

Design Innovation in Classroom

Enhancing Interactivity in Indian Classroom Education

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ABSTRACT

The world is developing rapidly day by day. Technology is accelerating, and people, places, and things are moving with exponential growth. Yet, when we look back at our classrooms, all our past generations have had the same experience. Today, the education system, especially in the classroom, has barely developed. There is a huge gap between the learning process and the world around us. Students as well as teachers are stuck in a primitive method of learning. Hence, the purpose of this paper is to design an ecosystem that fosters a better learning experience. This caters to reduced stress, freedom of learning practices and methods, self-learning, experimentation, and collaboration. The research focuses on primary data from observing different learning schools and focuses on individual learning. To analyze further, alternative approaches used around the world to learn school curriculum and their benefits and drawbacks the final design is created. 'Globo' is an ecosystem that brings a new way of learning. It is designed to focus on building a classroom that enhances the interaction and experience developing overall education.

Keywords: Indian Education, Classroom, Interaction, Experience, Self Learning, Collaborations

INTRODUCTION

A traditional classroom typically features a structured and organized setup designed to learn from direct instruction. Desks are usually arranged in rows or columns, all facing the teacher's desk and a blackboard or whiteboard at the front of the room. This layout reinforces the teacher's role as the primary authority figure and focal point of the classroom.

In the process of learning in a classroom; the students are treated as empty vessels and the teacher is considered as an epitome of knowledge and imparts it to the students pushing learning and knowledge to be restricted and stagnant. The social environment is primarily based on uniformity and discipline. The routine is set schedules and procedures that reinforce a rigid learning atmosphere. While this structured approach may provide stability in the long run, this education does not cater to the needs of all students. The sincere lack of flexibility often hinders creativity and critical thinking. Often, students are given an oral lecture that they absorb and memorize from textbooks. This practice is then checked through oral and written tests. There is no freedom to think freely or practice a

behavior that ignites curiosity and motivation. For years there have only been incremental changes in this method of learning. Teaching is made easy and the learning experience is watered down extensively. As time progresses and different disciplines and technology emerge, the distance between classroom learning and the actual world is increasing.

Here, when discussing teaching and learning, it does not include the syllabus that is devised through the education system. It talks about the development of a student through the teaching methods and the impact that a classroom education has.

Often, in subjects that have an easy practical approach like mathematics, where you practice to learn, learning still is easily gamified and taught through some experiments. Subjects like history, politics, geography, and sociology are pushed back due to a lack of proper teaching methods. The primary goal is to prepare students for standardized tests and exams, which are crucial for academic progression. This examination-oriented approach often leads to a significant emphasis on rote memorization and recall of information, which can limit the development of critical thinking and problem-solving skills. Hence, there is a better way to enhance a student's learning experience. The study approaches an interactive approach where different students can learn in their ways and are pushed aside from the monotonous classroom environment that has been prevalent for generations.

METHODOLOGY

To understand the impact of classroom experience on an in-depth level, it is necessary to study from a systemic perspective. Hence, the research includes interviews with students across India who studied from a variety of approaches and places. Also, to observe the ecosystem, there is field research in 3 schools different from one another. This study aimed to reflect upon real-life experiences and developments and helped in observing the contributions of various subjects and objects of their education.

Riverside School



Image 1 Riverside School. (Source: Google)

Riverside School has a more innovative approach to education and promotes workshops, experimentation, and collaboration to facilitate learning. Open-ended discussions across batches and subjects, as well as an open space for new learning methods to emerge. In classes, there was more maker space to promote a hands-on approach to learning. The students had real-life projects related to SDGs that they worked around and helped.

To make a more aware and conscious experience the students were assigned tasks like creating compost, which helped them realize the value of mindful use of resources. Classroom education was still restricted to books and teachers reciting lessons as a method of learning, hence a lot of students were given the freedom to learn on their own or take different approaches. The student's behavior was more motivated, aware, energetic, and curious. With the given resources, the ecosystem incorporated the method best to facilitate different learners.

