

Digital Classroom: Survey and Contributions

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Abstract—India has very auspicious tradition of teaching learning from the ages. The roots of Indian teaching learning system have been found in old Ashramas, then in middle age universities like Nalanda and now in world class institutes like the IITs. Over the ages teaching learning aids got changed and today's demand is Digital classroom. This paper highlights the profile of Digital Classroom. The modern technologies used in the digital classroom are also enlisted in this paper. At the end, paper describes three novel methods of teaching learning applied by the author. The new methods: Alpha Learning, Online Group Discussion and Debate Digital are well suited to the digital classroom environment. They boost student interest by making them learn through one of their preferred mediums.

Index Terms—Digital Classroom, Quality Education, Use of Modern Tools in Teaching

I. INTRODUCTION

Charles Darwin said “It is not the strongest of the species that survive, not the most intelligent, but the one most responsive to change”. Indian education system is the third largest in the world, producing over 400,000 engineers every year [1]. Even then the country has not been able to achieve full economic benefit, societal upgradation from its skill base due to mismatch between education and industry requirements. A solution to this problem is to make our classrooms digital and use these digital aids with full potential. Industries and research organizations need students who have ability to solve critical problems, which is possible only if students are molded intentionally, with the focus on practical sessions. Digital classroom stands to make a student practically strong by making him visualize things. Modern technology enables us to introduce elements of digital classroom into the education process, which should improve student motivation and information retention as well as their ability to do their own research and work in teams [2].

Digital Classroom aims to enrich the lesson planning and in-class experiences of teachers. It also helps to engage students by making learning enjoyable and enhance students' classroom experiences by diversifying learning activities and to improve student learning outcomes, both subject-specific and in a broader context [3].

This paper reviews existing Digital Classroom aids. Further, three new terms, which are experimented in classroom by the author, are elaborated with their outcomes observed.

Section II gives a brief literature review of Digital Classroom aids. Section III describes proposed methods and discussion. Section IV gives conclusions and future scope.

II. LITERATURE REVIEW

The profile of current age digital classroom [4] is described below in Table I:

TABLE I: Profile of Digital Classroom

Sr.	Tool Name	Description
1.	Projector with tablet	The teacher uses the projected tablet screen to display and write most of the notes and classwork.
2.	Digital resources and digital tools	The teacher routinely uses digital resources and has his/her students also use them for a variety of purposes including research, texts, and multimedia.
3.	Inquiry, Project, & Problem-Based Learning	One-to-one technology puts more student-centered approach to the curriculum which challenges students to find answers to problems and create meaningful digital products.
4.	Student work is published for a wider audience	Students are putting their writing on blogs or posting PowerPoints, Podcasts, or PhotoStories online. These digital products are viewed by peers, classmates and other teachers.
5.	Outside experts	Students might also have an occasional opportunity to communicate in some form with experts in the field.
6.	Assignments or projects that require collaboration	Students work together to create, revise and publish their work by coauthoring documents using shared Google documents, peer review using a voice commenting with VoiceThread, etc.
7.	Authentic On-going Assessment	Teachers and students use the ability to look at the examples of work over time to identify areas of strength and weakness.
8.	Digital Literacies and Multimedia	In the digital classroom it is understood that students must gain fluency while searching, evaluating, manipulating, creating and publishing information in a variety of media forms and formats.

To support the profile of digital classroom, online tools can be brought into the educational process to make it more interactive and integrating both for teachers and students [2]. The list of such recent aids is listed below in Table II.

TABLE II: Aids for Digital Classroom

Sr.	Aid	Description
1.	Open Source Softwares (OSS)	Several OSS works to assist teachers in their teaching and students management work listed below
i.	Learn Boost [2]	A digital gradebook that provides teachers with the ability to upload new lesson plans, create schedules and even track student attendance.
ii.	Moodle	Learning Management System (LMS) which enables students and teachers to create own learning environment, quizzes, attendance. Course Outcomes and Program Outcomes mapping are also handled.
iii.	Class Dojo	Used by teachers to better student behavior in class, and to inform parents about their performance in the classroom
iv.	Cacoo	To display complex data to students by use of flowchart, diagram or graph
v.	VoiceThread	Enables both students and teachers to upload photographs, images, clip art, scans, their own drawings and PowerPoint slides. Both can then add their own audio comments to the uploaded materials. Teacher can also upload audio commentary for any lessons.
vi.	Top Hat	It enables teachers to create interesting and interactive presentations with the goal of enhancing student activity in class and aiding their knowledge retention.
vii.	Trello	A scheduling app and a project management tool rolled into one
viii.	ReadWriteThink	Integrate stuff such as new lessons plans, presentations, after-school activities, which they can then share with their students.
2.	eBooks	Books available on phones, laptops and tabs
3.	Books rental via kindle	Kindle can give books on rent
4.	iPad	To read books and manage sources of knowledge
5.	Digital boards	It makes classroom lively

