

Learning beyond Textbook: A Digital Technology Approach

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Abstract

With the advent of the technological era, many countries have integrated more technological tools in their educational system. However, textbooks still hold a dominant place in our educational scenario. With their fixed and mostly outdated information in this lightening fast world the textbooks are not as reliable as before. There is a need to revamp our educational landscape and for this the integration of technology in education has become indispensable. Some research has suggested that using digital technology in instruction enables students to take a more active role in their learning rather than their more conventional role of unresisting listener and observer. However, other research shows that changes in classroom practices will not occur simply because technology is more available in the classroom unless it is used effectively. Facilitating the proper access to ICT and other content building tools in education is only one step in the process. Thus, calls have been made to pay more attention to the way technology has been implemented in the educational setting. This paper focuses on the issues educators may need to consider when attempting to transcend the textbook era. It aims to provide an insight into the successful use of digital tools, articulating the challenges and the requirements for their effective implementation. The discussion finally indicates that technology implementation should begin with the identification of learning objectives and determining what students, teachers or schools wish to achieve, not with the provision of technology. Effective implementation of digital tools requires using them as knowledge tools rather than instructional tools.

Keywords: *ICT, education, digital tools, implementation, technology.*

Introduction

“Tell me and I forget. Teach me and I remember. Involve me and I learn”.

Not all knowledge can be gleaned from books. Often, the things we remember come from lessons learnt outside the classroom and the textbooks. The mind learns through association. Training the mind to learn and unlearn is a process that requires dedication, patience, technique, and for a large part of the world - opportunity and access. An able instructor can help create an environment conducive to learning – unlocking a wealth of ideas and knowledge in the process.

Though always considered exceedingly expensive, textbooks were once deemed as fundamental to the classroom learning experience just like the teacher. These toms were the source of knowledge, the drivers of curriculum, and the teacher’s most important resources. But today, we have reached a platform where a wide variety of tools and techniques, collectively known as Information and Communication Technologies (ICTs) or Digital Technologies, are available for imparting knowledge. Textbooks no longer dominate our educational setting.

In this internet age, the textbook is no more a student’s primary source of interaction so far as learning is concerned. It remains the starting point but, with interactions outside of the classroom increasingly easy, it is now only a small part of that process. The learner can receive input from a wide range of sources beyond what the teacher and textbook can give them; and learn in his own personal way. So, as a teacher, being able to influence what that input is, by setting tasks beyond textbooks, is increasingly important.

“Kids are wired differently these days,” said Sheryl R. Abshire. “They’re digitally nimble. They multitask, transpose and extrapolate. And they think of knowledge as infinite”.

“They don’t engage with textbooks that are finite, linear and rote,” Dr. Abshire continued. “Teachers need digital resources to find those documents, those blogs, those wikis that get them beyond the plain vanilla curriculum in the textbooks.”

And of course, in today’s lightning-fast world, the textbooks are out of date before the ink is even dry.

Need and Significance

While the books are essentially considered less than ideal, we are seeing an enormous change in students based on the fact they have grown up with technology. For them, learning with technology has become much easier and enthusiastic. We can imagine the transformational power of classroom teachers across the nation adopting a similar instructional philosophy. Yet so often, for the sake of comfort and convenience, teachers are focused on traditional methods and resources; and unfortunately, this means an unhealthy reliance upon textbooks. Our whole system of education is geared towards exams, which only recognize textbook knowledge. Therefore, students and teachers tend to stick to the textbooks. Research regarding pedagogy suggests that textbooks fail to provide the hands-on, inquiry-based learning that is necessary to master concepts (Foley & McPhee, 2008). In our modern information and communication age, textbooks are no longer adequate for conveying information in a timely and interesting manner, as most textbooks, by their traditional nature, are very institutionalized and resistant to change (Stambaugh & Trank, 2010). Furthermore, the long shelf life of the average textbook means that the audience it is written for may be significantly different from the audience that uses the book several years later (Teten, 2010). Therefore, it is essential that teachers find new strategies of instruction that utilize a variety of resources.

Learning beyond Textbook

The digital world is changing everything. With the growth of new and advanced technologies as a means of gaining knowledge, the textbooks have largely been confined to the shelves. This literary autocrat is now experiencing a fall-down to the extent that some consider it of no efficiency at all. “Textbooks have very little narrative,” writes Godin. “They don’t take you from a place of ignorance to a place of insight. Instead, even the best ... textbooks surround you with a fairly non-connected series of vocabulary words, oversimplified problems and random examples.” As such, we now find ourselves in a time that provides personalized devices and tools where students can do more than the author and share their learning which goes beyond books, for they can discover it all in one place. Thus, this is a powerful time to be a student or a teacher.

Learning beyond textbooks does not mean the absence of textbooks altogether from the process of learning. It is really about looking at learning objectives independent of a text. The whole approach involves using the learning objective as the starting point, then choosing the most effective resource to teach that objective to the students in addition to textbooks if necessary.