Diwan Ballubhai School



Image 2 Diwan Ballubhai School. (Source: Visit, 2023)

It is in the traditional education system. The first thing observed in the classroom was a few students being forced to stand and look down due to some discipline issues. Another student was reading the chapter out loud and the teacher would give a lecture on the given paragraph. There was absolute silence and everyone was looking at their book. At the back, some students were almost falling asleep, showcasing a lack of motivation. While studying the school ecosystem, I noticed that there were barely any students in co-curricular spaces. The school was highly disciplined and organized.

There is a significant importance of gamification and playing that traditional schools like this lack. This does not ignite a curiosity. Most students when discussed often rely on YouTube to learn through interesting videos or parents send them to tuition to study.

Eklavya School



Image 3 Eklavya School. (Source: Visit, 2023)

Eklavya School is a blend of informal learning methods in a disciplined traditional classroom. The school has mandatory play time for students of all ages. Every morning enjoying and playing sports was encouraged as it highly benefits health and mindset. There was a high level of discipline and competition that was surrounded in the classroom. In the front of students was a list of students who were graded the highest. For a learning environment, it creates a hierarchy.

The teacher discussed various methods they use to improve classroom learning, by creating games, tasks, and creative assignments. Their way of trying to engage different learners is to understand concepts. The students were often scared of breaking such rigid rules. Most students I interacted with had high discipline yet motivation to work. There was a lack of flexibility and an explorative nature. Visiting schools was an integral part of understanding how the environment in a classroom is shaping student behavior.

Interviews

Interviews were conducted with students from states like Pune, Delhi, Bangalore, Ahmedabad, and Noida respectively. The motive of conducting this study is to extract qualitative data on a student's life and experience in their respective educational institutions.

The following is an overview of the questions asked

1. Where do you study? What curriculum do they follow?
2. Describe your classroom in detail.
3. What is how you learn anything new, apart from the school textbook?
4. Rating from 10, how efficient is a school in teaching?
5. Do you take any other classes outside school?
6. Describe your day in detail.
7. Do you think there are things in school you want to change? in a class?
8. Do you get exhausted just studying by reading and writing and taking exams?
9. If you were given a choice to change something about your classroom learning, what would it be?
10. How do you think you would enjoy studying?
11. If you are unable to study or complete your work, what help do you take?
12. What methods does the teacher use to teach? What methods do you use to learn?

1. Interview 1

The interviewee is a student from 9th grade studying in Delhi. School starts at 7:35 AM with a zero period until 8 AM, where students can study informally or consult teachers. Each period lasts 40 minutes, with four periods before and four after a lunch break. School ends at 1:40 PM.

From 2 to 3:30 PM, they take a break and then prepare for her tuition classes. They attend tuition from 4 to 6 PM for Mathematics and Science, with specific days allocated to each subject. The tuition focuses on a summary of chapters, rigorous note-taking, and regular tests. then returns home by 6:30 PM, plays until 8 PM, has dinner at 9 PM, studies other subjects, and goes to bed by 10 PM.

School teachers primarily use textbooks and question-answer methods. English is often taught using YouTube videos, while science has minimal practical sessions. In contrast, tuition classes involve thorough explanations, note-taking, and frequent testing. The classroom has 43 students, plenty of windows, seating, and a screen that rolls over the blackboard for projector use. They find them monotonous with limited practical sessions and prefer biology due to the practical work and discussion opportunities in the lab.

For history, they favor videos for better understanding, while for science and English, she prefers textbooks. She desires more real-life experience-based education. They supplement her learning with extra books, YouTube, ChatGPT (recommended by teachers), friends, and parents.

