Implementing Multimedia Applications into the Classroom

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要 旨

As the popularity of multimedia technology increases in homes and businesses, it is natural that its use will become more widespread in schools also. This paper examines the current state of multimedia technology in educational environments, and discusses how this technology could be introduced more successfully in the classroom.

　マルチメディア技術が家庭とビジネス現場に普及するにつれ、必然的に学校においてもそれがより広く使用されるようになると予想される。この論文は、教育現場におけるマルチメディア技術の現状を調査し、それを授業においてより効果的に導入する方法について検討したものである。

Introduction

In the last two decades, the world has seen amazing advances in multimedia technologies. They have become more powerful, easier to use, and much more affordable to buy. More than that they are everywhere. Equipment that was once in the realm of professionals only is now available for anyone who wants it. And people do want it! The average household now fairly bristles with all manner of appliances and devices designed to help us tap into our technological creativity.

However, in the field of education, it is not this multimedia technology itself that is having the biggest impact on our classrooms. Rather, it is the huge influx of technically savvy students we are now faced with teaching that is defining the degree to which we incorporate these technologies into our classrooms. These are students who are not just capable of using multimedia tools, but who actually expect them to be available for their learning. The days of "chalk-n-talk" lessons are now severely numbered, for these students require greater motivation, and will not accept anything remotely mundane.

While the purpose of this paper is not to examine the rightness of such a change, it is worth drawing attention to the extraordinary opportunities that are now available to schools and teachers. Schools are becoming better equipped, and students are becoming more capable of using these technologies proficiently. The ingredients are already in place in many situations. What is needed is for teachers (with institutional backing) to take the initiative, learn the technologies, and develop classroom programmes that integrate multimedia into good teaching practice.

Currently, this is where a lot of classroom programmes that are trying to be innovative fall flat. There are two main causes for this. One is the inability of the teachers to operate or understand multimedia technologies. While in some cases this may be due to natural inability, in most cases this occurs through a lack of sufficient preparation and training. No longer is it the case that a high degree of "geekiness" is needed, as big advances have been made towards improving user friendliness. There is greater intuitiveness built into controls, and greater consistency too－quite possibly what worked in one application or device will work in another as well. By taking the time to learn the technology or to set it up properly, teachers can ensure that the lessons themselves will be not only successful, but more fun as well!

The second cause for lesson failure derives from how the technology is incorporated into the lesson. In so many cases, teachers develop lessons that make the technology the focus of their class rather than an integral part of it. For example, we often see classes that use video recording and processing or finding information on the Internet that focus on the process more than the opportunities for learning. Technology is no substitute for good teaching practice . . . in fact, quite the opposite. It is an easy task to build a strong lesson with a sound pedagogical base and no multimedia involved at all, but quite impossible to perform the opposite. Using multimedia as a toy will have initial success, but will soon lead to boredom or rejection. By using it as a tool, the students learn more because they are focused on the goals of the lesson rather than the technology. Their proficiency also improves, as they learn to apply their skills with the technology in different contexts.

What is Multimedia?

When most people hear the word *multimedia*, their first thought is *computers*. Even the Longman Dictionary of Contemporary English describes it in one definition as "involving computers and computer programs that use a mixture of sound, pictures,

video, and writing to give information." However it then follows with a second definition, describing it as "using several different methods of giving information, for example using television, newspapers, books, and computers" which begins to capture the richness of the concept of multimedia. For the purposes of this paper, we would take it as any technology that can use, manipulate, or display information in a textual, visual, or aural format. This might involve music, video, text, images, or sound,

By looking at the tools available for multimedia work, one can begin to see the possibilities that are available. For example, in our college (which is probably fairly typical) we have available:

- Computers and software
- Fibre-optic Internet connection
- Video cameras
- Digital cameras
- Video recording and editing suite
- Printers: laser, inkjet, large format
- Scanners
- CD and DVD writers
- Projectors
- Internal server
- Lots of keen students!

As one can see from the list, the resources are already in place. What are needed are well-planned classroom programmes to incorporate them into the students' classroom experiences.

To give some idea of the possibilities that are available, let us look at a number of case studies of programmes that have been used in recent years in our college. In each case the student names have been changed out of considerations of privacy.

Case Study One: Memorial Video

Objective: To learn video filming and editing techniques

Multimedia skills: Video camera, iMovie, video editing

Keiko and Mamiko wanted to use their graduation thesis class to produce something to give all the students in their year group－something that would provide a nice

memory of their college years. They decided to produce a video of interviews with graduating students and teachers. The first part of the project involved making an interview "set." They used digital cameras to photograph scenes and people in the college, and then created a montage on a large board as a backdrop. With the set created, they then made a list of questions to ask all of the students (*What is your best memory of your college life, which teacher did you get on best with, etc.*) and then interviewed each second-year student individually, recording their responses on video using a Sony™ digital video camera. They also did short interviews with all the teachers in the department, plus shot footage of various scenes around the college. Once they had all the material, they then imported it into Apple Computer's iMovie™ programme on one of the college's Macintosh computers.

