Envisioning improved E-learning platforms based on Design concepts to aid Indian Education System

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Abstract:

COVID-19 disrupted the smooth operation of educational institutions [7]. Due to this reason, most educational institutes have shifted to online systems [7]. When it comes to education, India has a vast history, and over a period of time, due to socio-political circumstances, access to education was limited to a few people of certain castes and genders. This paper also takes a look at the association between degrading mental health and academic stress and how it can be solved with hybrid learning [7]. Education system issues have persisted over time, and this paper investigates how to improve E-learning platforms based on design concepts to help improve the education system. Also during this time, a new socio-technical system was formed. I will also be discussing how we can implement TSOI hybrid learning models into a hybrid learning system [11].

Introduction:

"Plants are Shaped by Cultivation and Humans by Education"

- Jean-Jacques Rousseau (1979). "Emile: Or, On Education", p.38, Basic Books.

India has one of the older education systems in the world, and it was rich in content, but over a period of time, the meaning of education changed [1]. When COVID-19 started spreading, the world went on hold, and educational institutes went under lockdown [7]. And for this reason, online learning modes were adopted on a vast scale in India. This gave me a chance to reflect on what our traditional offline education system was and how deeply flawed it is. Through this research paper, I will be talking about the shortcomings of the Indian education system and how they were addressed when technologies such as e-learning platforms came into the picture.

Background of the Indian education system:

Ancient India's Education system:

Before going into a discussion of e-learning and hybrid learning, we will first look at the education system in India over a period of time.

The Indian Education System is one of the oldest education systems in the whole world [1]. During the Vedic period, religion played an important role in society [1]. During that time, education was treated as a promoter of religion [1]. Due to the primary importance of religious education in this period of time, it was only accessible to a few people belonging to higher castes.

Knowledge, activities, modes of organization, objects, software, and hardware technologies are all examples of technology [2]. The knowledge that one learns during that period in the education system is in itself a form of technology [2]. Technology helps us to solve problems, extends human senses and forces, mediates between the physical world and cultural world, and is a mode of knowing, revealing, and enframing [2]. According to Horkheimer and Adorno's narrative, knowledge equals power, and power equals technology [2].

Education during British times:

The modern education system was established at the expense of the traditional education system after British rule in India [3]. The current high school education in India has its roots in Stuart Elphinstone's "Minutes," where he was very adamant about teaching English and European sciences [3]. Indians also started demanding an English-based education as that ensured that they would get jobs in British bureaucracy [3]. The British agreed as well because Indians who spoke English could act as a liaison between the government and the Indian people [3].

At the time, it was impossible for women of lower castes in rural India to obtain an education [3]. I, a woman of today, wonder how different that world was [3]. Things we take for granted now, like education, which is now a basic right, were once a dream for women of that period [3]. Because of today's technological advancements and societal advancements, any person of any caste and from any geographical location can obtain an education [3].

Higher - Education during the Post-independence period:

As India gained independence, it became motivated to bring many changes to the country [4]. New India needed higher education based on new value sets like democracy, secularism, and national integration [4]. The nationalist leaders thought that education was a tool for improving the socioeconomic reality of the country [4].

"Education is the most important single factor in achieving rapid development and technological progress and in creating a new social order based on values of freedom, social justice, and equal opportunities" (The Third Five-Year Plan, Planning Commission, Government of India, New Delhi, 1961, p. 573) [4].

Issues in the Indian Education system:

India has the largest democracy in the world [5]. With such a huge political presence, India faces multiple issues on various levels [5]. In today's technology-aided world, the Indian education system should have made progress, but it seems like it's stagnant [5]. It is due to various factors, which I will list as follows:

1. **Corruption in Politics:** Technology can have an impact on politics [10]. As said earlier, education is a form of technology, and it can be used in two ways: decision-based and necessity-based [10]. Corruption in politics is decision-based [10].

   Corruption has entered the Indian education system, which not only causes the education system to degrade but has also affected the culture [5]. Due to governmental policies, there was a huge investment in Indian education systems [5]. Some astonishing statistics show the real-life situation of India's education system. 35% of India's population is illiterate, only 7% are graduates, and 57% of college professors lack a Master's degree or Ph.D. degree [5]. There are 16000 colleges operating within these universities and institutions, including 1800 colleges exclusively for women.[5].

   Yet even after this, we are below par [5]. Parents invest their entire lives' savings in their kids' education, and by the end of it, what do they get? A degree from an institute that was running without affiliation, and their kid's degree being declared fake? [5]. Some of these institutes have no proper infrastructure, and their professors are of poor quality [5].

