Uses of multimedia in classrooms including e-learning and development

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Abstract : This paper explores the ways in which information technology's prowess can be explored in making classrooms a better place to learn and study and for students to internalize things in a much effective manner. With the advent of e-learning modules, making students understand complex topics and hard-to-understand topics in a classroom setup is no longer impossible. The paper also elucidates the advantages of a typical multimedia driven course content, over and above a traditional classroom setup, and how it has come to revolutionize the way we understand the learning's from a textbook-oriented pedagogy.

An understanding is sought to be achieved of what multimedia means in the context of an education system, how there are wider positive ramifications while multimedia is seamlessly integrated with the traditional classroom setup. Also, the paper explores how various cognitive skills can be ingrained in the students like constructive thought, positive behavior, critical reasoning, group behavior, leadership etc.

The paper also lays focus on the methodologies and practices which teachers and instructor should adopt while using multimedia tools so that the students can derive maximum benefits out of a digitech classroom setup. Besides proper training, teachers should be responsive to the evolving landscape in the digital education space to customize teaching methods according to requirements of the class audience.

The paper ends by looking at some constraints which stand in the way to a proper implementation of multimedia, including e-learning modules, and they may be overcome. Since multimedia oriented classroom is the way forward for a social media connected populace, digitech classroom is merely a natural extension of the general trend towards increased digitalization in every sphere of human learning. The paper then concludes showing the way forward of how multimedia classroom is the need of the hour to bring about a behavioral change and enforce a digital equality in the societal space.

Keywords: Behavioral change, DDDE methodology, MOOCs, digitech space, digital equality.

Introduction

With the advent of information technology, there arose a need to skillfully exploit the advantages of a tech-enabled classroom in order to raise the learning capabilities in school. This was found to be beneficial to all the stakeholders involved - starting from students, teachers, school administration, school boards - everybody found using technology a better solution compared to the traditional methods of rote learning and archaic pedagogy. Especially, the students have been found to be positively impacted through the use of multimedia tools and techniques which have been found to be broadening their vision, extremely beneficial for their psychological outlook and unleashes their creative being, since multimedia tools are inherently thought-provoking, interesting and bring dynamism in studies, other than the "static" and inorganic physical books study approach. This paper throws light on the indispensable role played by tech-enabled multimedia in classrooms, including the e-learning modules.

Why Multimedia in classrooms?

In order to appreciate the importance of multimedia in classrooms, it is important to understand what encompasses the term "multimedia". It includes the following, either individually or in combination - textual representation, video, audio, images and interactive content. There have been certain shortcomings in the traditional way of learning in schools which are sought to be bridged using the digital way of learning using multimedia tools. They encourage students to express their creativity in groups rather than study in solitary confinement, encourage them in thinking out of the box, develop a passion for positive life skills like teamwork, collaboration, present information learned in different ways, inculcate organizational skills and team building activities, accept diversity in thoughts and promotes healthy competition among them in an interactive, fun-based learning environment. Hence to better utilize teaching methodologies and achieve learning objectives, multimedia e-learning modules play a crucial role.

Since the physical books are not capable enough to ignite the "spark" in the students as often they are out of date, nor are they equipped enough to handle creativity in students, multimedia blurs the line between the sender of information and the receiver; hence bridging the gap between teacher and the student. Presentation skills of students are brought to the limelight, thus developing a confident, properly skilled and up-to-date generation of students who become responsible and knowledgeable citizens. Also, since multimedia content are technology driven, the inquisitiveness nature of students are well catered to, and in fact, they have a sense of satisfaction if multimedia tools are vigorously used, encouraged by the instructor whenever and wherever possible.

In fact, though in terms of overall learning outcomes, it remains one and the same, it is important to see that greater satisfaction is

derived by students while using multimedia tools, compared to the learning's from the traditional physical books. Also, a visual presentation of verbal content read is done by multimedia tools in the students' psychology as a mental mind map, hence enhancing their memory. Problem-solving is also enabled and collaborative skills initiated.

