

Arriving at the Right Platform for E-Learning

Abstract

Schools and educational institutions have tended to use proprietary software applications: software that is not sold, but 'licensed', by the vendor. Here, the institution is only a 'user', and neither owns the software nor has any control over it. Over the last decade, however, the Indian public school and higher education systems have made significant strides in using free and open source software (FOSS). Kerala pioneered the adoption of FOSS in schools in 2002 and many states have followed suit. This shift acquired further momentum after the National ICT Policy, 2012 of NCERT, recommended FOSS in schools. In the current COVID-19 pandemic context, e-learning has become the default method at many educational institutions. And with blended and Online learning set to become the new normal, we need to carefully weigh the relative merits of proprietary and FOSS e-learning platforms.

(Note: This article touches upon, but consciously does not delve deep into the larger debate on role of Online learning within education. Its focus is intentionally narrow: in the current context of increased emphasis on Online learning, our technology choices need to be in line with our educational philosophies of teacher empowerment and inclusive education).

E-learning

The use of e-learning platforms is seeing, and will continue to see, a dramatic increase. While their use was earlier limited to elite institutions, these platforms are gradually becoming mainstream. Every institution, whether in the government or private sector, is either already using e-learning platforms or is likely to adopt them in the future, to facilitate distance education and complement face-to-face interactions between students and teachers. UNESCO estimates that the number of students, across the world, who are unable to attend school, due to lock downs rose from less than 0.3 billion learners on 25 Feb 2020 to 1.38 billion learners in 23 March 2020. Many of them would be candidates for on-line learning programs.

However, while many online learning platforms are available, it is important to choose a platform that aligns best with the principles of education – participating,

sharing, and empowering. Just as there is a choice between a proprietary operating system like Microsoft Windows or a Free and Open Source Software (FOSS) operating system like Ubuntu GNU/Linux for desktops, online learning can be conducted either via proprietary software platforms like Zoom and Google G Suite, or FOSS platforms such as Jitsi or BigBlueButton.

FOSS - Free to Share

The use of proprietary software applications, such as Microsoft Windows, requires a licence for each and every system that the software is to be installed on. Any FOSS software, on the other hand, belongs to the institution, and does not need multiple licence payments for use on systems. Thus, a FOSS operating system like GNU/Linux can be freely re-used and shared on several computers without licence fees.

Proprietary cloud applications do not require a licence to be installed on each system; only a browser is needed to access the application. However, cloud-based platforms impose restrictions on the number of concurrent users, or the duration of use, as part of their 'licence to use' agreements. With cloud-based proprietary applications, we continue to be licensed 'users' and not owners. For FOSS platforms, the restrictions are those imposed by hardware capacities and not by licensing constraints. The entire platform can be hosted by the institution on its own or on outsourced hardware.

An institution can freely share a FOSS platform, installed on its server, with other institutions and teachers. For instance, a State Council of Education Research and Training (SCERT) could host these platforms on its own server, and allow teachers and institutions within its jurisdiction to use these to offer their own online learning courses. The National Informatics Centre could offer these platforms to educational institutions across the country, creating a shared public infrastructure. This would be similar to the ERNET program which powered connectivity in public institutions across India, or the NROER / Diksha program which supported open educational resources creation and sharing across India.

FOSS platforms will also reduce the installation/initiation as well as periodic licensing costs, and make it viable for mainstream educational institutions to offer e-learning and blended learning programs. Shared infrastructure for hosting on-line platforms, will further reduce overall costs.

FOSS supports user security and privacy

Proprietary software is a black box with no access available to the source code. Insecurity is inherent in closed code; proprietary applications can never be considered safe. Users have no control over the vendor, no certainty on what kind of user data is being collected by the vendor or how it is being

used. This has significant implications for the privacy and autonomy of users. Besides, this data can be used for surveillance and profiling.

This threat is even more significant in the case of education. Lack of information on how the collected data is being used by proprietary platform is a serious challenge to the safety, security and privacy of students and teachers, especially since the data collected can be linked to young vulnerable children. Kasinathan (2020), in 'Making AI Work for Indian Education', argues that software apps/platforms used in schools and educational institutions enable the vendor to collect data on people of, and from a young age, posing a greater risk to their security.

