Partnering with Museum for an experimental project on holistic education

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Abstract:
Museums provide ample opportunity for holistic education with humanistic orientation. Project EKAM is an experimental project on holistic education conceptualised by Pune Section of Institute of Electrical and Electronic Engineers and Tata Consultancy Services of Pune in partnership with Raja Dinkar Kelkar Museum at Pune. A major objective of the experiment was to establish the suitability of the ambience provided by the museum for the learning environment. Major initiatives taken up as part of the experiment included Activity based Learning workshops, Cultural enrichment programs, Concept to Product Projects, apart from lectures, webinars and Discussion Forums. The paper presents details of the experiment, observations noted and conclusions drawn. It is presumed that these details will be useful for those who are pursuing similar activities elsewhere, and for scaling up future initiatives of similar nature.

Keywords: Holistic education, Museum, STEAM, Culture, Tradition, Activity based Learning, Cultural enrichment, Concept to Product

I. INTRODUCTION

The coming years will bring fundamental changes to our working world, and people in almost every role will need new skills to adapt to these changes. The need for physical and manual skills is likely to be gradually replaced by technology-based skills. Developing higher cognitive skills and achieving social and emotional balances in life will become more important for success in life. Focus on digital, cognitive, social, and emotional requirements of an individual's life as well as adaptability and resilience in social life should become part of educational requirements to meet these challenges. Educational experts feel the needs for more personalized and purposeful approach for acquiring these skills. Holistic education emphasises on the concept of "wholeness" as the core of educational process. An important aspect of holistic education is humanistic orientation with emphasis on individual uniqueness, caring relationship, freedom, or autonomy [1].

Museums provide ample opportunity for the holistic education with humanistic orientation. However, in a country like India, museums are not in a good shape even in its primary job of proper upkeep of its valuable possessions. Even though India's ministry of culture released an ambitious 14-point agenda for reform and upgrade of museums in 2009, things have not changed much [2]. Compared to the Louvre, the world's most popular museum, which drew 10.2 million people in 2018 (which came down to 2.7 million in 2020), footfall at India's government-run museums is dismal [3,4]. That does not mean that Indian museums do not hold valuable artefacts. On the other hand, India's history and culture are very rich and diverse. But, barring a few exceptions, most museums tend to elicit a very tepid response from local communities.

Project Ekam is an experimental project on holistic education to meet these requirements. Rather than replacing conventional mode of classroom learning, the project attempts to supplement the same, so that the two systems can together synergistically enhance all round personality of a person. Present paper is on the experiences gained during the experimental project by partnering with a museum.

The paper is organized as follows. Section II provides a short review of the role of museum in education. Section III is about the EKAM experimental project and its main objectives. Section IV gives a brief account of the major initiatives taken up as part of the project. The paper ends with discussions and observations.

II. ROLE OF MUSEUMS IN EDUCATION

The educational role of museums was recognised long ago. During late 1930s a two-volume compilation work summarising the status of the museums at that time, Muséographie, was published which stimulated development of museums throughout the world. Museums have been showcasing the continuing history of mankind. On one side, they present the crude stone tools of the early man; On the other, they present works of art expressing man's aspirations in his search for the meaning of existence. They also showcase models explaining the latest technological achievements of mankind. And this led to a constant increase in museum attendance throughout the world [5].

As years rolled by, the educational role of museums became more important than earlier. There were increased and specialised educational services in museums in many countries. UNESCO encouraged this tendency by arranging seminars on 'educational role of museums' and the first seminar was held in 1952 in Brooklyn [6]. For museums which were just beginning to enlarge their scope of activities with an intention to fulfil their role in education, a small guide was published in 1958, which was of great help to those who were on small budget [7].

Museums have been accumulating 'civilization experience' of the humankind over centuries and are thus a very large source of information, comparable to any university or higher source of conformal education. In today's world of growing information flow, museums as a source of information can be a big asset, if they are properly utilised. For this, it is essential that this large bank of information is properly channelized, targeted, and made comprehensible to the user [8].

There are many museums around the world, which have adapted new techniques to facilitate those interested in learning about the past. Plantin-Moretus Museum in Antwerp, formerly a home and workshop of a famous printing dynasty, is now a museum to hold oldest printing presses of the world. To create a profound visitor experience and enliven the ambience of the place, an innovative 3-D audio technique has been added. Without altering the authenticity, it has added multiple layers of experience, catering to different types of visitors: novice, family, creative and the connoisseur [9].