Access to a vast variety of information from multiple sources is one of the most talked about and beneficial way to let students know the sources - they can themselves refer to the sources, play around with them and generate knowledge through questions and answers.

Increased student attention and retention powers are also one of the most important and understated advantages of a well-planned multimedia system; a persistent visual processing by the brain is useful for quick learning and recollection by students. This maintains a positive frame of mind, as students carry a reflection of what has been taught, and try to apply them in their everyday life. Studies have often shown that pedagogical use of digital technologies supports collaborative learning.

Feedback for problems raised during the learning can be promptly addressed, achieve parity between students, technology thus acts as a disruptor in the classical school landscape and sees students no longer as only receptors of bookish language, but as the collaborator of knowledge, participative learning is encouraged and healthy discussions triggered. This collaboration helps in achieving higher learning outcomes for the students.

How's the approach different vis-a-vis traditional learning and teaching

Multimedia tools usage requires planning at different levels - pupil's interest, parents affordability to provide for such options, school's infrastructure, purpose or goals of education, the outcome of such an exercise and learning's feedback into the loop - and repeating the same again. Decide, Design, Develop and Evaluate (or DDDE) model is a benchmark which may be used to deduce the way in which it is different from traditional methods of teaching. Engagement parameter is always quite high compared to students taught through the traditional book-whiteboard style. Interactivity factor is a notch higher too, with up-to-date information made available accurately.

Since technology is a great integrator also, an IT-enabled education system is not at the risk of losing out to the latest happenings, in fact all the infinitesimals integrate into a bigger whole. All the elements in the system should work in synchronization with each other in order to provide a seamless working experience for all the students.

Customized approach to a certain category of students' audience is necessary in order to evolve tailor-made solutions for the audience. This is one of the major reasons for its exponential growth in recent years. This has resulted in the clamor for increased acceptance by educational institutions about multimedia solutions to cater to a large student populace, and at the same time increase their productivity too.

E-Learning was considered merely as an add-on, but have now become an integral part of the classroom teaching programme. The multi-dimensional ways in which a topic would be covered is made comprehensive in itself. This also gives students the flexibility to attend and listen to classes and recordings, whenever they feel like.

The expansive development of multimedia technologies in education is triggered by its acceptance across industries and has thus become an essential prerequisite for students to get equipped with. The instructional materials used in the course and the way storyboarding is done plays a major role in retaining the attention of the student with multimedia tools.

Pros of using a dedicated multimedia approach in classrooms

Simply reading out words from the textbooks and rote learning have lived their life as educating strategies. The human brain, with its seemingly limitless avenues to assimilate knowledge, grasps multimedia information much more quickly than a one-dimensional study from textbooks. Concept initiation and development by teachers require students to access multifaceted learning resources; this can intertwine them into endless scouting for resources. With the advent of multimedia technologies which combines the power of plain text, audio, video, graphics, sound and animation to deliver an interesting package which can support constructive concept development and is scalable easily, according to requirements. Explaining complex topics to the students in a user intuitive manner are one of the biggest forte' of using multimedia tools. Diagrammatic representation in real time, the representational qualities of video in the particular context helps students relate with their theoretical knowledge more quickly and remains etched for a longer period of time.

E-learning modules are one of the core development channels through which multimedia has blossomed in the classrooms. The digital pedagogy has been taken to a different pedestal through the introduction of MOOCs (Massive Open Online Courses), through which the digital equality and non-discriminatory feeling is pushed to the fore without much difficulty. Hence it is a positive for both sides - teachers can enhance their professional capacity as well and students can enjoy education more, and they do not consider studying a burden anymore. No wonder, "digitalization" of education has made it more accessible across artificial boundaries irrespective of the region, religion, caste, economic and cultural barriers, thus enhancing the inclusiveness credentials of an educational system. Since technology by definition is value-neutral in nature, its power should be leveraged appropriately in order to derive maximum benefits out of it. At the same time, a careful balance must be maintained in not overdoing the aspects of

introducing / forcefully bringing in ICT solutions. A futuristic generation requires future-proof solutions - multimedia should help in bridging the gap between the generations, by helping leapfrog the generations to understand education's essence better.

