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Reviewed Article:

Vacation in the Past - Effective Heritage Interpretation through Education

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Heritage sites are breathing memories from the past; however, visitors can hardly imagine or experience the ancient life on the spot. In fact, these visits are supposed to conjure up journeys back into the past and park managers should facilitate such experiences by the most effective means possible in order to help tourists gain an immersive 'past experience'. Therefore, designing high quality and memorable visitor experiences is required in order to be profitable in tourism, and at the same time create awareness of heritage preservation.

Accordingly, the paper presents the memorable visitor experience design and the corresponding teaching and learning theories for planning interpretative activities in museums and heritage sites. The results of the research demonstrate which interpretative tool is the most effective among 9-11 year-old students, in terms of a memorable experience and long-lasting learning.

> This experiment is designed to help museums, archaeological parks and heritage sites, improve their interpretation programs and draw awareness on the changing characteristics of learning. Overall, the results of the research demonstrate, that applying non-formal learning methods, such as experiential-learning or problem-based learning with the support of technological features (...), can enhance the learning process.

Introduction

Nowadays, people tend to associate excitement, interest, time traveling, and adventure with open-air museums, instead of a boring place where touching and tasting are not allowed. The purpose of changing of the attitude in interpreting historical facts is due to a switch in demand. Visitors are not interested in pure historical facts alone and even reconstructed empty houses, artefacts placed behind glass showcases and scientific descriptions which are hard to understand are not sufficient for the visitor experience. In order to maintain visitors' enhancement, heritage sites must focus on their target market's needs and expectations by using the advantages of technology, development of cultural sciences and experimental archaeology. These include education and learning, experience creation tools which are an integral part of a new way of interpreting the past.

This action has two important purposes; firstly, heritage sites heavily depend on the income they generate by themselves thus attracting more people is crucial in the current economic situation. Therefore, creating products for tourism is essential. Secondly, new tools and methods had been investigated to present the past to create sustainable tourism and draw people's attention on preserving our historical and natural heritage.

There is a rising demand on involving larger audiences in the process of conserving our fading cultural treasures. Archaeological parks need to present their importance for the society, to consider them unique and significant to preserve for future generations. The question is how they can make their sites, essentially ancient ruins from the past, attractive enough to encourage people to visit and in the future care about them. From a marketing point of view, these ancient sites have to be sold to visitors, but the point is not to sell them as a one-time experience, but a long-lasting life-time memory.

Essentially, heritage education is a life-long learning approach concerning the creation of awareness of tangible and intangible cultural heritage and promoting interculturalism and tolerance by involving participants in various non-formal methods. Consequently, heritage education plays a critical role in the intellectual development of primary and secondary school children in terms of open-mindedness and drawing awareness and interest in the first place. As a result, emphasising importance on preserving our heritage at a young age might cause a favourable change in our society. Therefore, the research focuses on the improvement of the learning experience of primary school children.

Memorable Experience Design

Heritage sites are at a greater risk of passing out of mind regarding the changing needs and wants of modern tourists. Visitors seek unique experiences and even though an archaeological park and its monuments are exclusive, the tourist often considers these ruins similar to each other and tedious. However, the problem is not with the ruins itself, but how these monuments are presented and communicated to the audience. More often than not, heritage visitors are not able to imagine how ancient life was or how the buildings looked in ancient times. In other words, they might consider heritage sites as museums with archaeological finds displayed behind glass, and not as real breathing memories from the past. These visits are supposed to be a journey back into ancient times and park managers should facilitate this journey with the most effective manner to help tourists immerse themselves within this 'past experience'. Admittedly, there are some smaller and larger initiatives, but still heritage tourists often get lost (physically and mentally) in voluminous archaeological parks due to lack of information, signposting, motivation, entertainment or the careless interpretation of the site.

Thanks to technology there are numerous digital solutions on offer in the market which tourists could use to fill the interpretation gap and gain more information. Such technology includes Augmented Reality or Gamification which helps visitors immerse themselves within the past through virtual reality or game-play elements. Several mobile applications are available to download and with the help of GPS coordinates, it guides, entertains and educates visitors throughout the parks. Another proven initiative is Live Interpretation, which uses open-air museums to interpret the ancient life and vivify the historic reconstructions. Essentially, all these initiatives are created to offer a unique, memorable visitor experience by which heritage sites can differentiate themselves and attract more visitors. But what does a memorable immersive visitor experience entail?