An innovative project on Open-Learning approach (OLAREX) was initiated in the National Polytechnic Museum (NPM) at Sofia, Bulgaria to promote use of ICT and exploit its potential to enhance the teaching capacity of the museum's educational and demonstrational cabinet. As part of the program, an e-course was also offered to Science, Technology, Engineering and Mathematics (STEM) teachers which combined classical learning process with the new technologies. This could also help the visitors in understanding the role of contemporary museums and increase its popularity [10].

The International Council of Museums (ICOM) also recognises the key role of museums in promoting sustainable development. According to ICOM, "Museums preserve cultural and natural heritage in the form of collections and associated knowledge. These form the basis of a wide range of learning and research programmes that can support the Sustainable Development Goals (SDGs), and the preservation of cultural and natural heritage beyond museums" [11].

III. EKAM EXPERIMENT AND ITS OBJECTIVES

Institute of Electrical and Electronic Engineers (IEEE) is the world's largest technical professional Organization dedicated to advancing Technology for the benefit of humanity [12]. Pune section of IEEE located in India has more than 2000 volunteers specialising in different spheres and conducts variety of programs and projects which have direct impact on society at large. EKAM was conceptualised by IEEE Pune Section, in coordination with Tata Consultancy Services (TCS), a corporate house located at Pune. All activities of the project were driven totally by volunteers, with no major financial support from any quarters.

Partnering Museum: The Raja Dinkar Kelkar Museum (RDKM) was co-opted as the cultural partner for the project. The Museum is the one-man collection of Padma Shree Late Dr. D.G. Kelkar (1896 -1990) and depicts the tradition and culture of India. The museum was built with an aim to provide an uncanny vision of antiques and various arts and crafts to the citizens from the world over [13]. The Museum is divided into 8 galleries, 42 sections and boasts of over 21,000 priceless artefacts. Each object d'art reveals the powerful creative craft of its unknown creator and satisfies the inquisitiveness of several art enthusiasts. Most of the items date back to 17th to 19th century, and includes architectural fragments, sculptures, musical instruments, textiles, paintings and innumerable small objects associated with everyday

life of common Indians such as ivory and wooden combs, pots, lamps, pens, ink stands, Kumkum boxes and even ornamental foot scrubbers. There is a special section on the 'Mastani Mahal' originally built by Bajirao Peshwa I between 1730 – 1734.

Concept of EKAM: The name EKAM for the experiment on holistic education was adapted from Sanskrit language where the word EKAM means one or Single, and the concept of EKAM symbolises unity or Monism in Hindu theology. According to Rigveda, "Truth is one, sages call it by various names" expressing Oneness with Divine Consciousness transcending religions, traditions, and cultures [14]. The experiment forming the main theme of this paper tries to extend the tattva or principle of EKAM beyond the regions of theology and philosophy into Science, Technology, Engineering, and Mathematics and into Arts and finance in all forms.

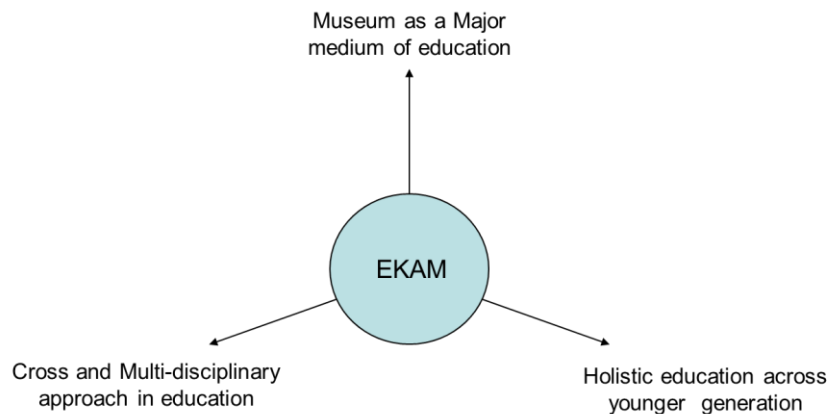The objectives of the experiment are depicted in Figure 1.

Figure 1. Objectives of EKAM

Museum as a major medium of education: As discussed earlier, many museums around the world, have been utilised as source of information, and place of higher learning. In India too, some efforts have been done such as at 'Living and Learning Design Centre' (LLDC) dedicated to the rich culture of craftsmanship of Bhuj Artisans, Army Museum at Amritsar for learning about Partition of India, and Indian Music Experience (IME)Trust at Bangalore on musical traditions [15,16,17].

All these museums focus on a very narrow topic and serve as extremely useful learning hubs for that specialised aspect. EKAM is an experiment for extending this concept for holistic education with RDKM as the prime medium.