The organization of schools hence become more innovative - in adopting reflexive, pragmatic and experiential approaches, which places the student closer to the centre of the learning processes and involves him/her in every step of the learning evolution. The use of multimedia at the core, hence, is student-centered work and flexible schedules. The teacher's role often changes from being an authority or a primary source of knowledge to being a facilitator of the learning process. Students have to find their own individual access to the fast-changing world and therefore they need a huge pool of appropriate individualized strategies, which will foster their active, passive and critical learning.

The ability to share knowledge collaboratively with others in a world where most products are the result of teamwork, and having the appropriate strategies, knowing why and how to apply them contextually will be among the most important qualifications within e-learning domain. This is essential to bring about behavioral changes in the students and make them active agents of change in bringing about a positive change in the societal framework. Hence, it is necessary to "make" students job and market ready so that skill enhancements may be done according to needs and demands of the students.

E-Learning in classroom setup

A classroom may comprise of students from varied levels of learning, with different requirements. Using an e-learning model ensures that the students can learn the modules at their own pace, without waiting for students is one of the boons of a dedicated e-learning module. A combo of hands-on activities, lecture and practical sessions helps students to internalize the concepts better and in this way students are prepared to apply those principles better in their everyday lives.

Issues of scaling, affordability, accessibility, reach ability, quality are thus well taken care of in an e-learning setup. Since it is necessary that a student is able to grasp the taught concepts, there should be a dedicated "teacher" even in an e-learning setup, to make the environment lively and engaging. Some of the defining features of an e-learning platform, which bring out its uses in the contemporary education system, are explained in detail below.

Better retention is aimed at through a planned audio-visual experience for the students, as a short clip of few minutes is far better in explaining subject matter to students than a big chapter on the same. Also, research has always suggested that more than textual rendition and retention, audio-visual retention is better and stays in the longer-term memory. This is the basis for the prevalence of all famous e-learning modules on the Internet.

Well-structured e-learning modules often have a role-playing characteristic embedded in their courses. This is to trigger the inquisitiveness of students to explore about the taught subject matter in the first-person mode, and imbibes the larger issues at hand and learning's into their deeper psyche. Though this applies to the traditional book- driven learning methodology as well, it is more applicable for the multimedia-oriented usage. This enables the development of a much more aware future generation and a responsible citizenry. Demands, limitations, challenges, constraints, negotiation - such soft skills can hardly be taught through a textbook oriented classroom learning, the e-learning multimedia approach have the capability to ingrain such positive notions taking students as groups as well as individual behavioral perspective.

E-learning to a great extent is effective irrespective of the trainer since it does not depend on the actual trainer's proficiency and emotional states and rather than only on the content provided as part of the e-learning module. This can be very well supplemented with the wide repository of Internet resources available on the topic, rather than only restricting students to the textbook material alone. This is particularly advantageous when each student in the classroom as his/her own pace of learning, weak areas, understanding patterns etc. Thus e-learning does not generalize the learning pedagogy, in fact, is individualistic in nature - the student can re-take the course as many times that he/she may want to. Thus, standing true to its name of any time anywhere access to learning materials in one go.

Since there is a less skill gap when it comes to digital technologies in terms of acquainting students with digitech solutions in today's world of social media, it is but natural that classrooms adopt the multimedia route, without completely discarding the traditional classroom teaching methods. This will ultimately change the face of education and how students are equipped with the latest in their fields of study and are not found wanting in the respective job market in terms of skills, know-how or latest trends. Hence to maintain a know-how, employability and intelligence quotient, it has become very much essential to have a multimedia-oriented learning in place.

Starting from instruction, practice, evaluation, lesson plans, assessment, activities, discussion forums, till certification, an e-learning platform is designed to take care of each stage of a student's learning. This can be easily blended into a typical classroom interaction environment - technology and textbooks, in fact, can be a beautiful combination to attain the final objective.

