

A Model of Service Learning and Outreach for Primary Education through Museums

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Abstract— This paper presents a model for the development of collaborative projects between universities, institutions for primary education and museums. The project described in this paper was realized as a service learning project through collaboration between students of Information Sciences from the Faculty of Humanities and Social Sciences, Museum of Arts and Crafts and elementary school “Cvjetno naselje”. As a result, the Museum gained young experts and valuable help in its outreach mission, while university students expanded their practical experience working with the museum pedagogue and leading school classes through the Museum. The evaluation of the service learning project addressed the role of field experiences in university education, service learning pedagogy and museum education partnerships.

Keywords— service learning pedagogy, museum education partnerships, elementary school, field experiences, interaction, learning opportunities

I. INTRODUCTION

We live in a time where the community relationship with a museum has drastically changed, as well as its role and function in the society. The museum transforms according to the users' needs and invites them to become participants, not merely observers. Museum is no longer a place for exhibitions and studying of cultural heritage artifacts, but a highly interactive place.

Recognizing this trend, many museums around the world offer different virtual tours and interactive e-learning tools for their virtual visitors (for example, the Louvre Museum¹ or the Smithsonian National Museum of Natural History²). Digital platforms helped museums to better expose their collections for the enjoyment of all who wish to have access to the cultural heritage [1]. Also, mobile applications have personalized the users' museum experiences, integrating collections, exhibitions and other museum offerings into a broad range of use-case scenarios [2].

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¹<http://musee.louvre.fr/visite-louvre/index.html?defaultView=rdc.s46.p01&lang=ENG>

²<http://www.mnh.si.edu/panoramas/>

On the other hand, educators employ virtual destination sites for their school curriculum, embedding virtual museum tours and interactive e-learning activities into traditional learning experiences. In a virtual museum, pupils can handle different paintings, entering their internal structure, which is unthinkable in a real museum [3]. As a consequence, the pupil's motivation to interact with the museum's exhibition pieces and collections gets a strong impetus.

As a response to the growth of the virtual destination sites and interactive learning materials available online, case studies have been developed in order to examine the impact of online museums on the knowledge and learning engagement when combined with traditional pedagogy [4]. Furthermore, the evaluation methodology has been designed to gather information on the strengths and weaknesses of multimedia interactive tools and resources for learning [5].

The concept of the museum audience today is very broad and may be classified by different criteria. The authors of this paper want to concentrate on just one specific type of the audience - the elementary school pupils (1st to 8th grade).

The reason for such a choice is the recognized issue - the lack of awareness of the importance of the museum that arises at this (young) age. Children at this age find museum visits mostly uninteresting, tiresome and consider them useless, no matter if they are organized by school or by their parents.

Also, the problem is that museums do not possess the collection content that is tailored to the needs and interests of the elementary school pupils. Furthermore, the problem is that elementary schools in Croatia mostly offer no extracurricular activities that would include visit to the institutions of cultural heritage as a planned and recommended action. Such museum visits happen only if a teacher decides to include a visit to the cultural institution as a part of field work or his subject curriculum. The consequence is obvious: if the children of this age do not get assigned a high quality educational guidance in museums, they will never be able to fully understand the importance of cultural inheritance and social context of museum exhibits.

Therefore, the aim of our project described in the following chapters was to highlight the importance of the systematically organized school visits to the museums. First of all, these visits are important because they are necessary for children and secondly, because they are vital for both museums and schools as public institutions.

Why children need a museum? What benefit pupils have from visiting a place that stores "a bunch of old artifacts"? The secret lies exactly in these artifacts and their content. The museums cover so many interdisciplinary themes from the core

school subjects that it is almost impossible to imagine a single lesson that could not be carried out in a museum. Connecting pupils emotionally and intellectually to the accurate stories of the past through the museum artifacts enhances their understanding of the present and shapes their meaning.

