Multi-Media Use in Teaching

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Abstract **– The rapid adoption of multi-media in modern educational environments has expanded the scope of teaching beyond classrooms and textbooks. Computers and the internet are now a conduit for information that give the individual unprecedented access to content, and the ability to create and share content of their own. Although current multi-media has some key limitations, it can still be considered a technology in its infancy, and will likely expand and change considerably in the years to come.**

Index Terms – digital media, education, multi-media, teaching

INTRODUCTION

Multi-media is a broad term, even in the context of education, but it generally refers to a combination of multiple elements, such as text, audio, video, images, graphics, animation, and sometimes even interactive elements. The key factor is that it involves more than one type of information, and the combination creates a cohesive whole. It is not limited to particular format, and can be physical, electronic, or a mix of the two.

A significant portion educational media can technically be considered multi-media, but simpler combinations (such as just text and graphics) are not commonly referred to as such. The term is typically used when speaking about more complex mixtures of media elements.

HISTORY OF MULTI-MEDIA

Although multi-media has existed in some form for the entirety of recorded human history, the term only entered common usage in the past several decades. Prior to the 20th century, most educational media was presented in the form of text, with occasional graphics or photographs, depending on the subject matter. With the advent of audio recordings, television, and film, instructors began featuring a wider variety of content in classrooms, but production in these formats was outside the reach of most people.

In the 1980s, with the massive decrease in the cost of microprocessors, classrooms began to incorporate computers into lessons, but their media capabilities were hampered by their low processing power and nascent display technology. The limited interconnectedness and hard drive capacity of microcomputers meant most media created or played on them had to be stored and transferred using floppy disks.

Increasing processing power and hard drive capacities, the introduction of the CD-ROM, and the emergence of the World Wide Web all greatly aided in the meteoric rise of multimedia in educational environments. For the first time, content creation of all types was completely within the grasp of an average individual. Furthermore, easy to use software for creating multi-media became widely available at this time, at first mostly for Apple's Macintosh line of computers, and later for nearly all major platforms.

In the past several years, affordable broadband internet connections have spread to all but the most remote rural parts of the globe. Numerous free-to-use, ad-supported, web-based services for content sharing, such as YouTube, Vimeo, and Tumblr, have grown extremely popular. These advances have removed nearly all economic and technological barriers for the

individual to produce and disseminate multi-media.

A nascent, but most certainly vital area of education that features multi-media quite prominently is MOOCs, or massive open online courses. These courses are available via the web to anyone willing to participate in them, and typically have prerecorded presentations that students can view on-demand. Were it not for many of the previously mentioned technologies, MOOCs would not be feasible endeavors, for instructors and students alike.

ADVANTAGES TO MULTI-MEDIA

Multi-media has many upsides that make it an extremely useful educational tool. First and foremost, the combination of multiple formats in a single presentation helps ensure students with different learning styles and preferences can learn the information being presented in their own way. The variety of media involved also helps keep students' attention, in contrast to the monotony of learning information that is all in a single format. Some information does not lend itself to being communicated through traditional means, and multi-media addresses this problem directly.

The ability to pre-record multi-media is an enormous boon for both students and educators. This allows an instructor to prepare a presentation long in advance of conducting class, and reuse it as needed. Recordings can be distributed online, which removes the need for students and teachers to be physically present in the same place at the same time. This can be useful even with regular classes, as students may then review the material later, or watch it if they were unable to attend the class. Distance learning models, such as MOOCs, are becoming very popular, owing in part to this feature of multi-media.

As previously mentioned, modern software makes it relatively easy and straightforward for educators to create multi-media, and the wide availability of broadband internet means a majority of students will have access to the material from the comfort of their own home. Most public libraries and similar institutions offer free computer and internet access as well, for those who do not have computers and/or internet connections at home. Resultantly, nearly all modern classes now involve a substantial amount of multi-media in their curriculum.