2. **Quality of Indian public education system:** India’s government schools have one thing in common, which is the poor quality of education and bad infrastructure [5]. If this continues, India will continue widening the income gap, and the inequalities will continue to grow [5]. There is a huge implication if no steps are taken to improve the education system [5].

3. **Poor quality teachers:** Another important reason why India's education system lacks high-quality teachers is a lack of resources [5]. This is due to the fact that teachers have very low salaries [5].

4. **Mental Health, Competitive environment, and Parental pressure amongst Indian students:** Students' mental health is getting affected due to academic stress in India [6]. There is an increase in students committing suicide as a result of constant academic stress [6]. Students from lower-income groups are more likely to develop anxiety disorders [6]. A natural reform in Indian education came about during the COVID-19 pandemic, which will be discussed further [6]. Due to rising unemployment among educated Indians, parents place enormous pressure on their children to "be the best" [6].

What happened during the pandemic: Situational actions

In the wake of the COVID-19 pandemic, 186 countries implemented national-wide lockdowns in schools, which affected 73.8% of students [7]. The government ordered educational institutes to shut down as these institutes wanted to save their students from the beginning of the novel coronavirus [7]. This caused inconvenience for many, but it also opened new doors for digital intervention in the education system [7]. During this time, many educational institutions have shifted their approach towards education to online modes like Zoom, Microsoft Teams, and others [7].

Post Pandemic situation :

Students and teachers also adopted conference systems like Google Meet, Jiomeet, and Zoom, where they used to conduct online classes [8]. People faced many constraints and challenges during the COVID-19 pandemic, but with those challenges, they found creative solutions [8]. This pandemic served as a blessing in disguise when it came to the education sector. Many education systems were forced to rethink their approach to teaching.

In traditional classroom settings, just sitting in class for 6–7 hours and going through multiple lectures was not beneficial in terms of the actual learning. Lengthy zoom sessions were not useful in terms of the psychological principles of a child's learning abilities [8]. Being physically present in the class and making students interact forcefully just for the sake of interaction is not beneficial either [8].

With online learning methods, teachers intend to provide a more authentic learning experience [8]. Students will be able to apply their online skills, for example, by giving students more collaborative projects that include the use of social media tools for their help [8]. Instructors have changed the way they assess students; they have eliminated homework [8]. They have started implementing interactive discussions, student-led teaching, and gaming activities to motivate students and increase their attention [8].

Overall, we can say that the pandemic served as a means to accelerate improving the education system. Technology played an important role in overcoming this pandemic situation; it not only helped in continuing the education system, but it also gave humanity a chance to sit and reflect on its old education system and its flaws. Students learned at their own pace and learned things better.

How E-learning learning solves the traditional education system's flaws:

The Indian government has invested heavily in Indian education, but why do we still have a poor infrastructure? It is mainly due to corruption in politics, which affects the education system. E-learning could possibly solve the problem of improving the quality of Indian public education. Students get a chance to give feedback about the teacher on the online system, and if the teacher does not improve, management can replace the teacher.

Further, when it comes to the mental health of students, hybrid learning helps. In traditional settings, students have to attend school for 6 to 7 hours at a stretch. And through this paper, we now know that the human brain has its own limits regarding how much it can absorb. Through hybrid learning, one can sit through short, one-hour lectures, take longer breaks than in traditional settings, and return to the classroom refreshed.

Along with that, online conferencing platforms like Zoom and Google Meet have recording features, which help with rewatching the entire lecture and take the pressure off the student.

Further, through online conferencing learning platforms, teachers can promote a collaborative study environment rather than a competitive one. A competitive study environment causes nervous disorders in students, which can be curbed using hybrid learning.

Designing an efficient Hybrid learning platform: TSOI Hybrid learning model

One should be able to change themselves according to the times' needs. In 21st-century education, context should have high-level learning skills to solve new-age problems [11]. These learning skills can be divided into three main categories [11]:

1. Information and communication skills
2. Problem-solving skills
3. Interpersonal skills

Technology is used so that students can be trained to learn independently and apply the knowledge they have gained [11]. For this, we have the TSOI Hybrid Learning Model, which is a cognitive learning model that has four phases [11]. It is a combination of the Piagetian science learning cycle model and Kolb's experiential learning cycle model. The Piagetian model focuses on student activity, whereas the Kolb model advances the theoretical component [11]. This puts the student forward and makes this form of learning student-focused [11]. In hybrid learning, the TSOI hybrid learning model can be applied.

TSOI has four phases: translating, sculpting, operationalizing, and integrating [11]. Let's discuss each one of the four phases:

1. Translating: Here teacher asks students multiple questions initially, this is done in order to generate a spark amongst students and motivate them to create a link between a student's personal experience and learning new additional information [11].

2. Sculpting: is what it sounds like, information that has been gathered will be combined and a hypothesis will be formed [11].