Museums are a suitable environment for the creation of experiences, gathering of information and for communication. In the process of learning, understanding and growing up, visual and auditory perception plays a significant role. Pupils' contact with the museum artifacts facilitates and enhances their access to history, encourages historical imagination and awakens interest in the historical events that are presented only as text in their school books and are therefore often uninteresting.

II. PROJECT PARTNERSHIP

Project *TiM: Ti i Muzej (Team: You and Museum)* emerged through collaboration between four Information and Communication Sciences students with the elementary school Cvjetno Naselje (in further text: School) and Museum of Arts and Crafts in Zagreb (in further text: Museum).

A. Museum of Arts and Crafts

Museum of Arts and Crafts³ in Zagreb was founded in 1880 by initiative of the Arts Society and its former President Isidor Krshnyavi as one of the first institutions of its kind in Europe. Its role was to protect works of art and craft against the new predominance of industrial products, to preserve the traditional values of people's trades and to create a new aesthetic culture for the city's upper class. So, for that purpose, in 1882 the Museum as well as a Craft school (known today as the School for Applied Art and Design), were founded.



Fig. 1 Museum of Arts and Crafts in Zagreb

The Museum is located in the center of the downtown area. The palace, built in the German renaissance style, was constructed primarily as a museum, and with its façade it still fulfills the scenography of one of Zagreb's most beautiful squares.

The Museum houses more than 100.000 objects spanning from 14th century to the 20th century and represents a national-level museum for artistic production and the history of material culture in Croatia.

It has a permanent exhibition that extends over 3 floors at more than 2,000 m² of museum space and includes about 3000 exhibits. The artifacts are classified into 19 diverse museum collections: furnishing, metal, painting, sculpture,

clocks, photography and photographic equipment, musical instruments, graphic design, ivory, printing and bookbinding, printed and painted leather, devotional items, smoking accessories and toys. The permanent exhibition was brought up to date in 1995 with commentaries on the exhibits in the form of legends, videos and computer installations. The new concept of the permanent exhibition is a reflection of the system and scope of the museum stocks.

The Museum also has an important library with more than 50.000 titles.

Thanks to its rich abundance of objects from abroad, the Museum goes beyond national importance and is a part of European heritage. Furthermore, the Museum also possesses its own restoration labs specialized in metals, ceramics, glass, textiles, paintings and polychrome sculpture.

The modern role of the Museum is seen in its rich cultural and societal events: it regularly organizes cultural and historical, problem and thematic exhibitions, expert meetings, educational playrooms and workshops.

B. Elementary school "Cvjetno naselje"

Elementary school Cvjetno naselje⁴ celebrated its 50th anniversary in the school year 2011-2012. The school is located in an urban area, surrounded by big roads with heavy traffic.



Fig. 2 Elementary school "Cvjetno naselje"

In the school year 2012-2013 it had 334 pupils in 17 classes (nine classes with children aged 7-10 and eight classes with children aged 11-14).

Since 1998 the school has classes in one (morning) shift in line with European standards. A small number of pupils per class allow teachers to observe each pupil's social, emotional, physical and intellectual development and individualized approach, as well as group work.

In the school year 2001-2002 it was among the first schools that introduced an experimental program of foreign language learning from the first grade.

The school management places an emphasis on the respect and recognition of human values of both pupils and teachers, promoting humanization of the school system to achieve equal opportunity and equal treatment for all pupils and effective communication between parents, teachers and the school administration. Finally, this elementary school pays particular attention to the moral and social issues, encourages the development of pupils' interests, abilities and skills with the desire to obtain a high quality communication and mutual respect and accomplish the most important task - to enable each pupil to develop a strong belief system in their own abilities and to become a happy child.

³ <http://www.muoz.hr/>

⁴ <http://www.os-cvjetno-naselje-zg.skole.hr/>

C. *Project partnership and community need*

As part of its outreach activities, the Museum of Arts and Crafts needed to increase the number of pupils visiting museum and recognizing museum educational activities, the faculty mentor was seeking ways to expand university's involvement with the local community and to increase service-learning courses, while students needed to obtain the field experience.

