

What Technology Should I Use in My Class?

A discussion on the potential and purpose of technologies in teaching-learning

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The past two years of our careers have been extremely challenging. Never during our teacher training did anyone refer to such a situation or mention how to handle it. We always believed that the job of a teacher meant going to school, where we would meet students. We would teach, and the students would learn.

However, since the Covid-19 outbreak in 2020, India's schooling system has been derailed. For more than two academic years now, we have been forced to keep children away from schools. The disruption of physical classrooms was rather abrupt, and most of our schools didn't have the time or the know-how to redesign their syllabus and prepare us for the new situation.

How Do We Teach Students Who Are Not In Front Of Us?

After the initial panic caused due to the virus and the first nationwide lockdown, we began to explore alternate means to reach out to students. Some suggested that we use the internet. Schools that were well equipped could ensure that all students were connected. They could also expect parents to help out. These schools had a better chance to adopt a new method of teaching called online classes. But what about schools that did not have such facilities? Different schools tried different ways of reaching out to students and restoring their academic schedules. For instance, we learned on-the-job how to teach through a mobile phone. Some enterprising colleagues also figured out how to get students to participate, how to assign homework, and how to conduct tests. Most of us merely coped.

We hope that soon the pandemic will be past us and schools will resume conducting physical classes regularly. We also hope that such a disruption will not occur again. But what if it does? Also, what have we learned from our experiments with technology, so far? Can it be used more often? Can it help do something that we could not achieve in our classrooms earlier? Did it help students in any way? Did it help us (teachers) do our work differently? Did it make our task easier and more effective? Or did we promise to not go anywhere near an online class ever again?

Depending on what technologies and techniques teachers were forced to adopt, different teachers will have different opinions about what worked, what will work, and what changes they may have to make. However, all of us have achieved a level of familiarity with technology, enough to help us ask some critical questions about it.

Assuming that modern information and communication technologies are useful and do make teaching and learning more efficient and joyful, let us explore them to see what issues we need to address. More than becoming an exploration of hardware and software, this is an opportunity to analyze how technology can help us teach differently, save time and effort, and aid us in doing tasks we always wanted to, but our classrooms did not allow.

Issue 1: The Choice Of Technology

Computers connected to the internet can perform a wide variety of functions. We see different people using them for different tasks. Earlier, we only had desktop computers. This was the case in computer labs in most schools as well. Nowadays, computers come in a variety of shapes and sizes. We have seen laptops, tablets, smartphones, and even televisions connected to the internet. Many of us have one or more of these devices. In a way, all of us have figured out how to connect to the internet and to each other. We all use information and communication technologies (ICT).

Of course, while most of these devices can be used to do many things, not all of them perform the same functions. At least, they do these things differently. A smartphone can be used as a camera. It can also be used to make video calls. But typing a document is rather difficult. A desktop or a laptop has a variety of software applications and can perform a variety of complicated tasks that smartphones struggle with, say analyzing data or coding. So, if we have to adopt ICT for teaching and learning, what devices, applications, and accessories should we choose?

First on our wishlist should be an internet connection for every student and teacher.

Some of us may have a choice of devices. Many of us, may at least, have a smartphone. But the same cannot be guaranteed for every student. Teachers should make an assessment of how many students they will be able to connect to. They should also assess what kind of devices they can access, what features do those devices support, will they have access to it

all the time, will they be sharing the device with their parents or siblings, how good is the internet connection where they live, is it available all the time, etc.

Arriving at a common minimum time, when every student can be simultaneously connected, is essential to decide when we can conduct an online class. And when we say every student, we mean each and every one of them. After all, this exercise is being done so that we can help them with their learning. Many of us, even without a systematic survey, can safely conclude that such a situation is impossible. But then, we need not consider an online class at all. We only need to connect with students. This can be done via telephone calls or notes and worksheets sent as messages or emails, use of the regular postal system, children living close to each other, thereby sharing access, etc., and there can also be many other ways by which we remain connected.

Issue 2: Learning, Teaching, And Technology

What devices will suffice will largely depend on what we wish to do with them.

Learning requires that children actively engage with the acquisition of information; process this information; make it a part of their knowledge by constantly interacting with and reorganizing it; challenge themselves by attempting to apply the knowledge to solve problems; and present their knowledge in response to various situations in different forms – spoken, written, through art, as computations or problem solving, or as creation of products. Learning includes knowledge and skills; interests and habits; and of course, the ability to learn independently.

Teaching has to aim at all these aspects. A teacher not only has to communicate information, she has to also arouse the interests of her students and package the information according to their level of understanding. She explains, describes, demonstrates, and sets tasks and problems to challenge students. She helps them practice their skills. She also creates opportunities where students can evaluate their learning.

Can ICT help with all of these activities? Can it enable a student to learn? Can it help a teacher teach? Can it help to communicate, provide practice, and challenge and evaluate learning? What software applications will be required? How can we use these applications?

