centers of education and cultural diffusion to society.

Fahl (2003), seeking to identify the marks of school education of Sciences found in non-formal education spaces, analyzed the exhibits of Campinas Dynamic Museum of Sciences (CDMS), in the state of São Paulo and the Science Station in the capital. In order to map points of confluence between shows and models of education present in these spaces, she defined as her reference for data analysis, prospects for education in science such as, traditional, rediscovered, technicalities, CTS (technocratic and decisionist) and constructivist. As a means of data collection, the author brings her on-site observations and interviews with staff of the sciences exhibition. Her results shows that in some moments, specific approaches between these non-formal



education spaces with science teaching of the traditional school can take place, but with specific features and characteristics for the science station and the CDMS.

In order to strengthen the museum-school relationship, the project "Teacher's Meeting: Knowing the Museum of Life (ML)" carried out by Reis (2005) at the ML sought ways to optimize the visit to this place, making teachers better acquainted with the museum permanent exhibitions, combining the contents worked in the classroom with the experience in the museum. From interviews with teachers, the researcher found that the reason for the teacher's participation in the project is extrinsic, i.e., it is determined by external reasons. On the other hand, it also reveals that teachers consider that the visit to the ML expands their possibilities of working with Science and, as expected, they believe that during a visit the topics previously studied in class can be reviewed and extended.

With the work "Science, culture, museums, schools and young people: what are the relationships?" Cazelli (2005) investigated the effects of some characteristics associated with young people and their immediate social environment on the opportunities for access to cultural institutions, such as museums. Since this is a research on people, data was collected through a self-administered questionnaire to 2,298 students of the 8th grade, from 48 schools in the city of Rio de Janeiro. Professionals directly involved with organizing the visit also answered the questionnaire. The aim was to investigate socio-demographic characteristics (in general) and the pattern of access to museums (in more detail) considering, more particularly, family practices to mobilize material and symbolic resources to young people. In her remarks, Cazelli reveals that,

[In the family context], different forms of cultural capital, combined with social capital intertwined in family relationships, are particularly relevant in the increased chances of access to museums. In the school context, access to museums has specificities related to the school system [being necessary to think about strategies to grant people's access to such places] (2005, p. 07, *our translation*).

Soares (2010) investigated the perceptions of teachers who visited the Science and Technology Museum (STM) of the Pontifical Catholic University of Rio Grande do Sul (PCURS) with their students. The work has the objective of understanding the expectations and motivations of science teachers who plan visits of students to the TSM as well as understanding the relationships that teachers establish between the visit and the formal teaching of science. One hundred eighty five teachers, who were randomly interviewed during visits, took part in the research. Three categories were obtained from the analysis of the empirical material: previous experiences and personal history; teachers' motivations and expectations; and the museum-school relationship. Finally, Soares (2010) is emphatic when saying that it is "*essential to develop*

*new skills and competencies of teachers when engaging them in activities in non-formal education settings" (p. 114).*

Ending this "State of the Art" of Brazilian research that addressed non-formal education spaces and their approach to the school, we discuss a survey carried out by Cruz (2010), which clearly explains in his remarks that most teachers sought to complement the school in these spaces. For most teachers, the infrastructure and transport issues are still obstacles that hinder the students' going to Brazilian museums. According to them, public policies to improve this issue would improve the approach between the two institutions, allowing the maximization of what is seen in the classroom with activities in museums. Another suggestion made by teachers to improve visitation conditions is the development of a booklet to help during the visits, particularly to the National Museum.

The analyzes of the Brazilian master dissertations and doctoral thesis focusing on this partnership showed, however, an inadequate diffusion and socialization of these academic productions to the wider educational system. Museums can be an extension and completion of the classroom, a way for students to live the situations and experiments developed theoretically in class.

## **Conclusion**

This research sought to show, through academic international studies, the importance and necessity of understanding the formal and non-formal education relationship in order to accomplish a more effective and consistent teaching of science. Focusing our attention on the Brazilian scene, we used the State of the Art research to describe and analyze the academic production of this field of knowledge from the study of theses and dissertations produced in the period between 1970 and 2010.

The fact that researching on education in science museums has a multidisciplinary character and its own historicity in the Brazilian scenario is pointed out. This also happens in other parts of the world. As an example, a recent study in the United States found that more than 70% of cultural and scientific institutions of the country have programs specifically designed for school audiences. Among these programs, there are the complementary activities to classrooms, integrated into the academic core as well as professional development programs for teachers (Bevan et al. 2010).

From the foregoing, we conclude that the partnership between formal and non-formal education is an emerging theme in contemporary society. If closer relations between educational institutions, on the one hand, require a greater involvement of teachers, on the other hand, they will also demand a reflection of non-formal education institutions.

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