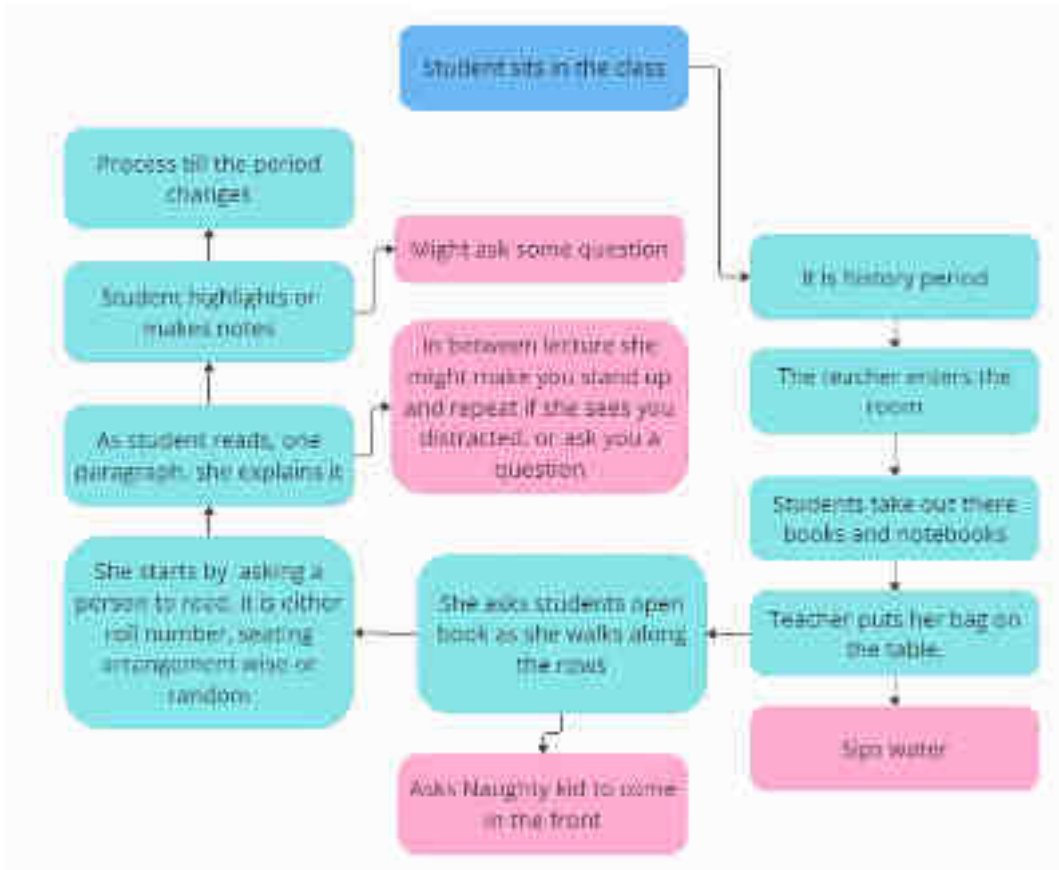


Image 4 Classroom Scenario Building. (Source: self, 2023)

2. Interview 2

The interviewee, a CBSE board student, studies Physics, Chemistry, Mathematics, AI, and English previously he studied in an ICSE curriculum. His interests include football, reading, and online games.

His current classroom has 20-30 students, big benches, and soft boards but lacks smart boards. His previous school, with an ICSE curriculum, had smart classes which he preferred for easier understanding through presentations and videos.

Lessons are taught using a whiteboard and reference books. Teachers provide notes, and students can ask follow-up questions at the end of the class. His previous school encouraged more informal discussions in lower classes.

He wakes up at 7 AM, leaves for the bus at 8 AM, and reaches school by 8:15 AM. School starts at 8:30 AM with a weekly assembly and a Sanskrit prayer followed by the National Anthem. The day includes two 35-minute periods, a snack break at 10-10:10 AM, lunch from 12:30-12:50 PM, and school ends at 1:30 PM. He reaches home by 2 PM. After a break until 3 PM, he studies for 2-4 hours. He then works out or plays for an hour, has dinner from 8-8:30 PM, studies or relaxes, and goes to bed at 11:30 PM.

He finds the CBSE curriculum easier and doesn't attend tuition. However, he prefers the ICSE curriculum for its better books and teaching methods. The lack of practical learning in his current school leads him to rely on guides, sample papers, the internet, and YouTube for better understanding.

