

Multimedia Use in Teaching

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Abstract – All senses are important to take in and process information. Students react differently to various methods of teaching. Popular theories state that inclusion of multimedia into teaching along with old school teaching methods, reaches all levels of students. This paper discusses the pros and cons of using multimedia as a teaching aid, studies on multimedia learning and steps to build good multimedia presentations.

Keywords – Multimedia, teaching, learning, effective presentations, theories.

INTRODUCTION

One of the primary applications of multimedia is in instructional teaching. Multimedia does not necessarily replace the teacher but changes the role of the teacher. It provides for a more interactive environment to the student who can learn at their own pace to complete a course.

I. Multimedia

Multimedia is a very ambiguous word. Loosely it means a collection of graphics, audio, video and animation. This paper deals with the education application of multimedia. For this purpose, we will assume the following definition; **Multimedia is an integration of multiple media element (audio, video, text, and graphics) into one coherent and effective presentation which benefits the end user.**

II. Need for migration to multimedia

The advent of technology has made it easy for the teachers to create more interactive and effective classroom environments [4]. The disadvantage with old school methods of teaching is that they tend to get monotonous. The usage of multimedia helps the students simulate a real-time view of the concepts in the course and experience them. According to popular theories, using visual aids piques the interest of the students, thereby enhancing the lecture experience

STUDIES ON MULTIMEDIA LEARNING

Various studies have been performed to observe the effective ness of multimedia based learning. The **Modality principle** suggests that moving pictures target the working memory of the brain which enhances the processing capability of the student [3]. The **dual-coding theory** follows from the above by stating that by using both narrative and multimedia presentations simultaneously reach the students better than doing them separately. **Redundancy principle** suggests combing text and graphics for the course to eliminate all the redundant material thereby proving a cohesive learning material. The problem with the above principles is that, most have not been tested outside the laboratory conditions.

ADVANTAGES AND DISADVANTAGES

I. Advantages

Multimedia provides a drill to master basic skills. By using interactive multimedia the learners also develop their writing skills and problems solving. Abstract concepts in mathematics and science can be brought to life using animations, pictures and graphics [4]. A simulation of the concepts engages the students' attention and helps them grasp the course better by watching the experiments in action. It enables the students and the teachers to acquire basic computer skills for all other business and vocational purposes. Both students and the teachers can access the material easily and distribution also becomes easy. Multimedia also streamlines the activities of a classroom session.

Apart from the general advantages of multimedia in learning, it specifically helps both the teachers and the students in different ways

- **Teachers** - It allows the teachers to be very creative while planning for the classroom lecture. The teachers are able to spend a nominal amount of time on each topic in the course and complete it on time, by avoiding spending too much time

on very challenging topics. Some activities do not reach all the students as they each have different learning abilities. Multimedia reaches a wider group of students and also allows for individual learning, by replacing ineffective learning activities.

- **Learners** - In some modes of multimedia learning, the learner is given full control of the material. She/he is able to work and learn at their own pace and choose their own path for learning, thereby providing individualized leaning. The patience of the instructor is limited, but the multimedia can be repeated and viewed an infinite amount of times hence providing the student with a very patient tutor. Students have more to do that just listen during such interactive sessions and they pursue learning actively. This allows for a more accurate feedback on the difficulty of the course.

II. Disadvantages

Disadvantages of multimedia are two fold, structural and practical. How the multimedia is structured itself is an important factor to aid its effectiveness. If the multimedia presentation deviates from the topic, has redundant information and has flashy animations and graphics that distract the student it is deemed to be ineffective. The multimedia must be consistent and have a cohesive mix of both information and other media. Some multimedia uses a certain amount of copyrighted material without proper citation or credits which leads to legal issues [7].

Practical disadvantages are mainly the costs involved. It costs to develop multimedia and buy equipment needed to run the presentations. Multimedia requires a high end computer and a good projector. There must be proper software readily accessible to run the presentation files. Compatibility issues also arise when. Due to the large size of the multimedia files they have a tendency to run slowly. Other disadvantages involve the crashing of the system, and its susceptibility to viruses due to online content. Training costs for the educator in charge of the course for which the multimedia is being used is an additional overhead.

BUILDING EFFECTIVE MULTIMEDIA

Multimedia presentations are of three types

- **Reactive** - where the control is entirely in the hands of the educator and e uses multimedia as an addition to his teaching methods requiring only reactions from the students, but no active

participation in the manipulation of the presentations as such.

- **Co-Active** - This proved some control to the leaner, as he chooses the pace and style of learning
- **Proactive** - The control is entirely in the hands of the learner, he controls the content and the sequence of the course content [4].

It is to be noted that multimedia is not interactive by itself, they are tailored to meet the requirements that have been provided by the educator based on the needs and ability of the students.

I. Pre-requisites

All educators must have a basic knowledge of computer science. The educational institution must have resources and budget for the implementation of multimedia in their campus. Basic hardware (computer and projectors) and software must be present. Objectives of the course must be identified for which the multimedia is being used. For the content to be prepared we must identify the level of the students and a sequence for presentation must be formulated.

II. Choice of media

The medium through which the entire course instruction must be delivered is solely up to the educator. Depending on the course difficulty and the time allotted, one or a combination of the following media can be used:

- **Audio** - listening comprehensions mixed with lectures and special audio clips pertaining to the topic
- **Video** - documentaries or live action portrayal of the topics
- **Animation** - Simulation of abstract topics to bring them to live using animation software
- **Interactive text and pictures** - This gives the learner the control to proceed with the topic at his own pace.

An ideal multimedia presentation would be a moderate combination of the above media which does not distract the learner or deviate focus from the course topic.

III. Content

The content is built based on the objectives of the course. It must cater to the difficulty of the course level and must ensure accuracy in its facts. Are should be taken to ensure that the content must satisfy all the objectives of the course.

IV. *Prototyping*

To ensure that the multimedia presentation is effective and useful, a suggestion is to make a prototype or initial design of the presentation and give it a test run. Using the feedback of the group of testers the presentation can be modified to suit the exact needs of the educator and the students. This helps improve the quality of the presentations.

V. *Feedback*

The main goal of the multimedia presentation is to decrease the complexity of a subject. To find out whether the goal has been achieved, we need proper evaluation and feedback from the users and the students about the presentation. The multimedia presentation must constantly evolve to be reusable to many batches and levels of students.

CONCLUSION

Both coherence and interest play an important part in making multimedia learning a success [2]. It is not designed to replace teachers but to provide them with a tool for making lectures more reachable to all levels of students. It is important to evaluate the level of the students before making the presentations. Multimedia must also be goal oriented and hence needs specific set of requirements. Teaching with multimedia makes a classroom more active and increases creativity and participation from both the students and the teachers.

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