

Educational opportunities used by formal education of the Museum of Natural History 1st generation. The effect of educational activities that take place in the museum of Zoology of the University of Patras in building the concept of classification of animals from preschoolers.

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Introduction

Scientific knowledge can be spread either through formal education around the school science curriculum or through the informal or non-formal education as a preoccupation with technological problems at home, watching television program and visit museums (Unesco, 1986; Escot, 1999). The involvement of school activities in non formal educational environments, such as museums, is an educational activity which may contribute to cognitive and emotional state of children (Ramey-Gassert et al , 1994; Allard & Boucher, 1998; Griffin, 2004; Koliopoulos, 2005). The answer to this basic research question, namely whether students are able to have cognitive and emotional progress visiting exhibits or exhibition in the museum of natural sciences, although in some cases it is positive, it is not easy to be answered due to the diversity of the museum of natural sciences presents both in phenomenological and epistemological level (Schiele, 2001; Koliopoulos, 2005) and secondly, the lack of a commonly accepted theoretical framework that regards education and learning in informal and non-formal educational environments such as the museum of natural science (Anderson et al., 2003; Anderson et al., 2010; Martin, 2004).

It seems, therefore, that research on the pedagogical and educational value of school visits and activities mostly in museums science is still in a descriptive level and there is a need to obtain more and better endowed data. This need is even greater in the level of preschool education. There are few data reported in the cognitive and emotional state of the preschool children in the environment of a museum of natural science, data that result from the educational activities closely related to the nature and characteristics of the visit to the museum of natural sciences. In contrast, there are several research data showing that preschoolers are able to build even precursor models typical concepts of natural science in an environment of formal education (Howe, 1993; Zogza et al. 2001; Zogza & Papamichael, 2000; Ravanis, 1996; Ravanis, 2005).

Such research is conducted within the research paradigm of -constructive approach of teaching and learning which recognizes the need to teach organic integration of mental representations

students have the concepts of science and scientific procedures (Ravanis, 2005; Koliopoulos, 2005). The main research question which was formulated earlier is therefore possible to rephrase it as follows: Is it possible to design appropriate educational activities within the research paradigm of constructive approach to teaching and learning to be cognitive and emotional progress of children of preschool age in educational environments that combine formal and non-formal educational characteristics?

A typical form of science museum is the museum of natural history. These museums are museums exhibits the so-called first generation is the oldest and most conventional type of museum where visitors can admire collections of original exhibits. In the case of zoological museums, for example, the exhibits are mostly stuffed animals. The main objective of this 1st generation science museum is to collect, preserve, preservation, documentation and display a range of fauna (Museum International, 2000; ICOM, 2003).

In recent years formed a tendency to renew those museums in order to approach both the general public and students and teachers from different grades. It has been noted that efforts are made to these museums on the one hand to reconfigure their hardware to make the communication more effective and secondly to create a special relationship with the field of education to (re) design their educational policy (Diamond, 2000; Gouskou, 2006). The university museums of natural history, both internationally and in Greece, is a typical museum exhibits first generation which are major visits of school groups mainly preschoolers. Rarely, exhibits in museums first generation becomes visibly on the transformation of scientific knowledge into folk or school knowledge. This means that on this type of museum collections, the meanings are not undertaken by the museum itself, but it is up to researchers, visitors and the educational role of the museum. The formal education can help to create different meanings Transaction collective undertaking the design of educational activities, both in the museum and school, which arise from the demands of school curricula.

A field of knowledge which is possible to teach in early childhood education and, simultaneously, using, the suitable meaning to the collections of the natural history museum is the field of the classification of animals. The concept of classifying animals is usually implicit in museums Zoology 1st generation. Alongside is an interesting field of teaching from early ages in the context of formal schooling (Giordan 2008). Finally, regarding the construction of the concept of preschoolers several researchers indicate that children of this age use more

anthropomorphic or functional criteria (eg, habitat and movement) rather than morphological criteria for categorizing different animals (Bell, 1981; Trowbrigde & Mintzes, 1988; Guichard, 1998; Hammann & Beyrhuber, 2003; Zogza, 2006). From the foregoing it is clear that it is entitled to design a researcher work which will have as its main objective to provide answers to the following research questions which is, moreover, specificity question of principle raised: Is it possible to design appropriate teaching activities closely related to the space of a museum Zoology 1st generation of the research paradigm of constructive approach to teaching and learning, provided cognitive and emotional progress in the concept of classification of animals by preschoolers?

Objectives - Assumptions of the research work

The aim of this research is to explore and highlight the characteristics and the special role of didactic activities that evolve during the visit of the preschool children at university zoological museum (specifically the museum of Zoology, Department of Biology, University of Patras) by the concept of classification of animals at the level of preschool education.

More specifically sought to investigate what are the design principles of didactic activities that take place in the museum, and the nature and characteristics of the conceptual, methodological and cultural component used in these knowledge affect the cognitive and emotional state of children in the subject of the classification of animals. Especially if you consider how and why these activities lead children to recognize animal categories (typological species) (Hickman et al, 200; Mayr, 1982) pointing out common morphological features in each category. The design, implementation and evaluation of these activities will be based on (a) current research in the field of science education relevant to the constructive approach of teaching and learning in science (Guichard, 1998; Ravanis, 2005; Zogza et al , 2001; Koliopoulos, 2006; Zogza, 2006) and (b) recent research conducted in the field of Scientific Museology are studying the influence of informal and non-formal education in the advancement of knowledge and the development of positive attitudes toward physical science students of different levels of education (Paquin, 1995; Allard & Boucher, 1998; Girault, 2003; Griffin, 2004; Koliopoulos, 2005).

Methodological elements of research

The research that will be conducting classified the type of so-called developmental research. This is a consistent improve-way simultaneous thrust of teaching, mainly at the level of the

development of learning activities and through ignorance of a teaching-theory (Astolfi, 1993; Lijnse, 1995). The methodological model to be used in three phases (Koliopoulos, 2005):

(i) the phase of theoretical analysis and the establishment of teaching activities and relevant teaching materials to be used in them. The study and use of relevant literature will lead to the creation of appropriate activities which in principle tested in a preliminary implementation of (pilot study), in order to perform necessary corrections, adjustments and modifications. In this phase finalized the objectives and content of the prior teaching activities (activities detection of cognitive performances of children for the classification of animals and preparation for the visit to the museum), *during* (observation activities of museum objects and formulate hypotheses relating to the intended school knowledge) and *after* (building activities and evaluation of on-persecuted school knowledge) visiting the Museum of Zoology University of Patras. Also, we designed and constructed the relevant educational material and prepare research tools and evaluation assigned to each activity.

(ii) the stage of implementation of didactic activities in the preschool grounds mainly in the museum of the Zoology Museum of the University of Patras. During this phase collected data from a series of tests and observations on the knowledge and attitudes of the children during the visit, which associated with corresponding data taken at the beginning and end of the didactic intervention (pre and post tests). We used the techniques of questionnaire, semi-structured interview and observation group (Gkouskou, 2011; Gkouskou & Koliopoulos, 2011; Koliopoulos, Gkouskou & Aparaki, 2012).

(iii) the stage of data analysis and evaluation of teaching activities and the related teaching materials. In this phase will be used quantitative and mainly qualitative analysis of educational research in order to correlate the nature and characteristics of the proposed educational activities during the visit to the museum with any cognitive and emotional progress will occur. Finally, I authored the definitive text of the thesis and will make suggestions for the utilization of research findings and the widespread implementation of educational programs that will result.

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