The interviews highlight the importance of school education in a child's health. Students with informal education often had reduced stress and often had a more optimistic attitude towards learning. Meanwhile, students with primitive, traditional, and formal education had a lot of discipline but also lacked motivation and studied alternatively in tuitions, and coaching classes. Despite similar education being provided, there has been a clear difference in students' behavior.

To gain a worldwide perspective on different interventions, the project dealt with various education systems with an alternative learning environment.

- 1. Montessori Schools:** Focus on self-directed, hands-on learning. Emphasize mixed-age classrooms, individual pacing, and intrinsic motivation.
- 2. Waldorf Schools:** Emphasize creativity, imagination, and holistic development. The curriculum integrates arts, practical activities, and academics.
- 3. Forest Schools:** Focus on outdoor education and learning through nature. Students engage in hands-on activities and exploration in natural environments. Promotes physical activity, environmental awareness, and problem-solving skills.
- 4. Online Schools:** Provide education primarily or entirely through online platforms. Offer flexibility in terms of location and pacing. Can be fully virtual or blended with in-person elements. Increase since COVID-19 pandemic.
- 5. International Baccalaureate (IB) Schools:** Offer a rigorous, internationally recognized curriculum. Focus on developing intellectual, personal, emotional, and social skills. Prepares students for global citizenship and higher education.
- 6. Home Schools:** Education provided by parents or tutors at home. Allows for highly individualized instruction and flexible scheduling.

(From sources across the web)

Many institutions present a common alternative that promotes informal learning, which is usually unstructured, spontaneous, and, very often, unintentional. Unlike formal learning, this is more unstructured and more like a game. Informal learning includes gamification, experiential learning, and social learning. It gives students less burden of learning but makes it fun and acts as a motivation that pushes them to learn more.

There have been various improvements made like adding smart classes, encouraging more practical learning, and changes in the structure and approach to learning through curriculum.

This has surely made advances but has also added issues where smart classes are barely used, and textbooks have been the same over the years. There is only one way to judge knowledge.

LITERATURE REVIEW

Education in a classroom is a wicket problem in space that needs to be worked upon at different levels. The project here works on Revamping school education in an Indian classroom environment to foster informal learning, promote self-directed study, and encourage peer collaboration.

Why is self-directed learning and peer collaboration important?

Students have always been taken as individuals not capable enough to work independently. Hence, rigid exams, humiliation systems in society, and teachers being the only source of learning in a class have led to the education we all know today. Collaboration and experimentation are a huge part of learning. Therefore through these interventions, the system is designed to facilitate a classroom where learning is more than a stressful burden.

RESULT & DISCUSSION

The project revolves around a classroom which is a more informal and enhanced way of learning. With Globo, the idea is to make learning more fun and interactive by giving students active engagement, and exploration and having a higher sensorial impact to learn intuitively. Globo also promotes self-learning and peer-to-peer collaboration. It is a new vision to look at classroom learning.

Globo is based around a room that is equipped with a central globe and surrounded by theater, forming a unique classroom experience designed to take students on an immersive learning journey. Under the guidance of a teacher, students gain a deep understanding of a specific subject.

They are given the autonomy to choose their destination, and with a simple tap, the globe transports them there. The room transforms into an interactive theater, providing a firsthand experience of the chosen location, supported by informative audio cues that facilitate learning through active engagement with the environment. If any questions or uncertainties arise, the teacher is available to pause, rewind, and elucidate the content.

This experiential learning method extends beyond conventional textbooks, fostering curiosity, honing observational skills, motivation, self-directed learning, collaboration, experimentation promoting interaction, and enhancing understanding of one's surroundings.