Figure 1. iMovie™ Editing Screen

After editing (which involved trimming out unwanted footage, compositing questions with answers, reordering video clips, etc), they added opening and closing titles, subtitles on each scene, transitions between scenes, and a background soundtrack. After the video was completed, they made a master tape and used this to dub enough copies for all the second-year students on the college's video-editing suite. They also used Adobe InDesign™ to create custom labels for the videotapes. These tapes were given to students and staff after they presented their end-of-year graduation thesis in January.

Case Study Two: English Presentations

Objective: To create a well-formed English presentation, develop presentation skills, and deliver it to an audience. Also, to give feedback to others.

Multimedia skills: PowerPoint, Internet search, digital photography

Every year, our second-year English Communication students are required to give a presentation as part of their assessment procedure. When this was started ten years ago, students had much difficulty in preparing their speeches and getting up in front of their peers to deliver them. Once the school upgraded its computer suites to be Internet capable, we were able to turn their presentations in multimedia events. Now, once the students have selected a presentation topic, they begin collating presentation material to use in their presentations. Their biggest resource is usually the Internet, where they are able to find and download information and pictures. They also use video footage and digital photographs they have taken around the college. Once their resources are compiled, they begin assembling their presentation in Microsoft PowerPoint™.

Figure 2. PowerPoint™ Formatting Window
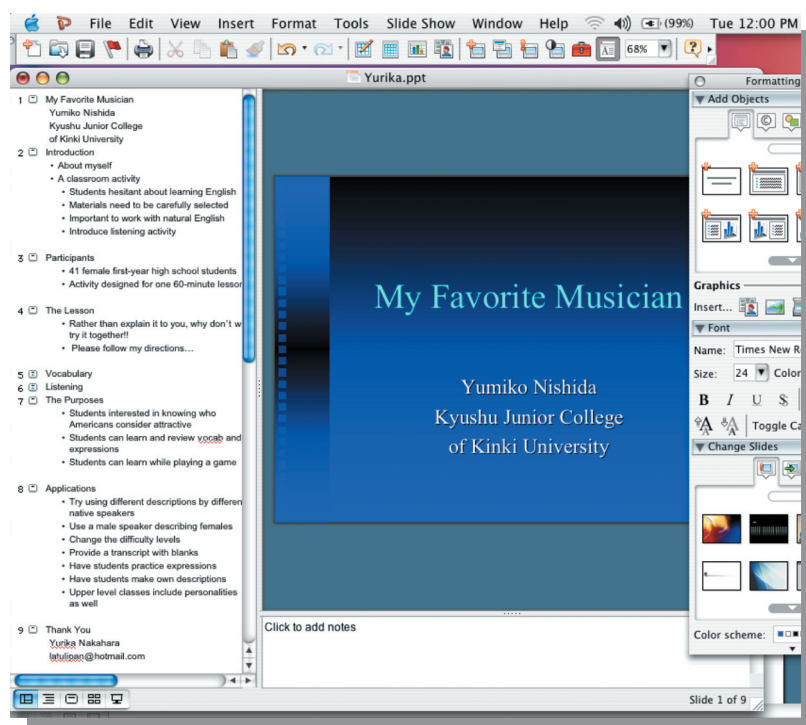
The advantage of using PowerPoint from the start is that it helps them plan their presentation in outline form. When developing a speech in a foreign language, students often have difficulty in presenting their ideas in a cogent and sequential format. The slides only contain key points and abbreviated information, but they do so in a clear, sequential, and organized manner, so provide a strong framework on which they can build their final oral presentation. With this skeleton in place, the students work with the teacher to flesh out their presentations, expanding on the notes on the slides and writing them in complete sentences and paragraphs.

The consequence of this has been that students are able to do their presentations more confidently. Their writing is stronger and more expressive. They are better planned, and have the on-screen presentation as a crutch for when they are nervous or lost. As a result, the proficiency of these student presenters has increased enormously. Their presentations are far more accomplished and content-rich, and as such are far more interesting to watch. This would not have been possible without a multimedia foundation.

