Flow INDIA

Museum Learning Toolkit

DESIGNED FOR

DANMAL MATHUR MUSEUM

MAYO COLLEGE, AJMER (Rajasthan, India)

PROGRAMME INTRODUCTION

Fostering development of a 21st Century Learner at the Museum:

Museums can provide memorable, immersive learning experiences, provoke imagination, introduce unknown worlds and make topics taught in school come alive! Museum Learning means how we use real things, real stories, and real people to inspire teaching and learning. Research across the world suggest that Museum Learning inspires students, empowers them with vital skills for learning, and nurtures a cultural confidence to last a lifetime.

Opened in 1949, the Danmal Mathur Museum at Mayo College, Ajmer, houses a diverse collection of historical, societal, geological and natural artefacts and exhibits from across India and the world. Compiled primarily out of donations from Old Boys, parents and other well-wishers of the school, this collection is spread over 18 rooms across 2 floors of the Jhalawar House on the school campus.




Furthering its commitment to 'Learning from the Campus', the school was keen to develop a curriculum linked resource framework around the objects and displays of the Danmal Mathur Museum. Thus, the **Mayo College Museum Toolkit Project** was mandated to harness the potential of these artefacts as primary resource and stimuli in fostering an enquiry-based teaching and learning pedagogy in Junior school (Classes 4-6).

This document records the methodology developed and implemented by Flow India in mapping the museum collection onto the mandated curriculum, and designing a comprehensive learning toolkit for students, educators, the museum, and the overall school environment.

Object Based Learning:

Objects are what people left behind and can tell us about themselves, about the people who used them, about change and about the past. Most importantly, they can be powerful tools to help deliver the educational curriculum in an active and participatory manner. Along with extending knowledge, they can be used to develop skills such as: investigation, evaluation, historical understanding, forming an opinion, speaking and listening. Objects can be used as inspiration for all learning styles if used in a variety of ways.

In recent years, pioneering research into the value of object-based learning (OBL) in a higher education context has been undertaken at University College London. The main benefits of using objects in learning, according to UCL Museums and Collections [(1)], are that they:

- Provide a direct link with a topic or 'the past' and can really enhance young people's interest in and understanding of a topic/subject.
- Encourage learners to use all their senses – especially touch, sight and smell.
- Help to develop the important skill of drawing conclusions based on an examination of evidence, together with an understanding of the limitations and reliability of evidence.
- Are ideal for generating group and class discussion.

At the same time, linear models of learning- where facts are learnt and recited out of context- are redundant in today's world. Adapting to the ever-changing world of the 21st century requires applying the fundamental skills of literacy and numeracy, along with the more complex skills of teamwork, problem-solving, critical thinking, information synthesis, creativity, and more. By bringing real-life contexts to the classroom through interdisciplinary project-based learning, students are encouraged to become self-sufficient, critical thinkers, and lifelong learners.[(2)]

PROGRAMME AIMS

- Use the museum collection to inspire and stimulate learning in educators and students of topics in and beyond the curriculum.
- Provide high quality teaching resources for projects linked to curriculum areas of the junior school that can be used by educators effectively.
- Provide training services for educators to demonstrate the use of learning material.
- Provide opportunities for learners to share their experiences and showcase their learning.

(1) https://www.ucl.ac.uk/culture/research-teaching-obl/teaching-object-based-learning

(2) https://www.edutopia.org/project-based-learning-guide-importance

PROJECT PROCESS

Stage 01: Collection Research

The project commenced with a preliminary review of the collection to arrive at a broad framework that would explore the collection under 4 broad themes- each of which would map the artefacts onto core subject areas of the curriculum. Thus, each theme would be serviced by its independent kit with one subject area in focus.