According to a recent study (Boswijk, Peelen and Olthof, 2012)., memorable experience includes:

- Increased attention and focus on the activity;
- Anticipation, awaiting;

- The involvement of 5 senses;
- Forgetting about time;
- Emotional attachment;
- Intrinsic motivation during a particular process;
- Real life context, connection with raw material;
- Involvement of exploring and doing;
- Playful elements;
- The activities are in equilibrium with the individual's ability.

Accordingly, visitors anticipate a memorable visitor experience when they undergo a particular learning process. In that case, tourists understand the displayed objects, their functions and by gaining new knowledge, they are able to enjoy and form emotional attachments which leads to the intention to preserve. Consequently, heritage site managers should understand the importance of interpretation and exploit its potential for economic and cultural growth. Therefore, memorable tourist experience design, which in our case is learning experience design, is the key concept for development. In other words, understanding how visitors learn best and planning a staged experience according to this acknowledgement might lead to a positive change in the attitude of individuals (i.e. tourists).

Memorable Learning Experience

Considering the learning processes in heritage sites, two theories may come to mind: Informal and Self-Directed learning processes. Turning to the teaching and facilitating phase, various combination of teaching tools can be used to achieve learning outcomes, including mainly Informal, Non-Formal and technological mediated tools such as Edutainment and M-learning. As it was pointed out previously, in case of heritage sites, the creation of a memorable tourist experience is associated with the design of learning experiences. Indeed, the following table tends to summarize the connection between the appropriate elements of a memorable experience with the joint learning processes and its inherent teaching methods. The table gives an overview and examples on how the elements of a memorable experience could be transmitted and the visitor experience enhanced with various learning and teaching practices. Therefore, serves a useful tool in designing educational programmes which at the same time become memorable experiences as well.

Memorable Experience Elements	Learning Processes, Teaching Methods and Tools
Increased attention and	Edutainment a great example of how to keep learners engaged and stimulating them intellectually to focus on the learning materials mediated. (Edutopia, 2016).

focus on the activity	
Anticipation, awaiting	Anticipation refers to the curiosity towards the learning subject which basically considered as intrinsic motivation.
The involvement of 5 senses	Experiential learning is one of the processes emphasizing the relevance of utilizing all senses (Kolb, 1984), nevertheless it is also based on Constructionist learning theory, whereby students construct their own knowledge by exploiting their own abilities and senses (Cakir, 2008).
Forgetting about time	Enhance learner's attention on the learning material by emotional or intellectual stimulations, might cause losing track of time.
Emotional attachment	The long-lasting effect of learning experience is intensified if emotional empathy is involved in the process. Same in Experiential learning or Informal learning, the joint activities stimulate the emotional level by involving all senses, hence learning is amplified. As well as, educational entertainment, what is a concept based learning method that links learning activities to enjoyment. Edutainment rely on an informal game-like graphic media, hence attract learners by stimulating their emotions (Buckingham and Scanlon, 2000).
Intrinsic motivation during the particular process	Intrinsic motivation is the ground of all effective learning processes and inevitable for a long-lasting learning experience. Regarding Self-Directed learning, intrinsic motivation is the key factor for self-development (Garrison, 1997).
Real life context, connection with raw material	Several studies have indicated that effective learning takes place in real life situations, where the unique learning environment and the intercourse with exact materials are available. The process of Situated cognition refers to on-site, in situation learning which effectiveness highly relies on the learning environment (Brown, Collins and Duguid, 1989). In another learning theory, cognition regarded as the result of processes "distributed across objects, individuals, artefacts, and tools in the environment" (Resnick, Levine and Teasley, 1991).
Involvement of exploring and doing	"For the things, we have to learn before we can do them, we learn by doing them" (Aristotle, 1998). Following Aristotle, Felicia (2011) and Kolb (1984), information, skills are learned best by experientially. The Experiential Learning Cycle including: doing, observing, thinking and planning, is the framework to facilitate an experiential learning experience in an effective manner (Kolb, 1984). In addition, role-plays enable participants to immerse in unfamiliar situations, personalities, eras and anticipate new experiences by doing (Pinkham, Kaefer and Neuman, 2012).
Playful elements	"Learning by playing may even be called the oldest learning method" (Hansen, 2009). The use of game and play elements during the learning or teaching process might be a common practice ever since humankind, however, teaching through play can be observed throughout the social evolution of teaching (Fogarty, Strimling and Laland, 2011). Play-based learning focusing on learning through playing with an approach towards conceptualized learning outcomes (Pinkham, Kaefer and

	Neuman, 2012). Game design elements often can be found in educational contexts, considering non-formal teaching methods, edutainment, m- or e-learning, AR, etc. Essentially, this new approach can be grouped together under the definition of Gamification (Huotari and Hamari, 2012).
The activities are in equilibrium with the individual's ability	Salomon and Almog (1998) defined constructionism as a learning process "whereby learners construct their own knowledge by applying their existing knowledge and mental skills to novel incoming information, constructing their own meanings as they go along." According to Wilson (1996), effective learning takes place, when the cognitive ability of learners harmonized with the task.