Case Study Three: Instructional Video

Objective: To create an instructional video that other students can use to learn cooking techniques

Multimedia skills: Video camera, iMovie, video editing, iDVD

Emi is another second-year graduation thesis student. She is studying in the Home Economics course and wanted to create an instructional video for teaching various cooking techniques. Her first video was of techniques for using knives effectively in the kitchen. The initial steps were similar to the first case study above: she recorded a student using knife cutting techniques on digital video, then imported the footage into iMovie where she edited it and added subtitles and a sound track. She also created a graphic in Adobe PhotoShop™ that she used on all the title pages. Once she had created her video, she showed it to other students and teachers for feedback and advice. Finally, she wanted to put it on some form of media for other students to use. She tried VHS tapes and exporting to QuickTime™ format on CD-ROMs, but finally settled on DVD disks as the most user-friendly format. These disks have the advantage of being compact, yet have a huge capacity. More importantly for the work Emi wanted to display, she needed users to be able to access a menu so they could move back and forth between different video clips. Other formats involved much scrolling and searching whereas a DVD player can do this with a simple click. Also,

these disks can be played on both DVD players and computers (cross-platform) so they have a greater number of accessibility options. DVD production software and hardware is usually very expensive. Fortunately, Apple supplies iDVD™ software with all of its SuperDrive enabled computers.

Figure 3. iDVD User Interface
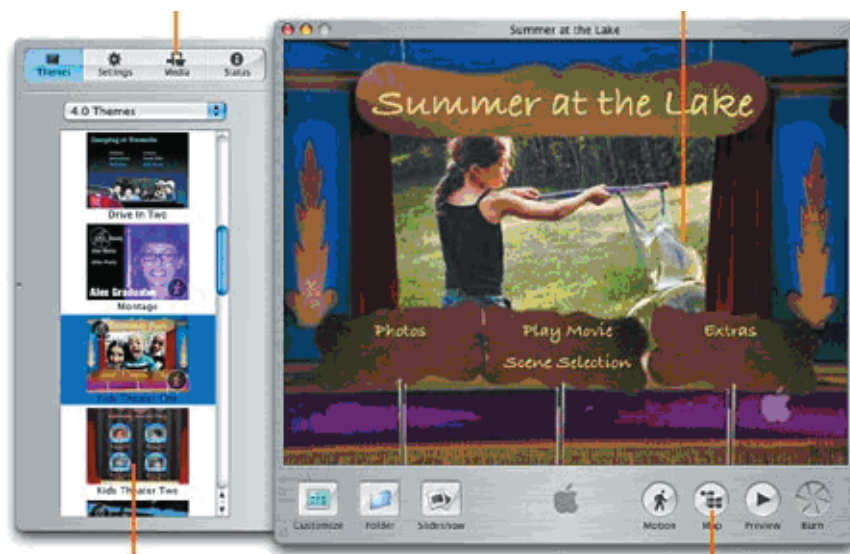
The software is exceedingly simple to use. From within iMovie, the user selects "Export to iDVD." This activates the software, plus automatically links the project to the iMovie video the user has been working on. Other iMovie projects can also be imported. The next step is to choose a theme from the approximately 40 styles that come with the software. The theme provides a template into which the video movies can be imported. It is also possible to import still digital photos to make slideshows. Planning the layout involves creating a map－similarly to what you would do with a website－keeping in mind the ergonomics users will employ in using the disk. Once the layout of the disk has been mapped out, music soundtracks can be added if necessary prior to burning to disk.

Having mastered the skills of editing video and setting up for DVD burning, Emi is now moving on to creating other instructional videos for next year's students. In doing so, she has to keep in mind how best to portray the important teaching elements for the students she is trying to help. This is perhaps the most demanding skill of the project, but it is one that is made easier by the use of these multimedia tools.

Case Study 4: Website building

Objective: To create a website to illustrate a skill developed by the student

Multimedia skills: Adobe Photoshop, Adobe ImageReady, Adobe Go Live, Fetch FTP, scanner

Japan is recognized worldwide for the skills of cartooning and character drawing. From its many manga magazine to its full feature-length animated movies, Japanese artists have set the trends for the rest of the world. So, it is no great surprise that many students share this passion for cartoon drawing. Look around any class and you will see any number of students skillfully doodling in their notebooks and on scraps of paper.

Yumi is one such student. She is a rather quiet, diffident student in class, but she has a passion for drawing. She likes to use the very cute style of figure drawing—huge eyes, button noses, and piles of hair. For her graduation thesis project, she has decided she wants to show the world her interest in the form of a website. This website will feature a gallery of her pictures, and links to some of her favorite related websites. She is also hoping to add an instructional area where people can learn basic cartooning techniques.