Holistic education across younger generation: UNESCO has indicated the four pillars of learning for the 21st century as 'Learning to learn', 'Learning to do', 'Learning to Live together', and 'Learning to be'[18]. On the same lines, India's National Education Policy (NEP) 2020 has its guiding philosophy as to 'nurture, inspire, influence, and groom' children with emphasis on holistic education [19]. EKAM tries to experiment on mainly the younger generation who are more malleable, following the above principles.

Cross and Multi-disciplinary Learning: Teaching based on interdisciplinary research is a better way of engaging students in thinking exercises [20]. In India, the need to expose students to various disciplines was recommended in Yash Pal committee in 2009 [21]. NEP 2020 also recommends multi- and cross disciplinary studies, since it can stimulate higher education environment and promote holistic education. EKAM is an experiment for engaging engineering students in Cross and Multi-disciplinary Learning using the museum as a medium.

IV.   MAJOR INITIATIVES OF THE EXPERIMENT

Since the experiment was to supplement conventional mode of classroom learning, care was taken to ensure synergistic coordination between EKAM and other regular educational activities undertaken by the participants. The various initiatives taken up as part of the experiment can be put in three categories.

Activity based Learning workshops: Workshops were organised which focussed on providing opportunities for children to handle and work on some of the old gadgets specific to Indian tradition. These were held in the museum premises, so that the children could use the old artefacts available in the museum.

The potter's wheel was one of them in which the kids could work on clay with their hands and so could create enormous excitement in them. Similarly, the kids were given sets of kitchenware and kitchen tools, specific to Indian household (locally called Bhatukali). They could make 'Roti', a round flatbread made from wheat flour, native to the Indian subcontinent. During the process, they were also introduced to making flour at home and home appliances used for preparing the flour. Though these methods are popular in villages, urban children hardly have exposure to these.

Another interesting item for the kids was the betelnut crackers, a variety of them being available in the museum. Using them to cut a whole nut into smaller pieces could create lot of interest among the children. A combination of betel nut pieces, betel leaves, scented lime and other small nuts called 'Tambhool' is traditionally offered to guests after a good meal in Indian homes. Process of making different types of 'Tambhool' and tales around them could interest the kids.
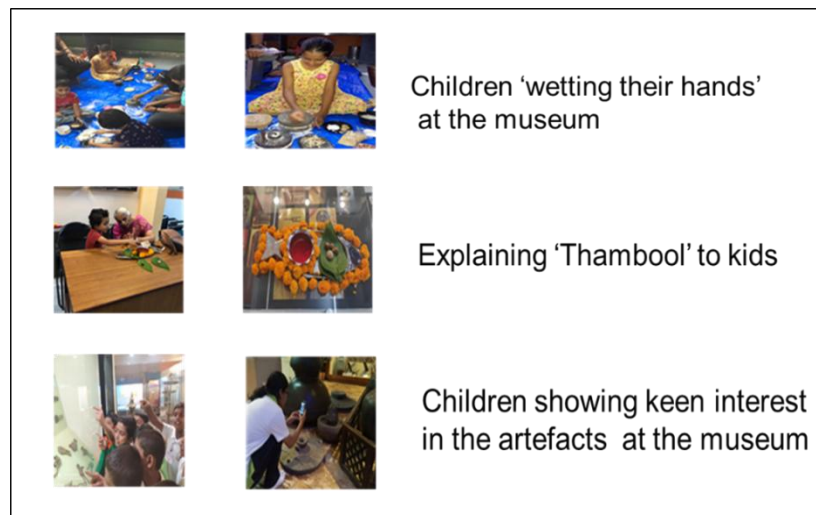

Figure 2. Activity-based learning workshops for kids

Such small but significant 'learning by doing' activities helped the children to understand and appreciate the local culture and tradition. By wetting their hands, kids could really enjoy these sessions. It could also ignite curiosity in them to learn more about things around them, which is an important educational objective and strand of the project. Some of interesting pictures are given in figure 2.

A typical workshop called 'Fiber to Fabric' for a mixed group of school children and college students was held in November, 2022 where attendees learnt the logic, science, and mathematics of weaving silk sarees. A weaver specialising in a local silk saree variety called 'Paithani' explained the complete processes involved in creating high quality silk. The traditional ways of hand stitching, differentiating different types of fabrics, and silk weaving methods helped the participants to know about the culture and history of one of the oldest traditions of India. Special emphasis given to the need to preserve and modernise these traditions to suit changing conditions was well received by the younger generation. It was interesting to note that many college students in their second-, and third-year engineering participated in the exercise enthusiastically. To commemorate the 75th year of Indian independence, they made 75 pieces of handicraft items and gave it as present to 75 schools. See Figure 3.