By identifying a community need and matching it with the skills of university students, a vital service was provided to the community's youth, while students obtained practical service experience.

III. PROJECT DESCRIPTION

Service learning project TiM (You and Museum) aimed to emphasize that many tasks of the educational process that are realized in the natural and social environment can also be accomplished through the visit to the museums with a somewhat greater engagement.

The core knowledge pupils receive through school subjects may be easily expanded in the museum environment through observation, independent research, encouraging curiosity and reasoning. This may be marked as a process enhancing the successful adoption of the compulsory learning content through an entertaining element, which is a visit to the museum.

Museum artifacts are a source of knowledge, but that source needs to be opened not just for experts, researchers, artists and those who already possess awareness of the importance of a museum, but also for young brains that are full of questions and that cannot abstract or understand answers read from the legends printed in their textbooks.

Pupils that get the opportunity to interact with the exposition artifacts begin to communicate with the history and start learning which ends not only in acquiring new knowledge but, what is more important, acquiring unforgettable impressions and observations. Museums can therefore create an atmosphere of educational practice which listens to its young visitors and promotes curiosity through learning and collaboration with other public institutions, such as elementary schools.

A. *Learning through Experience and Interaction in a Museum Environment*

Pupils visiting a museum receive concretization and enrichment of the specific educational content; they experience the culture of life, belonging to the museum circuit and enjoyable memorizing. Important educational parts of the visit to the museum are creative workshops that include hands-on activities that each pupil participates in. These workshops should be a supplement to the museum tour and should be based on the content of the tour, satisfying the main objective of the museum visit.

Elementary school pupils should be allowed to participate in the guidance through museum because, apart from curiosity, the museum artifacts evoke associations to the "items in grandma's home", old stories they have heard, etc. These artifacts are vehicles for looking into the past and museum

needs to uncover the meaningful story behind them to these young visitors.

Furthermore, a museum should ideally take pupils somewhere they have never been in their imagination and thus reveal its function in their lives, enabling them to perceive it not just as a place for professionals and tourists, but as their place of learning and growing.

The direct encounter of children with museum artifacts is the beginning of communication and learning, and workshop can activate the participation in the communicational and educational circle which starts from them and ends with them. Children's' perception of the world around them, as well as information they receive, must be processed and presented in an interesting way. Otherwise, their visit to the museum has no educational effect.

It is important to emphasize that the guidance through the museum exhibits and amusements should be tailored to the curriculum of a specific grade that visits a museum. In that way, the museum pedagogue would be given the curriculum and learning content which he might, in cooperation with the teacher, include in the educational guidance. The final product would be a professional guidance that insures rich learning experiences, induces museum's educational outreach and raises pupils' interest in the museum.

Elementary school pupils do not perceive field work as an obligation but as an enjoyable and informal process of learning through experience. Their emotions are an indispensable part of it which plays a very important role during a visit to the museum, especially if such emotions create a connection with the real world and encourage children to pose questions.

It is important to maintain and continually develop standards for the pupils' visit to the museum. In order to accomplish all educational goals of the visit, both the school and the museum must set clear expectations in advance, to avoid misunderstandings. The teacher as an individual has a major role in this process, because the realization of the whole visit as well as its success depends on his attitude.

The long-term goal of these visits would be to significantly increase the communication between museum and the local community, where museum fulfills its outreach mission, raising the community knowledge and awareness about the importance of preserving cultural heritage in the area of human consciousness. The authors of this paper believe that this approach might be one of the best courses of action to shape the perception of the new generations.

B. *Project framework*

At the Faculty of Humanities and Social Sciences (University of Zagreb), as part of the graduate course titled *Service Learning in Information Sciences*, students have conducted a mentored project aimed at pupils who never had a guided museum experience before.