3. Operationalizing: The concept that hypothesizes that was created in the previous step will be proven here in this step using practical activities [11].

4. Integrating: The hypothesis that was proved to be right will now be implemented in form of problem-solving [11].

Hybrid learning has its own advantages: students can learn on their own time and at their own pace; they can learn from anywhere, and they can take any instructional path in order to understand what they are trying to learn. Along with this, there is a teacher of record who will help students achieve their goals [11]. Studies conducted show that using this TSOI hybrid learning model has a significant impact on students' learning ability and outcomes. This model also supports what skills are required in the 21st century [11]. This model was used with hybrid learning, and the outcomes came to 83.30% [11].

Using Design concepts to improve E-Learning platforms:

E-learning technology through the lens of material experience: The term "material" in this context refers not just to actual physical things but also to their qualities, combinations, and compositions for performance [12]. In this definition, "material" includes traits, combinations, and compositions of physical objects as well as the actual physical objects themselves [12]. Artifacts have emotional connections, making their owners strongly appreciate them, and family traditions have grown up around them [12]. While designing these E-learning systems, we can make use of the fact that materials have emotions attached to them [12]. So if a child is working on his or her schoolwork from home, as UX designers we can look towards creating online environments that resemble classroom settings, and this in return will help the student experience education in a much better way [12].

Students as embedded actors: Further, while designing for a good user experience in the e-learning learning environment, one could use the concept of "design for life" [13]. While conducting research for developing learning systems, UX researchers need to observe students in their normal classroom settings and in their home study settings [13]. This can lead to the derivation of useful insights. Transformative goods enable us to connect with others, recognize

our accomplishments, and express the essential components of our identities [13]. Successful design goes well beyond comprehending the "cognitive load" [13]. The authors conducted research and understood something called "cool user experience" [13]. Essentially, it is how UX designers should design for core human motives—creating products that fit into users' busy lives [13]. One should strive to create the "triangle of joy" while designing an e-learning platform [13]. This triangle of joy is basically a system that lets students direct their actions, reduces the hassle factor, and applies the learning delta: "I think what I want, I get the solution"—with no thought, no figuring, no deciding. "It just happens like magic" [13].

Giving an immersive experience in order to get the best out of the student: Another feature that we as UX designers should keep in mind is creating a memorable experience on online and offline platforms for students. To have "an experience," according to Dewy, is to be able to undergo something that you will remember, that will make you feel alive, and that will interfere with your routine [14]. There are two types of experiences: the intellectual experience—does it have any aesthetic to it? Emotions and aesthetics are required for an intellectual experience [15]. When emotions are involved, you are experiencing them more intensely [15]. User engagement can be implemented by using interactive elements on any webpage [15]. When we talk about aesthetics and user judgment, Any website or product service can be made aesthetically pleasing, but the judgment depends on who is viewing it, what they are doing, and what background information they have about the product, so everything is very subjective [15]. But it's a complex thing; in the initial days, aesthetics may play an important role, but as days go on, usability plays a major role [15].

E-learning design and Usability: An interesting connection between users' mental models and designers' design models and how this will affect a design's success [16]. Don Norman discusses discoverability and understanding as being the two most crucial aspects of excellent design [16].
Usability goals:

1. Effectiveness: How good the system is at doing its job [16].
2. Efficiency: How efficient and easy it is to use[16].

One of the objectives should be to create an effective and efficient e-learning platform [16].

Conclusion:

India’s education system is one of the oldest in the world. It was based on spirituality, meditation, and religion. It was much deeper, and education was used to achieve spiritual awakening. But this education was just for upper-caste Brahmins and not accessible to other people. With changing times, education has changed its meaning and structure. Education in British times changed dramatically with European sciences and English entering the picture; this education was especially available to upper-cast males living in cities. Post-independence, education took on a different structure; now it was made available for everyone, but the quality of education and curriculum was something that kept India from being called a "developed nation". The traditional education system had flaws that caused students’ mental health issues. During this time, e-learning was in use, but not on a larger scale. Students went to school and got an education there in the traditional sense.

Through this research, it is clear that the pandemic proved to be a catalyst for changing the age-old education system and bringing in technology as a mediator. During the pandemic, many Indian education institutes shut down to keep themselves running. However, E-learning platforms have helped to solve many problems.

E-learning in itself has its own issues; different students have different learning styles, and for this reason, hybrid learning plays an important role. Using an existing model like the TSOI learning model, hybrid learning can be enhanced, and students can get maximum benefits from the education system.

In this study paper, design principles are applied to create better E-learning platforms that will allow students to learn much more effectively and contribute to the country as a whole. The education system will produce quality students and good candidates for the development of the nation.

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