Themes	Historical events	Natural selection and evolution	Geology	Society
Collections	Textiles/ miniature paintings/ arms & armaments/ stone sculptures/ currency/ regional crafts	Taxidermically preserved birds and bird eggs/ butterflies/ reptiles	Rocks & minerals	School insignia and other objects/ personal belongings of erstwhile Principal Gibson/ photographs showcasing the different historical phases of the school/ school uniforms over the years/ clocks/ Textiles
Curriculum	Civics/ History	Environmental Science	Geography	Civics/ History

Stage 02: Educator Interaction

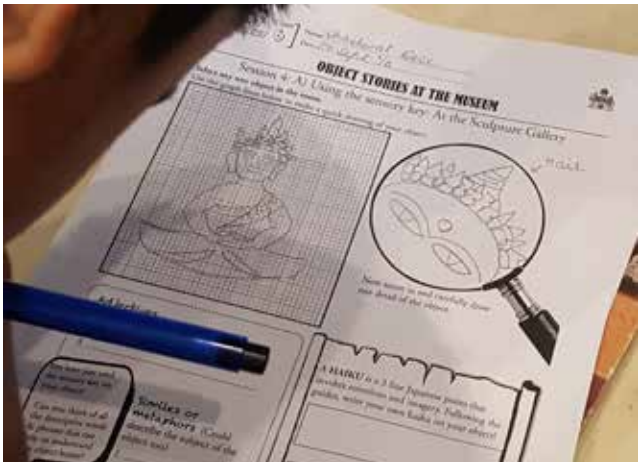
The next step was a free-thinking session and museum exploration conducted with the junior school faculty. Educators explored the museum with us while keeping their curricula and classroom topics in mind. Through discussions and activities, we were able to capture their insights into learning needs.

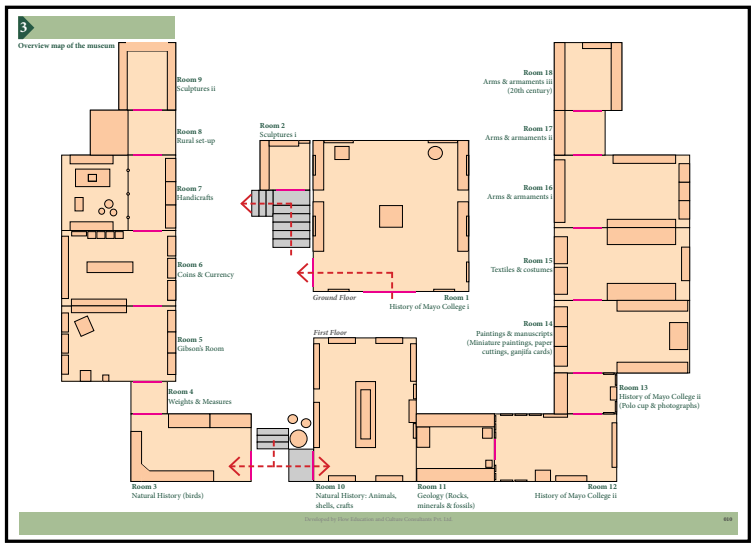
Stage 03: Curriculum Mapping

Flow then launched into an in-depth research that captured both primary and secondary research around the exhibits. In parallel, a detailed curriculum map was created for each of the 3 grades that documented topics across subjects that would support cross-curricular themes. The findings of the same were presented to the faculty to map out the final themes for each of the 4 kits for the 3 grades.

Stage 04: Education Experience Design

Over the next 20 weeks, Flow designed and delivered detailed education experience designs for each kit in sequence.The kit designs comprised of components that were generic to the entire project and specific to each of the 4 themes.





The generic components included the:

1. Kit Introduction that gave an overview of the project, the theme outlines and physical orientation of the museum and its galleries

2. Evaluation Frameworks that would be applicable to each project comprising of frameworks for the participating students, the implementing faculty and external observers from the faculty pool and school management

The specific components for educators included:

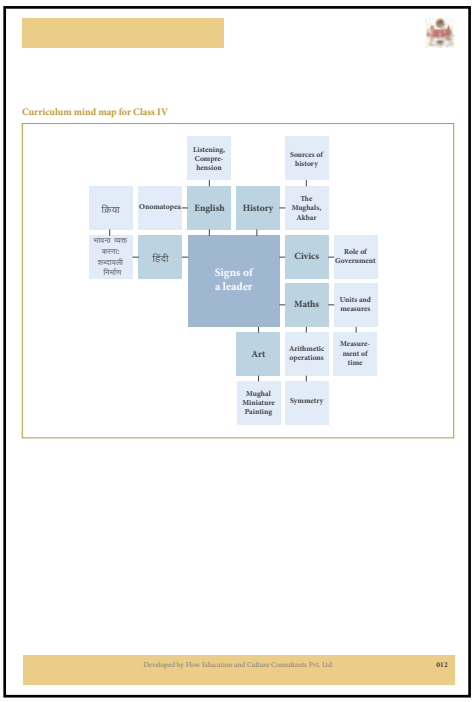
1. ***Outline of the project theme*** for each grade comprising of guiding questions, the project's knowledge and skill objectives and curriculum map.

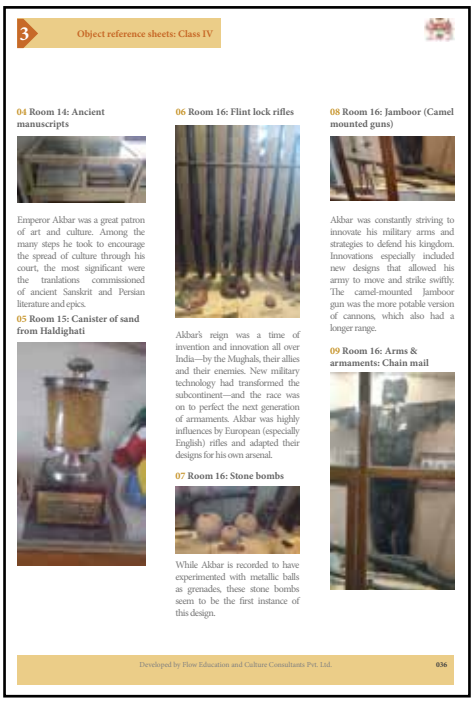
2. ***Detailed lesson plans for each project***. The project comprised of a series of sessions in the classroom and the museum galleries. These were categorized into Pre-visit, Visit, and Post-visit segments. Each segment comprised of 2-4 sessions. Once the activities and their flow was in order, the plans were detailed accordingly. They were written out in a manner such that a thorough reading would support the faculty to be able to take the work forward. It provided complete information on:
   - The activity description
   - Approximate duration
   - Skills being fostered
   - Materials required
   - Recommendation on Faculty/expert participation
   - Key concepts covered

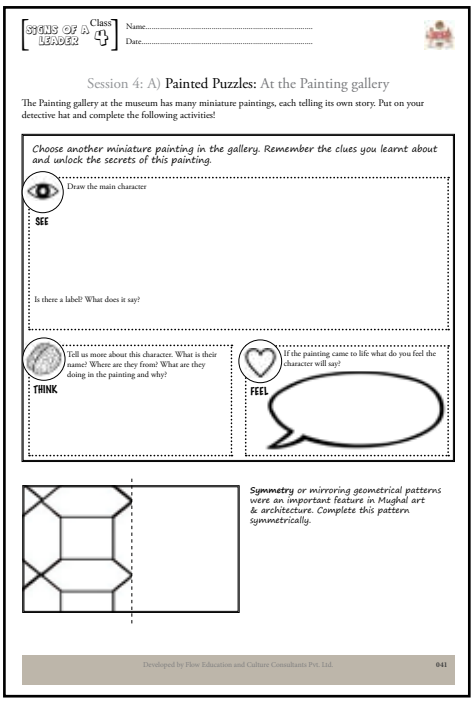
3. In addition, the following ***supporting resources*** were also designed to contextualize the project:
   - Supporting resources: A variety of written or visual material that would be required to scaffold specific activities within the project.
   - Object reference sheets: Identifying specific set of objects that will serve as stimuli for this project along with their locational references.
   - Reference map of the museum for project: Outlining the specific zones within the space that the project involves along with recommended circulation and other logistical pointers to be kept in mind during the visit.

The specific components for learners included:

Student worksheets for students to work on and record their learnings through the project.