In order for pupils to learn in a museum setting, they must be able to make mental investments in the learning process and stay motivated [6]. Therefore, it is important to offer them a challenge, arouse curiosity and motivation for further exploration in the museum environment.

To satisfy these demands, one of the objectives of the service learning project TiM was to design age-appropriate

instructional materials, such as worksheets and activity kits that will encourage pupils during the museum visit to grasp new concepts, relate them to the past experiences and integrate new information with previous knowledge, retaining it in memory for the later application. The other objective of the project was to demonstrate that a strong will and minimal resources can make huge transformations in lives of the local community, especially its youngest members.

C. Methodology

Three problem areas were covered by this project: the role of service experiences in preparing graduate students for their future careers; school-museum-university partnership and student project management capabilities.

Regarding the service experiences, students were able to frame their theoretical knowledge in the context of the local environment, which enhanced their understanding of civic responsibility in the local community and society in general [7]. Service learning experiences shifted their focus from developing skills for their future careers to learning outwards, beyond the classroom [8].

Service learning (SL) teaching method was used to connect the goals of higher education with the needs of the local community by providing the project of public service that encouraged university students to utilize their classroom knowledge to improve local communities [9].

This method was introduced in the Faculty of Humanities and Social Sciences at the University of Zagreb in academic year 2006-07 with the goal to transform the traditional ex-cathedra teaching style [10]. Goals and requirements for this teaching and learning method were based upon the U.S. experience.

Since then around 60 SL projects in the field of information sciences and information technology have been completed and evaluated as part of the course "Service Learning in Information Sciences". Students find this method effective, because (according to their course evaluations as well as service learning project evaluations) it increases their awareness of the world and their personal values and facilitates their engagement and interactivity in the classroom [11, 12].

Moreover, initial service learning projects developed through collaboration between university students, faculty and primary schools yielded excellent results [13].

Regarding the school-museum-university partnership, studies of student museum internships already showed that students gain valuable teaching experience interpreting museum collections with children visiting the site [14].

As to the educational objectives of their service learning project, students planned to acquire new knowledge in the field of museology and informatics, which are both important segments of the pedagogical practice in museums. They also decided to encourage the development of critical thinking and instill a sense of cultural heritage in a younger generation.

Elementary school pupils (fifth, sixth, seventh and eighth graders) have visited Museum of Arts and Crafts with their class. Firstly, they visited the permanent collection of the Museum under the professional guidance of the museum pedagogue (Fig 3 and Fig 4).



Fig. 3. Pupils visiting Museum of Arts and Crafts with their class.

The Museum wanted to offer tour and workshops for school children as part of their outreach mission.



Fig. 4. Pupils actively participating in the visit of the Museum of Arts and Crafts

After the tour of the permanent exhibition, pupils took part in a creative workshop prepared by the museum pedagogue (Fig 5 and Fig 6).

Each workshop has been specifically and professionally prepared depending on the pupils' age and grade.

Thus, one group of pupils has made antique furniture out of corrugated cardboard.

The other group of pupils drew their bodies on a large format paper.

Finally, the last group was given a smooth paper coated with a mixture of black ink and egg yolk, which they scraped with wooden chopsticks.

The museum pedagogue selected all the themes for the workshop and provided all materials.



Fig. 5. Pupils in the creative workshop of the Museum of Arts and Crafts.



Fig. 6. Pupils working with smooth paper coated with a mixture of black ink and egg yolk

Students have documented all the activities as video-journal, interviewing the pupils who visited the exhibition and who took part in the creative workshops.

The second and final part of the service learning project was carried out both in school and at home

In the final part of the project, children were able to visit the web page created by faculty students and read museum news. They also had a chance to browse through the gallery of pictures showing their recent visit to the Museum of Arts and

Crafts and were able to take part in the quiz that tests their knowledge about Museum of Arts and Crafts and its various artifacts.