In this process, teachers are able to focus on what is the best way to creatively teach the learning objectives. So, often teachers are limited to teaching with the resources they have. With the use of ICT and other digital technologies they can leverage the nearly unlimited potential of the Internet and other means to gain access to virtually any resource they can dream up. This includes materials created by other teachers, subscription services, and many incredible free resources out on the web. The key is to organize these resources in a way that allows teachers to connect them to their learning objectives.

The foremost need is to shift teachers' mindset from "I need this textbook and structure" to leveraging ICT and Open Educational Resources (OER) that are readily available and accessible. Additionally, OER are free and, in most

cases, vetted for credibility and accuracy of information. Plus, teachers have full autonomy over their content and can update it from year to year.

While some may argue that this creates more work for educators, it should actually become a practice that all life-long learners or lead learners engage in regularly. At the core, educators can be hired as content experts who will stay abreast of the changing landscape in their area of expertise. As digital resources became more readily available and accessible, teachers can chart new courses for leveraging social networks that not only connect students to content, but also connect them with other classrooms around the globe.

As we know, blended learning is constantly evolving nowadays. Many recent ICT and educational technology innovations, such as Intelligent Adaptive Learning, have been developed to support student-centered learning. That means integrating technology into learning activities, both in and out of the classroom. Implementing blended learning environments in classrooms will give students access to the content they are ready for, and progression will be based on demonstrated mastery, not grade content. This is the foundation of Intelligent Adaptive Learning—recognizing that every student is at a different level of learning readiness, and that it can change from moment to moment.

In addition, today's students are not experiencing the same thing. Textbook prices have skyrocketed since the 1980s. And in the 1990s, the problem was exacerbated by publishers who tried to squelch the used textbook market by putting out new editions of books every 18 months instead of once every six years, as had been the tradition since the 1950s. Even more frustrating for students has been that as prices continued to increase, faculty would still require students to purchase an expensive textbook but then only use a third of the chapters. Because they were only required to read selections from a book, some students stopped buying textbooks altogether, hoping to either squeak by without reading the book, or hoping that one of the copies on reserve at their school/college library would be available the night before the exam.

This situation can be avoided by making use of technology these days as the technology exists to create open textbooks at a fraction of the cost and offers content for free, assuming the student has Internet access. The textbook publishing industry has been challenged as new open textbook publishers hired authors (often educators) to create textbooks with content that was openly licensed and free. It is not a surprise that a textbook in almost every field of study is now accessible online and free of cost. Organizations such as CK12, for example, create open source textbooks to lower the cost of education in the U.S. and beyond.

Ironically, because teachers today can create and distribute their own textbooks, they also have the power to destroy the very notion of the textbook. Using the Internet, educators can easily co-create and share learning content. They can alter lessons. They can cut and paste and customize content for each student. They can, in other words, renew the textbook altogether.

Creating content, nowadays, has become a possibility for all. The Internet has disrupted many of our traditional institutions, from newspaper publishers to recording companies, and now textbook publishers. A great wave of disintermediation has done away with the notion of publisher's profits and author's royalties. Online, teachers can collaborate and create learning content that can be remixed to suit a student's particular needs. They might not take sole proprietary authorship, yet experts in a particular subject can participate fully in the creative process. The top-down textbook hierarchy is inverted if not subverted. Content no longer needs to be delivered to teachers, as teachers can be part of the localization and adaptive process.

The narrow focus on the open textbook is distracting us from what is potentially most important in education: the conversations about new approaches to learning that are taking place in all corners of the world, thanks to the Internet and greater access to digital resources. Once it is shown that textbooks may not be the most effective way to learn, there will be no going back. The question will no longer be open textbooks versus limited access textbooks,

but instead about the ways in which education content can be created, shared, and distributed by those directly engaged in the teaching and learning process itself.

Advantages

Technology is an accelerant. It should be used to accelerate things that are already working well. This new paradigm of learning which is based on technology is so personalized that every child can have an individualized learning pathway that is dynamic, informed by each of her learning interactions, and be competency-based, not age-based or grade-based. As a child achieves a deep understanding of subject matter, and can confidently demonstrate her competency (to both herself and others), she will be advanced to the next level. Assisted by the effective use of technology, she will get what she needs when she needs it. Other advantages of the use of digital technologies in the form of digital contents and other learning materials are:

- **Ease of Distribution:** It is easier to copy/distribute digital texts. There are virtually no transactional costs beyond appropriate copyright compensation. Plus it can be accessed and used by a large number of students simultaneously.
- **Cater to all kinds of learners:** Digital texts can be living documents with video and sounds plus hyperlinks to outside supporting materials. They are more appealing to students as they make use of all the organs of reception, thus catering to the needs of all kinds of learners.
- **Ease of Access:** Digital contents can be more easily appended and modified either by students taking notes or teachers choosing exactly the right resource for a given lesson. A web based document can be accessed from anywhere and everywhere provided the internet facility is available.
- **Instant updates:** With the facility of instant updates of digital contents, the textbooks never become obsolete. They are constantly updated to include recent developments and findings.
- **Collaboration:** Starting with primary collaboration between teachers it can prove more useful as the tools become more familiar to students, their teachers, and the community. This depends on time factor.
- **Costs:** While the technology that enables digital learning still costs slightly more than a set of textbooks, it can do so much more. A digital device provides access to content and gives students a platform to create, share, and work in his/her own personal way.