Figure.3. 'Fiber to Fabric' Activity-based learning workshop

Cultural enrichment programs: Number of Demonstrations cum Lecture programs were held for cultural enrichment of the younger generation. A popular item was on Lavani , an art form which has contributed substantially to the development of local folk theatre. References were made to the relevant dresses and instruments displayed in the museum as part of explanation during lectures. Many times, audience also participated in these programs displaying their enthusiasm. All activities focussed on developing a sense of appreciation and pride on Indian Art and culture, which has been passed on over generations.

Figure.4. Cultural enrichment Programs

Lectures, Webinars and Discussion Forums: Several lectures were arranged as part of EKAM program to focus on the inherent linkages between science-based modern disciplines and the faculty of Arts, and the strength that can be derived by realising and understanding the bonds between the two. Many of them took the form webinars during COVID Pandemic period. Apart from the lectures, and webinars, discussions forums were held where some interesting and thought-provoking subjects were opened for discussions and brain storming. A few topics are shown in Table 1.

TABLE.1. LECTURES, WEBINARS AND DISCUSSION FORUMS

Some of the Lectures / webinars	• Science, History and Art of Flute • Leap off Google! Back to Books • Mind mapping over the years • Raag Ragini : Introduction to Classical Music • Is Data Science applicable to Indian epic • History and Science of Beauty Care : Solah Shringar • Tradition in Transition : Perception of a kathak Dancer • Coins over the ages • Body Armour over the years
Some of the Topics for discussion	• Using Robotic arms for Indian Puppetry • Was 'Megha Sandesh' of Poet Kalidasa (of 400 CE) a form of cloud communication • Influence of Geography on Indian History • Museums as cultural Hubs • Use of technology during religious festivals

Concept to Product Project: This was a major activity to emphasise the need for young students to work on projects of multi and cross disciplinary nature. A group of engineering college students were picked up and given the task of developing gaming modules based on the artefacts in the museum. They were asked to think of a concept of their own and design all aspects related to the gaming module and come out with a final marketable product. Emphasis was laid on projecting the image of the museum and its artefacts through these final products. They were thus exposed to the intricacies of a complex project activity including Project Flow, costing, marketing etc, apart from integrating the technical design with product design. In the process the engineering students had the opportunity in close coordination with Design students, Gaming experts, Commercial product designers, and marketing personnel.

Four games were developed by students with themes centred on the museum, under the guidance of experts from Tata Research and Development Centre. These games were released by the Vice-chancellor of Pune university who was very appreciative of the concept. These games have since been made available through Google Play [22-25].

V. DISCUSSIONS AND OBSERVATIONS

When Project EKAM was initiated in March 2019, the objectives, and the road map to achieve the objectives were not very clear. But as time passed, all aspects got evolved, and many activities were taken up as discussed above. Table.2 gives the match matrix of the activities with respect of the objectives.

TABLE 2. MATCH MATRIX OF ACTIVITIES WITH OBJECTIVES

	Objectives of the exercise			
	Museum as a Major medium of education	Across different age groups		Cross and Multi-disciplinary approach
		8-16 years	16-25 years	General Public	
Activity based Learning workshops	YES	YES	YES	___	___
Cultural enrichment programs	YES	___	YES	YES	___
Lectures, Webinars and Discussion Forums:	YES	___	YES	YES	YES
Concept to Product Projects:	YES	___	YES	___	YES

Most of the activities of the experiment were held in the campus of the museum, except during COVID pandemic time. They were mostly attended by school children, and college students, and general public as shown in the Table 2. Average footfall was about 100+ for each activity. In one of the programs, a few foreigners from the USA also participated, who were very appreciative of the approach.

Some of the observations and conclusions drawn from the experiment are:

a) Museum has been a major partner in all the EKAM initiatives, and was instrumental in meeting the objectives of the experiment.
b) Museum provided the right kind of environment and ambience for reaching out to the younger generation in all aspects of holistic education, attempted as part of the initiative.
c) Indian museums have the potential to be a source of inspiration and a place for holistic and informal education.
d) Children show enormous response when they are provided opportunities for participative / interactive learning process.
e) Indian museums can help in protecting and safeguarding cultural and natural heritage and thus help in achieving the targets as proposed in UN sustainability Agenda, when used as media of learning.
f) Using museum artefacts for engaging college students for interdisciplinary activities seems to be very useful activity in providing them a wide exposure.
g) Exposure to tradition through history of artefacts in the museum is a new area and shows promise as a means for informal education.
h) The unexpected circumstances created by Covid-19 situation created problems, but could be circumvented through online experiences.
i) There have been financial constraints, but enthusiasm of volunteers could sustain the activities of the experimental project.
j) However, to sustain the activities on long term would require a well-worked out financial plan

VI.   ACKNOWLEDGEMENTS

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