During the semester, students were introduced with different reflection e-activities (e-journals, e-portfolios and e-discussions) that were assessed at the end of the course. They used e-learning tools available through Moodle (Modular Object-Oriented Dynamic Learning Environment) and Mahara (ePortfolio system), creating digitized collections of text, graphic and multimedia artifacts that represent their learning curve over the course of semester.

Their reflective journal writings and ePortfolio selections proved once more that service learning projects enable meaningful teaching and learning experiences [9].

D. Results

In this project, information and communication science students succeeded in presenting the MUO museum to pupils (that never visited museum before) as a place filled with dynamic projects based on the evocative collection content and as an environment for open-ended and self-directed learning experiences.

Students took part in the creation of age- appropriate activities and developed their leadership, communication and teamwork skills, while contributing to the quality of the Museum's educational program in an informal learning environment. They were able to apply their classroom learning to the local community and practice their skills in a real-world setting.

Students' reflective activities served as evidence that a university-community partnership developed in response to an expressed need results is a transformative experience of teachers, students, and museum educators [15].

The resulting videos with the pupils' responses were used not only by students to document the service learning project experience, but also by faculty mentor to evaluate the students' service learning project.

Answering the students' questions in the interview, pupils have expressed their enjoyment in the museum tour. The majority of them liked the professional educational guidance and the follow-up workshop.

They also learned new facts about different historical periods. Some of them even expressed wish to work in a museum once they grow up, while the majority of pupils stated that they learned many new concepts related to the museum (such as *curator* or *depot*) and that their first visit to the museum was an enjoyable experience.

Furthermore, as a result of the video journal, students have received very positive comments on their project.

Together with the museum pedagogue as community partner they planned a range of opportunities to help pupils learn in ways that match their learning preferences and to engage school pupils in meaningful and creative activities that represent learning as an active process.

Additionally, the museum pedagogue brought students' ideas to action with drawing and modeling activities and handling of the artifacts in a museum collection.

Furthermore, pupils have expressed their surprise by the artifacts in the Museum's possession and its informal

educational function that supports the children lifelong learning perspective. They were also impressed by the improvisation of the artist Boris Badurina who introduced fifty interventions in the Museum's permanent exhibition, as part of the cycle of dynamic exhibition events titled "Contemporary artists in the permanent display".

Finally, pupils reported that, apart from being entertained and being able to learn many useful facts, they abandoned the prejudice of museums as places with dusty antiquities, decrepit valuables, remains and scraps.

Creative workshops were more interesting to girls than boys, but all of the pupils agreed that they would like to visit museums more frequent and to learn in this way because they had a chance to link the historical facts to the actual artifacts from the museum.

IV. VIRTUAL PROJECT ENVIRONMENT

Starting from the definition of the website's educational value, David T. Schaller and Steven Allison-Bunnell, claim that educational website should provide to students the same things that an excellent teacher does, engaging pupils in the learning process and stimulate their imaginations. It needs to offer something more than the standard textbook, but should also include some basic features such as learning goals and outcomes and clearly targeted domain of action to help pupils to develop skills and increase their knowledge [16].

Interactivity is the key element of a museum's educational website dedicated to two-way communication between pupils and a museum. Researchers [16] believe that website interactivity should include several important elements:

- enable bidirectional communication between real people, whether in real time or not,
- foster a productive decision-making process, which means that pupils have the ability to see the consequences of their choices,
- provide pupils with something they would rather have done than watch

As a part of the service learning project, students have designed a website with the aim to connect pupils with the museum. The home page of the website contains information from the museum world, invitations to the new exhibitions and workshops that pupils might find interesting. It also contains the link for a Facebook page and a short survey.

In the main menu there is also a link to a photo gallery that contains all the photos of the pupils' visit the museum and the workshop, arranged by a grade. When the project gest expanded to other schools, the photographs and video documentation will be organized into folders on the webpage, to make it easier for visitors to find content that interests them and from which they benefit.