Stage 05: Faculty Feedback & Toolkit Iteration

Once the kit design document was ready, it was shared with the faculty for preliminary review and feedback.

The Flow team was invited to witness the project in action, interact with the faculty, and observe the children. This allowed the faculty to clarify doubts prior to implementation, discuss solutions for areas they felt needed improvisation, and also for the Flow team to share fundamental strategies for object-based learning that underpins the development of the kit. The visit culminated in a debrief for Flow to capture user feedback for subsequent reiterations before submission of the kit in physical copy along with overall feedback on the project via the evaluation frameworks for the different user groups.

Click Here to watch a video of a History teacher from Mayo College facilitate a session with 6th grade students on 'Object Questioning' through the History Museum Toolkit

https://www.youtube.com/watch?v=Bh0YhTLAoNQ&feature=youtu.be

CASE STUDY

Toolkit 02: Power's In Our Hands! (Environmental Studies) with a focus on Grade 5

The broad project theme of this toolkit is **Power is in our Hands!** which looks at human interactions with nature and wildlife at the museum and on the school campus. This toolkit interprets itself across grades 4, 5 and 6 into specific projects that use various segments of the museum's Natural History collection as stimuli to explore the theme with respect to each grade's curriculum. The following projects were designed in the toolkit:

Grade 4
Our Feathered Friends

'Our Feathered Friends' will help you understand the behaviour and characteristics of birds in your school campus and outside. Using museum exhibits like bird taxidermies, egg shells and nests, you will learn about several features of a bird - bird's habitation, sound, migration patterns, dwellings, and it's relationship with man. Become bird scientists, or 'ornothologists'
and egg specialists, or 'oologists'!

Grade 5
Fading Habitats

Every animal needs a home or 'habitat,' which not only includes its shelter but the areas outside and around the house or shelter where the animal roams to obtain food and water. In many cases the 'habitats' of people clash with the habitats of different species. Development of humans sometimes poses the biggest threat to wildlife, along with pollution and changes of habitat.

'Fading habitats' will help you learn about animal habitation and how they develop their own adaptation techniques to suit their surroundings through fun games, debates, and more!

Grade 6
Man & Nature

In a world increasingly dominated by humans, it seems there's less and less room for just about everything else. Habitats, or natural living spaces for animals and plants, across the globe are gradually shrinking to accommodate the need for human space.

The 'Man & Nature' project will help you question the relationship between humans and nature, reflect on all the steps (taken in the past and present) that have led to today's scenario, and actively think of future steps we can take to help biodiversity thrive!