TABLE 1. THE COMPARISON OF MEMORABLE EXPERIENCE ELEMENTS WITH LEARNING PROCESSES AND METHODS.

It can likewise be seen from the research that the various learning theories and practices are overlapping each other, therefore it is hard to distinguish which one of the theories is the most effective to apply in cultural heritage sites. Particularly, it is a complex task to do, considering the different ways that individuals gain knowledge the best or how difficult it is to enhance learning by mixing the various methods without knowing what is going to be the exact learning outcome of that particular tool or method.

Results of the Research

The aim of the study is to investigate new, creative approaches to interpreting the past, the usage and history of findings and the cultural heritage, based on memorable experience design, learning and interpretation theories. Interpretation and learning might happen in different ways. However, in terms of long lasting learning experience it has not been researched which method is the most suitable for this target audience in heritage sites. The main audience of heritage sites and museums are children and school-groups, therefore, the study aims to compare three different interpretation methods (Paper-based, ICT-based and Live Interpretation) among 9-11-year old children and then analyse their performances and the Generic Learning Outcomes with the help of a survey and a knowledge test.

Analysis Framework

The analysis framework of learning experience in heritage sites is based on the GLO (Generic Learning Outcome) created by the LIRP (Learning Impact Research Project) (Hansen, 2014). The LIRP was an initiative of the Inspiring Learning for All (ILfA) and the Museums Libraries Archives Council (MLA) to measure the learning impact on visitors of museums, archives and libraries. The LIRP established with the help of the online toolkit and the concept of HLF (Heritage Learning Framework) the effectiveness of these interpreting methods (AR, Gamification, Interpretation etc.) offered by archaeological parks can be measured and analysed. Following the final aim of the study, the research intends to present which tool effected individual learning or how these tools shapes the visitor experience.

The activities were designed according to the previously presented learning and interpretation theories, a collaboration with archaeologists and museum educators. To design the activities, the various learning and teaching theories were used - formal, informal and non-formal education; Gamification elements, Live Interpretation methods and ICT solutions.

The research took place in a small museum of an archaeological site in Budaörs, Hungary, which presents the prehistoric and Roman-era history of the town. Four primary schools were invited to the Városi Régészeti Kiállítás in order to participate in the study. All of the 504 students participated in the experiment and therefore, the whole study population was attained in the pre- and the post-test. The research follows an Experimental approach which aims to investigate how a change of a specific treatment alters the outcome in a study. Therefore, each class was divided into smaller groups (circa 8-10 children per group) and each group attended different types of the interpretative program. After the activities, the children were asked to fill out a knowledge-based test, which with the learning of declarative information (historical facts, dates, words) were measured and then they filled in a survey which measured the Generic Learning Outcomes (skills, attitudes, creativity, et cetera). To study the long-lasting learning effect of each method, the students were subjected to the same knowledge-based test one week later.

Paper-based Interpretation

For the paper-based interpretation, a playful museum guide workbook was created which leads the children through the exhibition. The guide tells the brief history of the era and presents the archaeological findings and their use in form of quests, written activities, tasks et cetera. The workbook was directly designed for children combining various learning methods such as formal and informal learning. The tasks were designed according to constructionism and situated cognition learning processes (See Fig. 1).

ICT-based Interpretation

During the creation of the ICT activities, one of the challenges was to design a platform which transfers the same amount of information as the paper-based version, without any larger financial and technological investments. Therefore, the solution was to create an online platform which connected to the museum's website and was available on phones and tablets. The platform systematically follows the exhibition and presents the findings with multimedia tools. In each exhibition room, Roman numbers indicate the order of the showcases. Standing in front of the vitrine, the user first navigates through an informative presentation, which included the same content as the paper-based version. Secondly, in addition to the declarative information, by using the online version, children could gain a more diverse understanding of the exhibited artefacts by watching related videos and pictures. The exercises, which can be found in the paper-based version as well, were transformed to the platform as online quizzes, puzzles and crosswords (See Fig. 2).