Furthermore, the next option in the main menu is "Ask museum". With this add-on feature, the pupils will be able to ask the museum staff whatever interests them and what they were embarrassed to ask during the museum tour and/or the workshop. Apart from this form, pupils can also fill in an anonymous form in order to leave comments about the museum, the quality of their museum tour, about the workshop they took part in or the service learning project.

Collaborating with the museum pedagogue, university students have also developed an educational interactive quiz which was also placed on the website of the TIM project and serves as a reminder to the elementary school pupils about the content that they have learned during their visit to the museum. The questions in this interactive quiz are of various types, but the most common type is a multi-choice question providing a range of A, B, C style answers for the pupils to choose from.

Example question:

The permanent exhibition of the Museum of Arts and Crafts presents the life and culture of:

- a) nobility and the bourgeoisie in Croatia,
- b) people in rural areas
- c) pupils in your school

The answer button advances the pupil through the quiz and keeps track of his answers along the way. When the pupil submits the final answer, the calculation script (determining the user's score and displaying it on the screen) is being executed. At the end, a summary screen shows the results and the percentage of the questions answered correctly.

The last part of the main menu is the survey that was also created by students in collaboration with the museum pedagogue. The goal of the survey was to receive a quality feedback from students in order to improve museum services, its outreach and to make museum tours and workshops more innovative, educative and interesting.

It should be noted that website of the service learning project, as well as other activities have been developed by students themselves, with a little help from the museum staff.

Alongside the website of the project, students have also made a Facebook project group that is frequently visited by school pupils who have a Facebook account.

V. EVALUATION

A. *The Reactions of Pupils*

As already mentioned, university students have conducted interviews with pupils during the project's action phase, questioning them about the feelings that were awakened during a visit to the museum and while participating in workshops. Since university students conducted these interviews with their own equipment, the poor quality of the footage of interviews can be excused (The students filmed these interviews with built-in mobile phone cameras and the recorded content was quite difficult to listen to, view and examine). But, students have put forth enough effort to extract the material showing pupils' reflections and critical thinking as a result of the participation in this project.

The girls from the 7th grade were mostly impressed by the imagination of contemporary artist Boris Badurina, whose works are the part of the permanent exhibition of the Museum of Arts and Crafts. They found his work amusing claiming that he "mixed the present with the past in a humorous way". They also found it interesting to see all the artistic periods in one place and to be able to notice the differences in styles - from furniture to clothing styles, which delighted them very much.

At the end of the interview, female pupils have concluded that they never expected to acquire so much knowledge in the

museum. Before the visit, they perceived it as a boring institution, but after this first visit they realized that they were not right.

In a group interview, seventh grade male pupils said they liked the fact that they finally tied the theoretical knowledge acquired in school with the objects that were used in reality.

When asked about the frequency of visits to museums among their peers, the boys said they believe that their peers rarely or never visit museums and that they would like to visit more museums themselves. The appalling fact was that for some of these thirteen year old boys this visit was also the first visit to the museum ever.

The male pupils especially liked the technique of making greeting cards using black ink and egg yolk. They concluded that the visit to the museum was a thrilling experience and evaluated this service learning project as a high quality and educational project.

Furthermore, during the interview, eighth-grade pupils pointed out that the museum tour made it easier for them to connect the lessons learned in school with the real museum artifacts, since (during the school class) they did not have a chance to learn in detail about the artifacts that were used in a specific period of the history and therefore had no perception or clear picture of life in that period.

Finally, from these discussions it became clear that pupils benefited from this visit, becoming more capable to visually integrate what they read in books or learned in school subjects about museum artifacts.

B. Evaluation of the museum pedagogy

The Head of the Educational Department of the Museum of Arts and Crafts (Malina Zuccon Martic) was the key Museum's person who collaborated with students.