The teachers are also taken into consideration while designing multimedia solutions, so that they may be used when essential.

Comprehensiveness, flexibility according to the situations makes e-learning modules stand out from other modes of learning. Behaviorism, Constructivism, neuro-based training and group-based learning should be encouraged, with guided interactions and thought-out evaluations and monitoring frameworks in place. Activities planned should be appropriate as well as somewhat challenging the notions of a student, for him/her to get something out of the course.

Teaching techniques in a multimedia-led classroom

Since newer technologies need newer skills to be learnt by teachers to better equip themselves with the new demands, it is important to throw some light on the requirements from the other side of the table as well. Some of the key techniques which are usually employed in the new-age digitech solutions are given below as a reference.

Linking concepts to the multimedia tool used is one of the primary responsibilities of a trainer who is teaching using the multimedia tool - as it may not be apparent upfront, it is necessary that the intended audience is acquainted at the beginning itself through a comprehensive lesson plan about the module's outline and the various activities through which the objective of learning would be accomplished. This would go a long way in setting the tone right for an interactive and an audience interested till the very end.

Just before starting a module, the teacher may also ask the students to undertake a task, either individually or with a group in order to make them realize the need for understanding the concept so that they may better appreciate its applicability. This may also be done in parallel while students engage with multimedia content. This promotes active learning, rather than a passive understanding of content (like encouraging students to write blogs, create short video clips about their experiences). This puts to use their analytical, evaluating and creation cognitive skills and hence take the traditional teaching methods a notch higher to achieve end objective.

Teachers should also link one activity with another, in order to achieve an end-to-end whole in making students assessing the learning outcomes. The taught material should be complemented with other multimedia content, which can broaden their thinking sphere. This always provides something extra over and above the existing pedagogical system in place for the students.

Research suggests that curiosity helps students in reaching higher planes of learning and appreciate things when something is missing from the thread of continuous study. It is beneficial to not show all cards at once - this, in fact, helps to trigger the curiosity of students by setting up a gap in their knowledge deliberately. This is for students to identify, analyze the missing piece, discuss among peers and fill the gap.

This may be extended into the "jigsaw" mode of learning - dividing the class into groups, and making each group view opposing views on the same material and then allowing them to debate in order to develop their critical reasoning skills.

Constraints in using multimedia tools

With the advantages of multimedia tools in the classroom also are some challenges or bottlenecks, which should be kept in mind while scaling the multimedia solutions across an educational institution.

1.   Purposes of introducing multimedia tools in the institution should be clearly known and adhered to in letter and spirit wherever and whenever applicable

2.   Technological tools have a steep learning curve, and teachers should be equipped and trained in this special skill in order to use them effectively while teaching students

3.   Multimedia are often resource-intensive - they demand dedicated computers and expensive accessories in order to provide the exact look and feel of a multimedia tool

4.   There has to be a separate activity planning and budgeting when multimedia as a pedagogy is to be adopted on a larger scale

5.   There has always been a controversy on how much effective and the role played by multimedia tools in the life of a student's learning and achievements. E-learning actually simulates the behavior of a student-teacher relationship in terms of a computer-guided system monitoring student's progress in terms of achievement of learning goals. This removes the personal, humane touch of students from the school system, and without proper human guidance could not achieve the objectives of establishing a multimedia oriented classroom at the first place.

Conclusion

To conclude, multimedia ought to be an integrated part of the classroom teaching which may take various forms, starting from a short video clip to a full-fledged e-learning module package. As seen above, using them brings a load of benefits both to the instructor as well as the recipient in a number of ways - pedagogical, learning, psychological as well as infrastructural. An intelligent mix of both the traditional methods of teaching as well as the new-age teaching methods brought forth by the power of technology should be exploited in order to benefit the student community at large, and make a lasting impact on their study patterns and the learning outcomes are achieved in a better manner, with better accuracy, in a fun-filled yet conducive environment.

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