Besides, the privacy policies which govern the collection, use, and sharing of data, are non-negotiable and covered in legalese and technical terms, rendering them ineffectual (Susser, 2019). The potential for misuse of data is extremely high, in the wider context of what has been termed 'surveillance capitalism' (Zuboff, 2015).

An important appeal of FOSS is that the code is in the public domain and hence can be studied by anyone. Linux creator Linus Torvalds said, "A thousand eyes make all bugs shallow". This is not entirely true, software as a human endeavour is inherently susceptible to bugs. So FOSS applications can contain bugs that can compromise users (or be compromised by hackers). Also FOSS by itself cannot ensure security, a user can always visit a site using a FOSS browser or web application, which can contain code that compromises user safety.

While it is not possible to assert that all free software is better than all proprietary software, or vice versa, it is undeniable that as it is possible to 'see' the code in the free software application, *ceteris paribus* it poses lesser danger than closed code. As free software advocates argue, over time, due to peer reviews, free software does become more secure. And if a defect is discovered, we do not have to depend only on the vendor to have it fixed.

The use of FOSS reduces the threat of our data being collected and harvested for political and commercial purposes with or without our knowledge. The data can be collected and stored by the educational institution, and the ownership of this data can lie with the community of institutions, teachers, and learners. Given this, it is an ethical imperative for educational institutions to choose FOSS over proprietary platforms.

The threat is Real

The dangers posed by proprietary e-learning platforms are not notional. It is well-known by now that proprietary e-learning platforms collect data of users, (students and teachers), and this data is harvested by the vendor for commercial use. For instance, Zoom, which is being used by schools and educational institutions for online classes amid the ongoing Covid crisis, has been charged in a US Court for selling the data collected from its users to Facebook, without permission or knowledge of users (Isobel, 2020). The Indian government recently issued an advisory, warning against the use of Zoom, due to the various threats that it poses: surveillance, vulnerability to hacking, and susceptibility to cybercrime (ET Online, 2020). The same concerns can apply to other proprietary platforms as well, including Google G Suite for Education or Byju's. The Cambridge Analytica case illustrates that corporations can also misuse data for nefarious political ends, beyond selling educational products and services.

Since there is no way for teachers, students, and institutions to know what the vendor will do with the data collected, it is essential that the code be made available for public scrutiny. To ensure the safety, security and privacy of students and teachers, only those platforms which have their source code publicly available should be used by schools and educational institutions.

There is also the threat of data being shared with third party private vendors and, thus, becoming prone to further misuse. Recently, the Kerala government was taken to court on the grounds that this health-related data it collected of people in connection with the Covid-19 pandemic and handed over to a US-based firm, Sprinklr could be misused by the firm.

The Kerala High Court, while allowing the state government to utilize the services of the US-based firm, directed it to ensure that the data collected is not misused by the vendor (PTI, 2020) and the state government asserted that it would not allow data to be commercially exploited by Sprinklr. It has subsequently announced that it Sprinklr has deleted all the data in its possession. Thus, the executive and the judiciary have recognized the danger from data held by private parties.

The Opportunity is Real

While Zoom, Google Classroom, and other proprietary e-learning platforms are currently more prominent across the world, there are FOSS alternatives. BigBlueButton (BBB) is an e-learning platform integrated with many Learning Management Systems (LMS) including Moodle and Sakai. Jitsi is another option which can be used for webinars with a large number of participants. Both Jitsi and BBB can be installed on servers of the institution, or on NIC or state data servers.

Kerala has been a pioneer in India in the integration of technology in education. Its IT@schools program is a good example that many states have adapted. Kerala has customized BigBlueButton and integrated it with the Kerala Infrastructure and Technology for Education's (KITE) Open Online Learning management system. Its adoption of BigBlueButton and Moodle FOSS e-learning platforms is likewise worthy of emulation in colleges, schools, and educational institutions across India.