FADING HABITATS

Museum & Campus Learning Toolkit for Grade 5

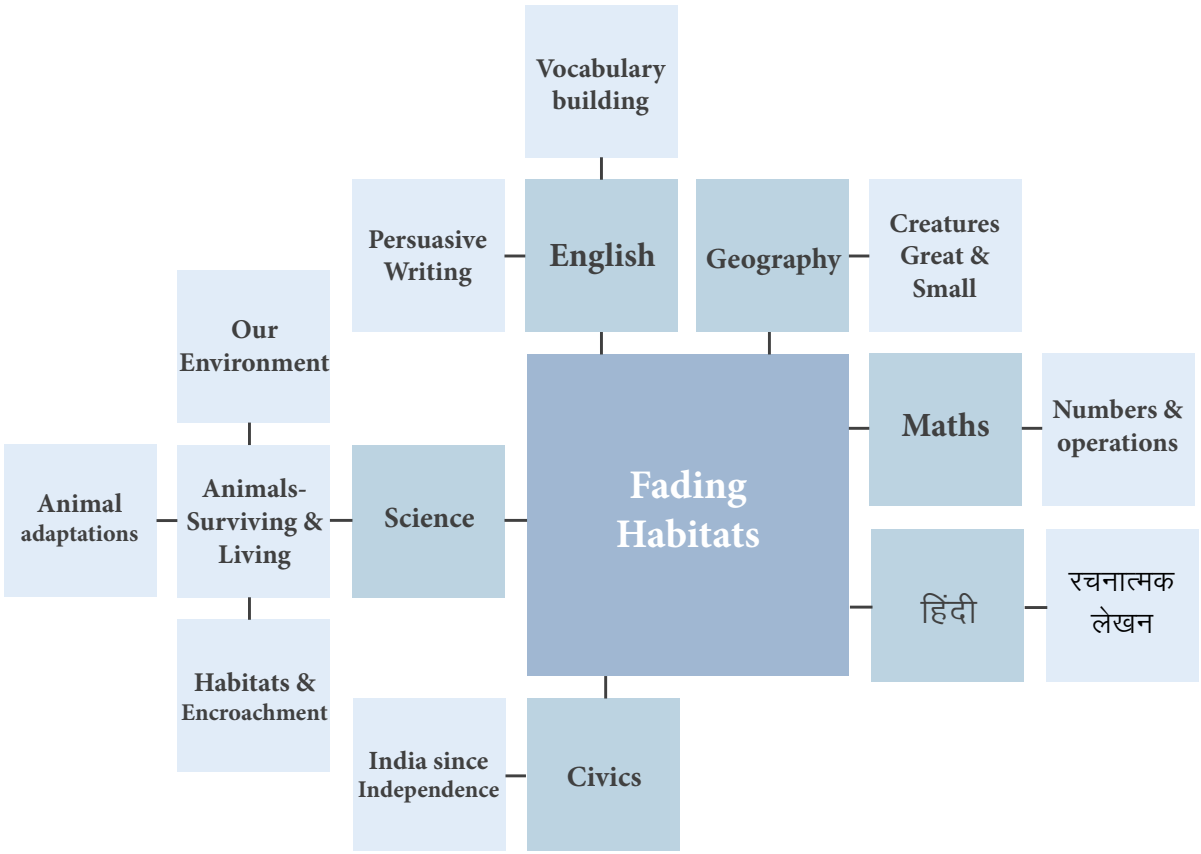
Project Introduction:

Every animal needs a home or 'habitat,' which not only includes its shelter but the areas outside and around the house or shelter where the animal frequents to obtain food and water. In many instances the 'habitats' of people collide with the habitats of different species. Development (habitat loss and habitat fragmentation) poses the biggest threat to wildlife, along with pollution and the alteration or manipulation of habitat.

'Fading habitats' helps students learn about animal habitation and how they develop their own adaptation mechanism to suit their surroundings. An audio visual stimulation will make them think critically about captive breeding versus natural habitats of animals.Through close looking at the exhibits in the museum, students will take note of different features and the associated adaptation mechanism.

Curriculum Links:

The lead subject focus for this project is environmental science along building cross linkages with Geography, Civics, Language and Math



Pre-Visit Session:

The project commences with a 20 questions game, *What am I?* that can be played in smaller groups or as a big classroom activity. Select animals cards are available for individual volunteers to come up and read and answer 20 questions around the same. The effort is to guide and encourage the students who are guessing to narrow down the possibilities by asking questions that build from the previous one. Through this activity attention is directly drawn to animal types, their features and habitats.

This is followed up by film. Students watch a short clip of 'Creature Comfort: At the zoo', an animation series developed by Nick Parks wherein animals are talking about their life in zoos. The faculty facilitate a discussion on life in zoos and why they exist. What are the pros and cons of a zoo for animals, for man and the environment in general? Some of the arguments in favour of zoological gardens can be conservation of endangered animals, research and experimentation and public education and entertainment. Arguments against zoos can be cruelty to animals, forced captivity, distancing the animal from its natural habitat, alienation and distress. Students are encouraged to explore both sides of the arguments before make conclusive judgments. Based on the same the class is broken up into groups to conduct a *debate*. Students use their debate planner provided in the student worksheets to structure their arguments. The session ends with lead debaters from each team summarizing both perspectives.

During Visit Sessions:

The visit to the museum is broken into 3 sub-activities that are conducted within or at the entrance of the museum. The collections to be explored are specifically the Natural History ones. Designated faculty take independent charge of each session to maintain consistency in the facilitation of the session. The sessions comprise of a mix of observation-based and reflection-based activities that allow the spaces to be used effectively given that the physical footprint of the galleries are modest in their size.