The issue, you will recognize, is not about technology. It is about what we wish to do with it. A focus on learning is what we underscore. The earlier students become adept at learning, the more independent they become, the more they can learn, the less they depend on teachers, and they can be motivated to explore further. Technology, for such students, opens the doors, and the World Wide Web can truly connect a student to the world. It also means teaching-learning is no more defined solely by teaching. The classroom, be it an online class or an offline class, can transform into a space for debate, reflection, and collaborative learning. Classroom time must be put to much better use.

Issue 3: Does It Work With All Children?

Most people outside the school system fail to distinguish between the capabilities of children of different ages. In fact, most technology solutions proposed for education suffer from this limitation as well. Teachers in schools deal with children between the ages of three and 18. And this entire range is a stage of continuous, rapid development. Children in each age group have different levels of learning. In fact, even within each age group, one child is different from the other.

The best way to handle such a situation is to find ways of setting each student on an independent path. The faster they can take on the responsibility of driving their learning, the easier this task becomes. For a teacher, today, exploring ways of achieving this is very critical.

Based on a general understanding of psychological development of children, one can expect children, by age 10, to acquire a good working knowledge of language – read, write, listen, and speak fluently with a fairly large vocabulary and grammatical accuracy. And while one child differs from the other, adequate opportunities, challenges, and attention to difficulties faced by every child can ensure that all children in a class reach closer to this goal.

The result will be that all children can begin to read their textbooks, comprehend instructions, do their homework on their own, and in fact, even use technology to undertake a number of independent activities.

By age 13, they should be able to independently drive their own learning, set tasks for themselves, independently explore information, seek knowledge, engage in cooperative and collaborative activities, and with each other's help go beyond the normal confines of their syllabi. ICT can best serve students who are able to use them to learn on their own.

At the same time, the nature of teaching-learning at different grades will be different and organizing learning experiences come with different challenges for teachers. The nature of learning experiences, activities, evaluation, and the use of technology support for each class will be different.

Issue 4: Learning Technology And Teaching Technology

So far, we have distinguished between learning and teaching. We also tried to identify different aspects of the learning process. The requirements in each of these aspects will be different. ICT can be designed to support each of these differently. Intelligent choice of the appropriate curricular experiences and challenges to be posed to the student can engage the student and foster learning.

We also examined teaching and identified different activities aimed at enabling different aspects of learning. Teaching also requires different ICT techniques and resources to support different activities. What can support explanations or descriptions? What is required for a demonstration? What experiences can pose problems and challenge students? How can ICT be used to evaluate learning? Which aspect of learning is to be evaluated?

Schools use different domains of knowledge – languages, mathematics, science, social sciences, arts and crafts, games, and sports – to support different kinds of learning. Each of these domains requires unique learning experiences, has unique content, and therefore, requires unique ICT support. Text, audio, video, graphics, photographs, data and data visualizers, calculators, and computing applications can all serve learning in unique ways. A video or animation cannot do what a data sheet visualized as a graph can do. Not all teaching techniques lend themselves to visuals. In fact, not all learning requires digital technology support.

Based on the development of capabilities to learn, children at different ages will require different learning experiences. Activities and audio-visual resources may be more appropriate in lower classes, data and graphs more relevant to higher classes. Teacher guidance may be essential for younger students, while opportunities to explore on their own more appropriate for older students. Technology is best used for creation and problem-solving. Children at different ages can be exposed to different levels of creation and problem-solving.

What is to be learned decides how it should be taught. And what is to be learned and taught decides how technology will be utilized. The choice of hardware, software, the activities designed and the learning demanded define the success of the educational program.

Issue 5: What Should Teachers Do?

The prescription is: no technology, low technology, select technology, and appropriate technology.

We all function under unique constraints. Every school is different and every group of children poses unique challenges. Changing circumstances will expect us to change. The foregoing discussion tried to help you appreciate this as an opportunity. We also saw that the primary purpose of education – enabling the growth of children into sensitive, capable, and responsible citizens of the world – is why we undertake teaching and learning.

Once we appreciate the unique situation we work under – what conditions we have to adjust to, what support we are likely to get, and what technologies we can afford – we should be able to work out the best ways to achieve our goals.

Rather than defining our tasks in terms of teaching – completion of syllabi, conducting examinations, etc. – we suggest a shift in focus to help children become independent

learners at the earliest and thereafter, pursue their learning on their own. This, we argue, will help teachers grow into facilitators and guides, finding the time and space to support each student individually.

Technology can play a wide variety of roles and if intelligently planned, it can relieve the teacher from a large number of tasks. It can remove the burden of mundane tasks and provide opportunities to raise the level of knowledge of the class. It can foster creativity and widen outlook.

Allowing technology to define the nature of transactions will begin to limit what can be achieved. Online, offline, synchronous, asynchronous – all forms of communication have a role to play; text, audio-visuals, graphics, and computing, similarly, serve different aspects of learning; and desktops, tablets, smartphones and the variety of software applications that can be served through them enable different types of learning experiences. Some situations do not require technology at all; some require very low technology; and some need select technology. In general, the choice of appropriate technology, serving the needs of the students and teachers is the most appropriate solution.

Engaging with technology, experiencing it, and exploring how it can be used will enable the teacher to focus on creating the best learning environment. Give yourself time, enjoy the process, and you'll realize that technology can indeed become an able assistant to you ♦