FOSS - ours to enhance and upgrade

Another advantage of using FOSS applications in education is that it is easier to add education specific features in by working with the community that maintains the software. The source code and customization guide are readily available on the website, making it easy for anyone to access and use. A prime example of this - especially relevant in the multilingual Indian context - is the translation of the user interface to local languages, so that a wider pool of users can access and use the software. For instance, IT for Change has translated the user interface of both Moodle and BigBlueButton into Kannada, to make these platforms more accessible to Kannada language teachers and learners. This is not possible with proprietary software as one has to rely on the vendor translating the software and releasing a new version.

The Ministry of Human Resources and Development in India, as well as other state and district level institutions and teachers can also support FOSS communities to further develop and customize these platforms, including local language interface development, to create a free and open enabling environment for e-learning. With the support of active communities of both FOSS developers and teachers, the use of FOSS e-learning software can be made the norm across educational institutions in India.

Caveat

At this point in time, not enough is understood about the virus, to make any prediction at all, about the need or possibilities for school/class level learning. Though over time we may see a need to explore alternatives to large congregations of students in a single site, to smaller, more local (and possibly more heterogeneous student) interactions with a teacher (similar to how many rural

schools function today, with small school and class sizes). Again this may be required the medium term and may change if effective vaccine or treatment regimes are established.

While online learning may be useful for teacher education, it would be a disaster, if imagined as ‘the solution’ for school education. School teachers in many states are being asked, persuaded and informally pressurized into running online classes for their students. This faces the first fatal challenge that learning for young minds, requires physical interactions between teachers and students and amongst students. A second fatal challenge is that access to connectivity is very limited and is extremely iniquitous. A third fatal challenge is that teachers abilities to use this model is limited; there is a danger that “just the act of ‘doing something’ (would) lull those in roles of responsibility into a false sense of achievement”. Education institutions and systems may be content to rely on teachers running WhatsApp ‘classes’ for few students, accepting this as only possibility in the current context, and avoid exploring other ways of supporting student learning.

Since the lock downs are likely to persist intermittently for several months, online learning will be required to provide opportunities for interactions that can support learning and the focus needs to be on teacher development.

Teacher Development

Given that COVID-19 is likely to be around for quite sometime, the immediate focus therefore needs to be on building teacher capacities to autonomously develop contextual curricula (learning possibilities) for their students. Both now, when schools are shut, as well as when schools reopen, since reopening is likely to be with several and severe stipulations relating to interactions.

The current lock down could be used as an opportunity to look at the possibilities of learning enabled by digital resources

and even re-look at areas of learning itself. The focus can shift to self-directed learning and can modify the role of the teacher in empowering ways.

Curriculum

The way to imagine online learning would be to explore how teachers abilities can be built to develop learning possibilities for children in their own homes, working with their parents and siblings. This has to be **contextual, inclusive and holistic**, to be effective and that would require significant thinking and planning for teacher development. It can offer an opportunity for teacher educators to bring back vision, highlighted in the National Curricular Framework for Teacher Education ‘to build a humane and professional teacher’. This also includes discussing COVID-19 and making meaning from different perspectives – the biological (health and hygiene) being one. It also includes discussing the divergent and inequitable impact of the virus on different groups in society, the relative importance of different vocations/professions during the crisis, the macro and micro economic implications, gender implications of the collapse of the personal and professional spheres for many families, collaboration requirements to address a common crisis, need for a universal health system of equitable quality, along with a universal education system of equitable quality.

Again, the current situation would cause an explosion in availability of ‘e-content’, frameworks of quality, considering context and priorities, become even more critical, to distinguish between one resource and another. Teachers abilities to be able to address these complex curricular needs has to be given the highest priority in online learning.

Given the heterogeneity and inequity in access to connectivity (for both teachers and students), the provision of curricular experiences would need to necessarily be diverse and contextual. Asynchronous learning possibilities with support of digital platforms (creating video lessons that are rich and allow parent – learner interactions) could be one such possibility. There would be several such possibilities beyond the ‘zoom conference’ or the proprietary app, however it is not the intent of this article to probe these.

Conclusion

If the focus of online learning can be on teacher professional development, it would empower teachers to imagine education as making meaning of contexts and supporting learner abilities to negotiate these. Free Software for free teachers would be a logical conclusion.

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