Through the Looking Glass encourages the children to close look and draw select species displayed in the galleries that fascinate them. Students then write about three things by looking at the animal –its habitat, its diet and its defence mechanism. What does the presence of well -developed canines tell us about the animal's eating habits? If the animal has a thick fur, what can we tell about its habitat?

जंगल की दास्तां (Stories of the Jungle) is a creative writing exercise in vernacular (Hindi) wherein children are encouraged to build an animal story taking inspiration from the various exhibits on display. Storytelling is a universal means of communicating cultural traditions, values, and beliefs, as well as a vehicle for passing on information about history, science, government, and politics. Some stories are new; others have been handed down from ancient times. The session focuses on the skills of imagination, character empathy, thought structuring. Students are given the aid of a story-building scaffold – Once upon a time – One day – Suddenly – Then – Next – Finally that they may sue to build the skeleton of their narrative.

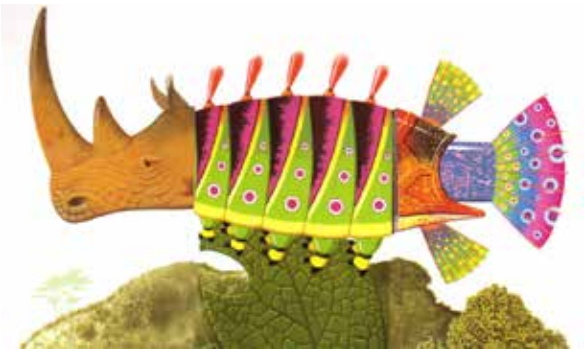
Food Web is a game that the children play in one of the larger galleries of outside the museum to build their understanding of how a food web in an ecosystem works and how human activities can impact the same.

Post-Visit Sessions:

The students return from the museum sessions to continue their project back in the classroom.

Losing Space is a simulation game that introduces to the class the idea of shrinking habitats by placing the students in a similar real life scenario. Students are physically moved within their classroom in stages to eventually find themselves confined in a very small area that is difficult to work in. The faculty then draws out a discussion from their experience and what they felt, connecting it to causes and effects of shrinking habitats in the real world. This is following up with a mathematical problem - Shrining homes that the students have to solve.

The project culminates with a creative output.



Animorphs, the final session of the project encourages the student to synthesise their learnings into a creative response wherein each student creates a unique animal and gives it adaptive features that would help it survive in today's world.

The faculty are encouraged to guide the learner's thoughts to present situations that make it hard for an animal to survive. For e.g., if the animal or bird is a town dweller, a big danger today is electrocution due to the high number of live wires in our neighbourhood. Other hazards are bright lights in cities that distract the bird and causes them to fatally crash into one another. How can the animal or bird protect itself? What defence mechanisms do they have?

Students use colours, photo cut-outs and more to create their own animorph. Students then describe the animal by giving it a name, its diet, size, how does it move and protect itself and interesting facts about their animorph in their student worksheets.

PROJECT OUTCOMES

The project outcomes are documented via the toolkits evaluation frameworks devised for the learner, the implementer and the observer.

After every session of the project, students reflect on their experiences and learning. They will write one thing they loved, one thing they found challenging, and one idea or question they now have.

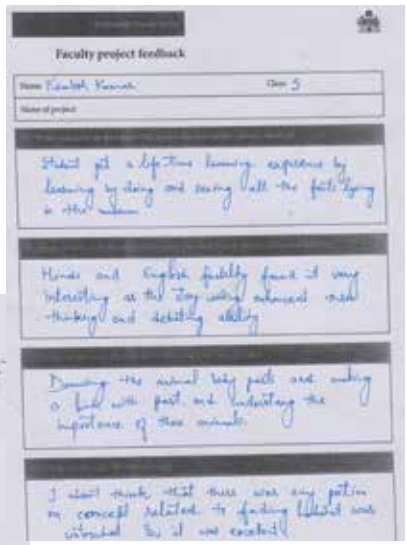
The Faculty Project Feedback form is a tool for all faculty members to reflect upon and record their experiences through the implementation of the project. It is filled in at the end of the project as a means to collate all thoughts.