Live interpretation

Live interpretation combines a wide range of informal educational methods with theatrical and experiential learning elements. The program called “Live History class”, where the students under the lead of the reenactor, travel back in time to experience and understand the life of ancients. The lecture starts with an introduction game, which facilitates immersion within the historical era and place. The children dress up like Romans and with the facilitator, they play a sacrificial ritual for Goddess Flora. After the ceremony, the time travel continues in the exhibition, where the showcases presented by the reenactor with games, stories and the tactile exhibition. Experiential-learning and its facilitation, was the task of the reenactor to involve the children in activities which help them to experience, understand and re-live the past. Such exercises were to participate in a Roman supper and gladiator game, using the authentic objects and enliven the exhibited artefacts. Besides, to gain a wider knowledge about the geography and history of the Roman Empire, large board games, wooden-puzzles helped the students “touch and understand” the ancient world (See Fig. 3).

Limitations

The limitations that arise from the nature of the experiment, the target audience and the available technological resources, need to be considered in order to interpret the data in a realistic manner. The Heritage Learning Framework heavily depends on the individual perception of the learning outcomes and this was considered during the analysis and interpreting of the results. The children were asked what they have learnt or to what extent in the five GLO categories. Since the judgement skills of 9-11 year old children have not been sufficiently developed, it should be considered that the results represent their own opinions about their learning outcomes. Hence, the experiment combines objective measurements in the form of the knowledge-based test and the analysis of the drawings. With the combination of the two analytical approaches a more realistic picture could be drawn.

Results

After the detailed analyzation of the outcomes of each GLO within each interpretation program, the following results were summarized (See Table 2).

GLOs	Paper-based	ICT	Live-Interpretation
Knowledge, Understanding	54,8%	63,3%	62,8%
Skills	65,4%	66,6%	58%
Values, Attitudes, Beliefs	72%	82%	73%
Creativity, Inspiration	74%	87%	84%
Behaviour	69%	80%	72%
Total	67%	76%	70%

TABLE 2. SUMMARY OF THE PARTICIPANTS' PERSONAL OPINIONS ABOUT THE ACQUIRED GENERIC LEARNING OUTCOMES.

The results are personal perceptions of 9-11 year-old children about their own learning outcome, therefore these results should be interpreted accordingly. Objective measures used were the (i) knowledge-based test, where the Live-Interpretation method turned out to be more efficient with 84% and the (ii) drawing analysis, the Live-Interpretation group attained a maximum score of 83%. The remainder of these data were the personal opinions of the participants and could not be interpreted as their learning outcomes. However, it was important to know how the children were thinking about their learning activities or which way they think they learned the most. By analysing their answers, further interpretation programs could be tailored based on their needs and interest.

Knowledge test after activity		Post-test (1 week later)	Analysis of drawings
Paper-based	64%	67%	58%
ICT-based	74%	70%	76%
Live-interpretation	79%	84%	83%

TABLE 3. RESULTS OF THE PRE- AND POST-TEST AND DRAWINGS.

Based on the results, it could be concluded that 9-11 year old primary school children in the region of Budapest, Hungary prefer to learn through ICT channels and use digital media to widen their knowledge. However, the Live-Interpretation method has a better, long-lasting effect on their learning outcomes, as well as having a creative impact on them, relative to the ICT method. Paper-based interpretation seems to be most effective in many categories although, it is not engaging the attention of this age group since they did not fill the workbook carefully or read it at all. The ICT method probably attained more satisfactory results because this type of interactive, computer mediated interpretation is exclusively made for that age-group, but is not common in the area. Regardless, the current generation grew up with digitalization, therefore museums and heritage sites should also keep pace and "go on digital".

The research focused on the learning outcomes of each interpretation method separately, however, further research could be carried out by combining the interpretation methods and analysing the effect on the GLOs.

This experiment is designed to help museums, archaeological parks and heritage sites, improve their interpretation programs and draw awareness on the changing characteristics of learning. Overall, the results of the research demonstrate, that applying non-formal learning methods, such as experiential-learning or problem-based learning with the support of technological features (such as M-learning and E-learning with a sense of creativity such as Gamification), can enhance the learning process. Thus, the visitor experience becomes

memorable. Consequently, a positive, unforgettable experience may correspond to a change in attitudes towards cultural heritage, and foster its preservation.

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FIG 1. PAPER-BASED INTERPRETATION

FIG 2. ICT-BASED INTERPRETATION

FIG 3. LIVE INTERPRETATION