Her first step in creating this website has been to create a range of images she can use for menu banners. This has involved sketching out an outline in pencil, then scanning it into Photoshop. In Photoshop, she then proceeds to paint in the white areas of her drawing using the paint, paint can, and airbrush tools. Once the image is complete, she then adds the text she will use for the menu buttons and transfers it across to ImageReady. In ImageReady, she adds animation and links to the buttons before saving it as an HTML and GIF file. This file she opens in Go Live and builds her webpage, adding text and images as desired. She can also use the site features of the software to create and interlink the other web pages of the site.

Figure 4. Adobe GoLive User Interface
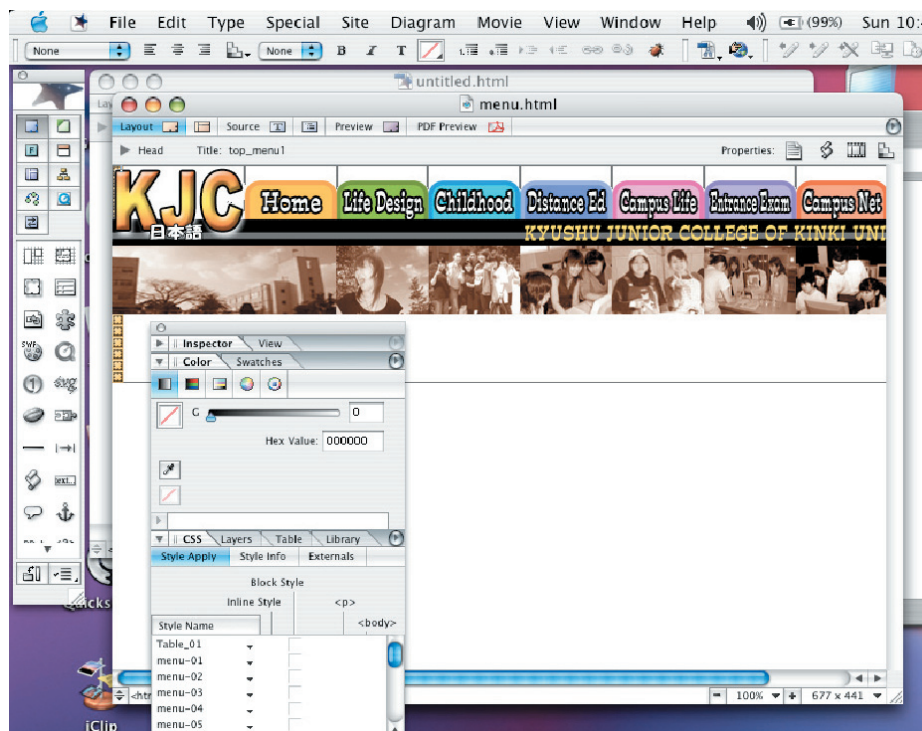
Preparing materials has involved more than just making pictures. It has also involved searching the Internet for similar sites to link to or to provide design ideas for her own site. She has needed to think about the site structure so that users can find their way around the site easily, and she has needed to give thought to the content, so that visitors will stay and be interested in what they see. She still has a long way to go as of the time of writing, but the final steps will involve learning how to upload the site to a server using FTP (File Transfer Protocol), and trialing the site with other students to debug and improve it where necessary.

In closing . . .

None of the case studies we have looked at are particularly unique or revolutionary. They have been included to illustrate a point about the use of multimedia in classroom situations.

In the first case study, we saw how two students had developed their skills in video

shooting and production in order to create a memorial tape for their fellow graduating students. The second study focused on classes using PowerPoint as a foundation point for their English presentations, and how the software helped them to present their ideas to the class. In the third study, we examined how creating instructional videos in DVD format could be used to pass on learning skills to students in following years. And, in the final case study, we looked at the way a student was developing and displaying her drawing skills through the development of a website that used the very skills she wants to develop.

A graduation thesis class, an English class, a domestic science class, and a design class. All very different courses, but they all share two things. Firstly, they use multimedia in many different forms, from computer software through to imaging and audio devices. Secondly, and more importantly, they use this multimedia technology, not as the basis for the class, but as a tool within it. In each class, the goals were set－to create a memorial video, to give a presentation in English, to instruct other students in cooking techniques, and to develop and display cartooning techniques－be fore the decisions were made about what form(s) of multimedia technology to incorporate in the learning.

For teachers looking to use the multimedia technology they have available, these are two critical points to be aware of. Obviously, before even beginning developing a course, teachers need to train themselves to use the technology so that they not only feel comfortable using it, but can also see the possibilities for incorporating it into their classrooms. Secondly, when building lessons or courses to use this technology, they must remember to use it as a tool within the lesson, and not as the basis for it. Keeping these two points in mind will ensure that multimedia-based classes are not only successful, but will also continue into the future.