Some instructors include projects in their coursework that involve students creating their own multi-media and presenting it to the class, which has all of the aforementioned benefits, but also encourages creativity and provides a way for students to familiarize themselves with the computer software used for such purposes. This also expands the number of learning styles that are catered to through the use of multi-media.

Of the many formats for educational content, multi-media is arguably the most complete. That is to say, it can contain the highest proportion of necessary information in a single, self-contained unit than any other format. This further contributes to the ease of distribution, as an entire presentation with text, images, video, audio, and other elements can be just a single file on a computer.

DISADVANTAGES TO MULTI-MEDIA

Despite its many positive aspects, multi-media is not a perfect or all-encompassing tool for education. It has several limitations that are mostly rooted in technological issues associated with it. The most obvious downside is the learning curve of creation software; while professional designers and such may be capable of creating very sophisticated presentations, professors are often tasked with creating their own instructional media, and may lack the skills needed to do so. Even the most skilled user may still require a long time to prepare a more complex production. Additionally, high quality software can be quite expensive for an individual. Increases in computer literacy, improvements to the user interfaces for multi-media creation and editing software, and software subscription models have alleviated these problems somewhat.

Given that most modern multi-media is viewed on a computer, and delivered via the web, students from underprivileged backgrounds may be put at a disadvantage if they cannot afford a home computer and broadband internet connection, and if using a public computer is unfeasible or impractical. However, this is mitigated to some degree by the ever-decreasing cost of computing hardware and rapid rollout of advanced fiber-optic and cellular data networks. In addition, an increasing number of schools are providing standardized computer hardware to students to ensure their family's financial situation does not impact the quality of their education.

Most contemporary multi-media is presented in a fairly linear format, and is viewed passively. The lack of interactivity can offset some of the benefits of educational materials of this type. It is understandable that, given current technology, it is impractical to make all multi-media interactive, but hopefully future advances will make creation of more dynamic content feasible. It is important to note that multi-media cannot replace face-to-face teaching entirely, but it functions very well as a supplement or partial alternative to direct interaction with an instructor.

Finally, an issue that has garnered a great deal of attention in recent times is intellectual property. Despite the ease of distributing content via the internet, existing legal structures do not always accommodate this degree of freedom. Digital rights management software (DRM) and proprietary formats are sometimes employed to control access to media, but both of these can have a deleterious impact on the usability, accessibility, and cross-platform compatibility of content.

FUTURE GROWTH IN MULTI-MEDIA

Much more than more well-established and mature methods of content delivery, multi-media has a great deal of unexplored potential. MOOCs are likely only the beginning of an explosion of freely available educational content. The democratization of content creation and distribution has led to many individuals not associated with any formal educational institutions making multi-media of their own and posting it online for all to see.

HTML5 is one technology that shows a great deal of promise in improving the interactivity of multi-media. The combination of a well-known markup language and a very powerful programming language, both of which are supported on nearly every modern general purpose computing device, gives educators the ability to create and deliver highly sophisticated educational modules that can provide immediate feedback to students on their mastery of a particular subject.

The development of highly personalized computing devices focused on augmented reality, such as Google Glass, provides another area of growth for multi-media. Educators could use such a device in conjunction with a web application for students to view the progress of their class in real time, and adjust lessons accordingly. First-person demonstrations of certain skills could be easily produced with this technology as well.

Collaborative creation of multi-media is being made easier through cloud platforms, such as the features included in Google Drive. This is beneficial both to educators working with one another to develop curriculum and students working on group multi-media projects. Although these technologies are currently limited to fairly simple documents, they will surely be expanded to more complex applications and types of media in the near future.

CONCLUSION

In spite of its relatively recent adoption in educational contexts, multi-media is one of the most compelling methods for conveying information. It addresses a number of the deficiencies of previous formats, and most of its associated problems are progressively being minimized. It has a great number of potential avenues for growth, and the primary limitations on improvements are technology and human ingenuity. Multi-media may not fill every educational need, but it certainly has revolutionized modern learning environments, and its continued evolution will be the source of many changes to come in the classroom.

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