Challenges

Infrastructure Related Challenges

A pre-requisite for spread and development of ICT and digital technology tools is a steady telecommunication network in the country. A number of surveys conducted on Educational Radio and Television (Mukhopadhyaya 1993, Basu 1996, CIET 2004 et al) [v] have already thrown into relief some intrinsic infrastructure related shortcomings such as small-size classrooms, non-availability of continuous electricity, non-availability of computer systems and sometimes even technicians for maintenance.

Teacher-related Challenges

For successful functioning of ICT and digital applications in the educational scenario, teachers need to accept the major challenge of re-thinking and re-framing their roles and competencies from that of knowledge-generator to knowledge-facilitator, a step that essentially may call for a re-appraisal of the traditional role of teachers in India. Besides, another major challenge is the mindset of certain teachers that technology implementation in education may

reduce or altogether eliminate the role of teacher-educators and textbooks in the classroom by substitution through computers and other technologies.

Language and Content related Challenges

An average Indian student is one who receives training in educational institutions in his/her native language from teachers who too are more comfortable in knowledge dissemination in the vernacular medium. In stark contrast, English is the dominant language of the internet as well as of the major softwares produced worldwide. Most of the web-based resources are in English. There is a pressing need to develop original educational content in the form of radio-television programmes, interactive multimedia materials on CD-ROM or DVD, web-content etc.

Sustainability Related Challenges

In order to ensure that like many government projects that start with a bang and end with a whimper, chiefly due to paucity of funds and lack of consistent government initiatives, the ICT projects need to be linked to a self-supportive mechanism, whereby the beneficiary institution is empowered through different indigenous/outside channels to ensure pursuance of the project with the help of other stake-holders, in collaboration/joint venture, so that even after the initiating agency retracts, the programmes do not face closure/cessation.

Suggestions

To gain the optimum advantages of digital technology in education, more attention needs to be paid to the effectiveness of its use in schools. Effective technology implementation will not occur simply because it is more available in the classrooms; rather, the significant issue here is how it improves the educational process. Issues including: why teachers integrate technology; how ICT implementation could be more effective; what are the requirements to achieve effective technology implementation etc. should be considered. Additionally, many research studies have indicated that one of the key determinants of whether digital technology implementation is successful is the teachers, particularly, teachers' knowledge. Teachers must have a coherent understanding of how technology can be used combined with knowledge of subject matter and teaching strategies to raise the chances of effective learning.

Thus, it is imperative that educational institutions invest massively in ICT for teaching and learning. Research shows that those institutions that invest heavily in technology integration have better students' academic performance and throughput rates. There is need for schools to expose students to more technology for learning prior to entry into university. This has the advantage of avoiding withdrawal and increasing their motivation, belonging, and concept mastery. There is also a need to capacitate academics technologically through e-learning materials that would lead to development of skills and enhance technology use in learning and teaching.

Institutions should promulgate policies that compel academics to utilize technology for developing digital content and learning materials. To promote the use of digital resources, e-books, learning modules etc. and to make students acquainted with the use of more authentic information and literature, the students should be made aware of the authentic sites for searching the educational materials. Recent methods of E-Learning should be demonstrated to the students like Virtual Learning Environment (VLE). They should be involved in research analysis using advanced versions of ICT. The utmost goal of implementing digital tools in education should be creative or innovative learning.

Conclusion

Ultimately, this process of digital learning will take time and the effort of learners and teachers. Planning of the change should begin with a scope and sequence, and then segue into aligning digital content to replace the static information provided in a textbook. This transition should focus on technology or applications and also on new ways of bringing engaging content to students so that we can connect them with the world around them.

The important implication of this rapidly developing trend is that our roles as educators and responsible learning guardians are to cultivate the most suitable learning experience for each student. Many things in life can't be rushed or forced, and learning is one of them. After all, learning should be active and not passive, competency-driven rather than pace-driven, and most importantly, enjoyable—all to help prepare students for the future.

Hence, digital world will be the real driver of educational innovations. The future is about being adaptive. Right now, enabled by combining advanced technologies such as Intelligent Adaptive Learning with the skills of learning guardians, we can help all learners to think deeply, exhibit curiosity as they tackle problems, develop fluency, and apply their knowledge to different situations. They will become confident learners as they build competence, and they will learn how to continually deepen and expand their skills so that they will be ready for whatever future awaits them.

Let's work together to help prepare students' minds and spirits so they can move with assurance into their lives—primed to meet their potential and achieve success.

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