III. PROPOSED METHODS

In addition to the above aids, the author has adopted some methods aligned with the profile of Digital Classroom. This

section further describes the formulated methods and the observed outcomes of each method.

A. Alpha Learning

The digital classroom expects projectors in each classroom. But many times it won't be affordable. In such cases smart-phones could make a significant work. In this method teacher can share the .pdf/.ppt or such a source file to all students. Teacher explains the important concepts from this file, while student can make annotations in the shared document. Mere use of chalk board in classroom teaching is not enough. It requires lots of words to explain the concepts and time to draw diagrams. It may cause delay in syllabus completion.

Alpha learning is learning in the classroom in presence of teacher but on the terminals of students. Students can underline important points, make note of additional points digitally. Psychologically also it is observed that, students pay more attention and participate actively in alpha learning than learning from projector screens.

Fig.1 shows how students are participating actively in Alpha Learning



Fig.1 Students in Alpha Learning

B. Online Group Discussion

On line group discussion is an innovative way of teaching learning process. The idea was conceived while the author was teaching Distributed Computing and students were getting overwhelmed by much more theoretical stuff and bunch of algorithms. From this, the author has introduced two variants of On-line group discussion as mentioned below:

1) Openbook Group Discussion

In this method teacher asks students to open books or ebooks in smartphones or tabs. Students are given 15 minutes to prepare for a new topic rapidly by understanding through the book and then GD is conducted.

2) Do Google Group Discussion

In this method instead of just limiting to the book students are allowed to search for more information online. They can prepare themselves for GD by surfing on internet.

These methods will help:

1. To cultivate the habit of self learning among students
2. To boost comprehension skill
3. To improve technical presentation skills of students
4. To boost interest of students in the subject by creating healthy competitive environment in the class

Fig.2 shows how students are preparing themselves for GD on mobile phones either through internet or from ebooks.



Fig.2: Students preparing for GD through internet

C. Debate Digital

Debating is one of the important skills. It teaches an individual to stay firm on his decision and present them firmly without quarreling in front of others. In this fast world many a times you may need to give decision on very crucial aspect in a short span of time. It is possible that you may not have adequate knowledge of the topic. To prepare students for such

situations, the author has introduced this method of Debate Digital. Students can read information related to the given problem statement through internet/ebooks, make some decisions in given stipulated amount of time and present them in the form of debate.

IV. CONCLUSION

The paper tabulates the profile of digital classroom with some renowned aids. It also introduces three novel methods suitable in the profile of digital classroom namely Alpha Learning, Online Group Discussion and Debate Digital. Furthermore after experimenting the suggested methods in the classroom it is observed that these methods help to cultivate self learning, boost comprehension and presentation skills.

REFERENCES

- [1] Dr. R. N. Mathur, "Effective Quality Upgradation for Technical Education, New Delhi", http://equateindia.blogspot.in/2009/06/effective-quality-upgradation-for_10.html, November 2016
- [2] E-learning Industry Education Society, "12 Aid Tools For Digital Classrooms", <https://elearningindustry.com/12-tools-for-digital-classrooms>, November 2016
- [3] Pratham, "Digital Classrooms Learn out of the Box", <http://www.pratham.org/programmes/digital-classrooms>, November 2016
- [4] Teaching with technologies, "Profile of a Digital Classroom", <https://tw.wikispaces.com/Profile+of+a+Digital+Classroom>, November 2016
- [5] Teachthought – we grow teachers, "The Elements of a Digital Classroom", <http://www.teachthought.com/uncategorized/the-elements-of-a-digital-classroom/>, November 2016