Image 6 Globo Experience. (Source: Vizcom Generated)

Features and characteristics of Globo

1.Space

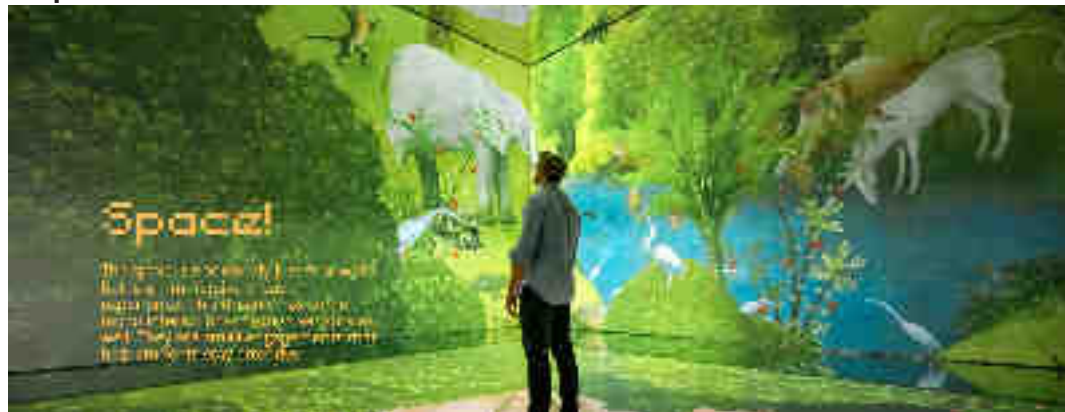


Image 7 Space Experience. (Source: Google)

2.Globe



Image 8 Globe Interaction (Source: Pufferfish)

3. Application

The teacher's application will help teachers to tie the ecosystem together and keep a check. It helps through records, feedback, and other features.

4.Audio

An audio-user interaction that guides the user through the journey and helps and through AI keeps developing according to the needs of students.

The following is the typical user journey of a student and teacher working with Globo.

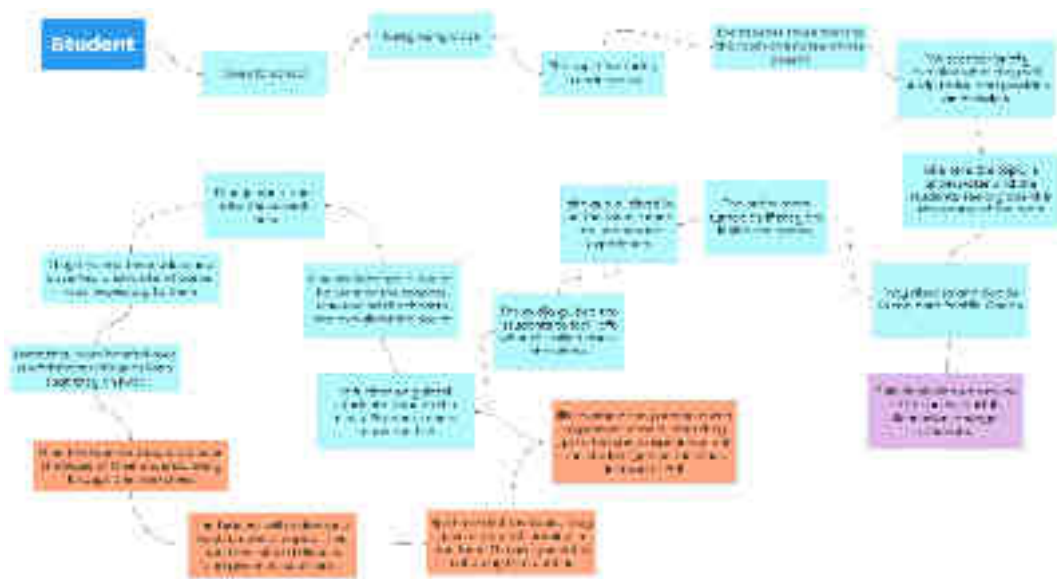


Image 9 Student Experience. (Source: Self)



Image 10 Teacher's Experience. (Source: Self)

To understand different experiences better, there are user personas devices to learn.