In the evaluation of the service learning project, she pointed out: "Contemporary museum pedagogy does not include only children, but all kinds of museum visitors, including students and pupils. Therefore, I was oddly pleased to work with these 4 students of Information and communication sciences on a service learning project related to museum education. Of course, it was not expected that they knew a lot about contemporary museum pedagogy, but originated this project emerged through many conversations and sharing of each other's ideas. I hope the project will really spread and develop in other schools and museums. I have to say that I was pleasantly surprised with the high level of technical preparedness of students for their project, but also with their willingness to listen to a different perspective and to understand the needs and demands of the museum. As a result of our teamwork, we conducted a project that became an inspiration for a successful collaboration between museum, school and university. "

VI. FUTURE COLLABORATION

After an extremely successful cooperation between students of Information Sciences from the Faculty of Humanities and Social Sciences, Museum of Arts and Crafts and elementary school "Cvjetno naselje", all partners recognized a need to spread this project not only to other

elementary schools that could visit the Museum of Arts and Crafts, but also to other museums in the city of Zagreb.

In the next few years, university students would like to arrange visits for all elementary school pupils in Zagreb to different museums in the city. Students, university professors and museum experts all agree that the organized educational visits to museums should be continued.

After the completion of the service learning project at the Museum of Arts and Crafts, many museum educators from different museums in Zagreb have expressed interest to expand this project to their institution. Therefore, the student team who planned and realized this project will try to spread the information about the TiM project to as many pupils in Zagreb as possible, even to other cities across Croatia.

VII. CONCLUSION

Although schools nowadays have the tendency to pay more attention to learning from sources other than books (such as multimedia – pictures, animation and video), very few schools in Croatia possess conditions to establish interactive and multimedia learning environments. However, few schools organize regular visits to cultural institutions that not only preserve knowledge, but also play an active role in presenting knowledge in an interactive way and enable dynamic learning.

Teachers visit heritage institutions such as museums quite rare, although many studies prove that children acquire knowledge better and faster in the informal environment. Parisa et al. [17] report in their study that children develop thinking, a sense for real values and a sense of belonging to the group through non-formal learning.

Research [18] also proved that museums can be models of institutions where pupils encounter a variety of learning opportunities to enhance school-based learning.

In a museum, if activities directed to pupils are combined with student- or teacher-directed experiences, students (teachers) shift their roles from dispensers of information to designers of rich learning environments for school children.

Already Gardner [19] imagined museum as an educational environment where local pupils take school courses, exposed to a knowledgeable guide who demonstrates the way to use a skill or solve a problem. Gardner [19] contrasted schools (that connote formal, serious and decontextualized learning) with museums (that connote casual, entertaining and enjoyable learning). He pointed out the difference between experience-based place that offers open-ended learning opportunities and place that offers lectures about remote subjects and tests based on drill-and-practice of memory of disconnected facts.

But, neither all museum experiences are as ideal as those described by neither Gardner [19], nor school pupils possess motivation to discover such experiences.

Students in TiM service learning project learned about many vital roles in their profession, such as handling of administrative tasks and communication between the museum, the school, the faculty professor and fellow students. They learned how to review project plans for feasibility, time allotment, appropriate content, and continuity across the semester. The faculty mentor observed each part of the project and had weekly contact with the student team.

But, the project realization process was not easy. In the project planning phase students encountered many problems, such as project time management and sharing of the project workload among themselves.

Furthermore, the problem that students encountered was the lack of public understanding. More precisely, as part of their project promotion activities, students have asked the rich and powerful companies for a symbolic donation. These companies were stalling on their demands and finally rejected them.

The next problem was a dysfunctional school administrative system. School teachers have complained to students that they were not informed about specific goals of the visit to the museum and the necessary collaboration between them, the museum pedagogue and their pupils.

Finally, museum practitioners, socialized to adopt a pragmatic approach to new situations and problems, had issue with school members, socialized to take a more theoretical approach to it [20].

In the end, despite all the troubles, difficulties and problems that students encountered during their service learning project, it was implemented on time, in scope and without any budget to the satisfaction of all parties: faculty students, school teachers, faculty mentor, museum staff and school pupils.

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