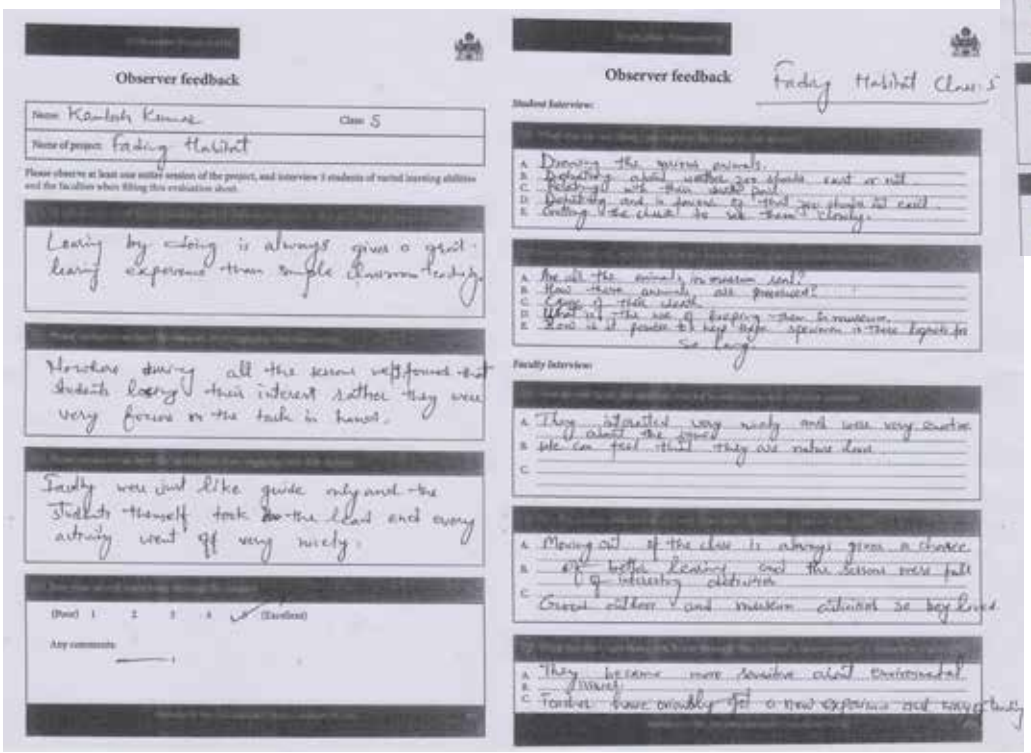
The successes and challenges of a project are most evident when an external faculty or administrative member observes the project from a bird's eye view.

When filling the form, the observer is asked to take note of the activity, how students are engaging with the activities and among themselves, how faculty members are conducting the session, and the overall energy of the session.

The observer then conducts a short interview of select students and the faculty members to record a holistic feedback.


Student session feedback


Faculty project feedback


Observer feedback

Name: Kamlesh Kumar Class: 5
Name of project: Fading Habitat

Observer feedback Fading Habitat Class: 5

~ Riktendu Das,
Science Faculty, Junior School
Mayo College, Ajmer

Click Here to watch the video of Mr. Das's feedback on the project and the Museum Learning Toolkit.

https://www.youtube.com/watch?v=MCSbibcKcS0&feature=youtu.be

Way Forward

The Mayo College Museum Toolkit Project is a first-of-its-kind initiative in India where a museum collection has been specifically mapped to curriculum outcomes to both maximize the potential of museum learning and integrate it with the pedagogical framework of project-based learning in the classroom. This design and implementation collaboration between Flow and the Junior School Faculty of Mayo College, Ajmer, has resulted in the adoption of this approach to be embedded in the school's academic calendar.

The project is currently being extended into the middle school as a new collaboration between the Flow team and the middle school faculty.

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