1. Arya, a 7th grade student from Mumbai



Image 11 User Persona. (Source: Self)

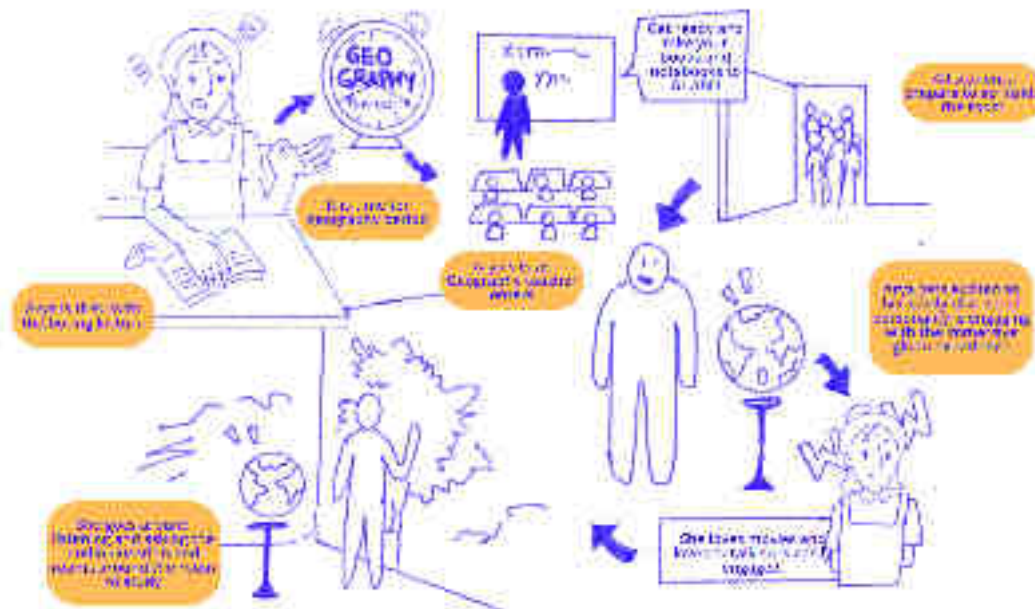


Image 15 Scenario Mapping. (Source: Self)

2. Miss Nandini, a geography teacher from Bengaluru.



Image 17 User Persona. (Source: Self)



Image 18 Scenario Mapping. (Source: Self)

Project Globo works with different design deliverables that form an ecosystem. This ecosystem facilitates different types of individuals who learn in their own way. The space helps them interact in various ways. This freedom also helps students rely on their own curiosity and become independent learners. Furthermore, globo enhances the learner's experience. You learn from visuals, experiences, audio, and peers. Immersing in experiential learning helps students to move out of a monotonous method of learning. Audio has AI experience that understands class needs and with the help of teachers helps students learn through different ways. It may sing a song, play jokes, and ask questions. Ways that will help students see different perspectives. To make the system more reliable and efficient. The application keeps records and feedback on all sessions. and helps students record as well.

CONCLUSION

The primary purpose of this project was to understand various aspects of classroom education and the impact of the development done around it. The study includes on-field/ primary research and observation of the education system and learning the development of a student around it. Through interviews, the impact of the system was studied at a micro level. This study also learned from alternative learning methods and practices, their pros and cons, and how the final design can incorporate all of these. The design project majorly centers on examining the classroom environment and how one can enhance the interaction and experience of a student.

Experimentation and collaboration have always been the catalysts to learning, providing the motivation and igniting curiosity in students will develop a better learning ecosystem that will help in the long run.

Understanding this, the design project is centered on the key needs of bringing an amalgamation of formal and informal education. Where education can be less stressful students are given more freedom as well as the classroom has a structure that can be developed through evolving technology. The interaction is enhanced due to the learning being from different mediums that work with visuals, discussion, and audio. Students are free to learn on their terms and AI-developed modules also keep on developing the module. The teacher here is not the primary source of education but acts as a middle ground between technology and students and connects them. Students can always rely on the teacher and at times it can help. The project can further develop into a space where students can talk to the immersive theater and learn. This will also foster a way to understand every student's passion and curiosity and work on various developments of their emotional quotient, problem-solving, creative thinking, etc. It will also be a way for students to learn from their surroundings. The globe can have much more freedom in time and space to offer a wider range of information through time. Students won't be mugging information but will dive deeper into reflecting and forming their own experiences and beliefs. This way we can also foster a more empathetic behavior to the surroundings, fostering a youth who will make decisions that will help us develop a more sustainable and utopian future.

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