# Considerations in the Development of an Online Teaching Course

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ABSTRACT: *Using technology to assist teaching and learning requires a redefinition of our roles as faculty, the role of the student in learning, and the methods of evaluation of the learning, both in process and in content. Conventional methods focus on outcomes with limited inputs and outputs. The new model involves larger amounts of inputs, classification, appropriate content, and then shifting the focus from teaching centered to learning centered. The power of the student learning increases as well as the faculty member teaching strategy. The implemented case example demonstrates the issues and impacts of redefining learning with technology. Students of today will be graduating into a technological world that is changing daily. Recently businesses are competing in a worldwide marketplace. Computers play a key role in universal communications. To be successful, students need to have hands-on experiences with computers.*

*In using the learning tool of creating an online course, we are seeking to create a concrete learning experience in hi-tech advances. Since the process is a hands-on experience, it will be especially effective with the visual and kinetic learners while still inclusive of other learning styles.*

*The creation of an online course is an excellent experience in problem solving. To be successful, students would be required to research, plan, and then execute their design. This is real life learning and very functional. Students would be able to take these skills and use them outside the classroom. This paper look at the considerations need to be made for developing an online teaching class and reports the development of such a tool.*

## 1 INTRODUCTION

Today's world is getting to have more home-alone style education every day. High cost of transportation and large amount of people challenging to travel to meetings, schools and thus spending time outside are also effects for this change. When we talk about professional development in education, first comes in mind that every difficulty and handicap related to time and place is no more set, that means 'education in anywhere and anytime'. Computer-based teaching is more like exploring and constructing information by yourself. This makes students learn not only what they are taught but also how this information is acquired. This paper looks at the issues associated with multimedia's abilities to construct a better-way of teaching and learning and the components it uses.

## 2 RESOURCES
### 2.1 Multimedia

Multimedia is the use of a computer to present and combine text, graphics, audio and video with links and tools that let the user navigate, interact, contact and communicate.
Components:

- Computer to coordinate what you see, hear, and interact with you,
- Links that connect the information,
- Navigational tools that let you traverse the web of connected information, and
- Ways to gather, process and communicate your own information and ideas.

Multimedia is highly effective in education. As research and publishing company Computer Technology Research (CTR) Corporation reports, people retain only 20% of what they see and 30% of what they hear. But they remember 50% of what they see and hear and also as much as 80% of what they

see, hear and do simultaneously[1]. That is why multimedia provides such a powerful tool for teaching and learning.

There is no doubt that computers are changing the style of the education. Having computers in elementary schools, high schools, colleges and courses has an effect of reduction in learning time and improvements in grades. The rapid developments in desktop computers and the Internet make it possible for interactive educational multimedia to reach thousands of learners simultaneously and asynchronously. The delivery method is most often CD-ROMs or the Internet. The producers of these materials are typically educators, video specialists, audio specialists, computer programmers, graphic artists, Instructional Designers, and Subject Matter Experts[2].

Teachers should also learn how to use multimedia in order to reach their students all over the world and function productively. Figure 1 illustrates a model of an online teaching system.
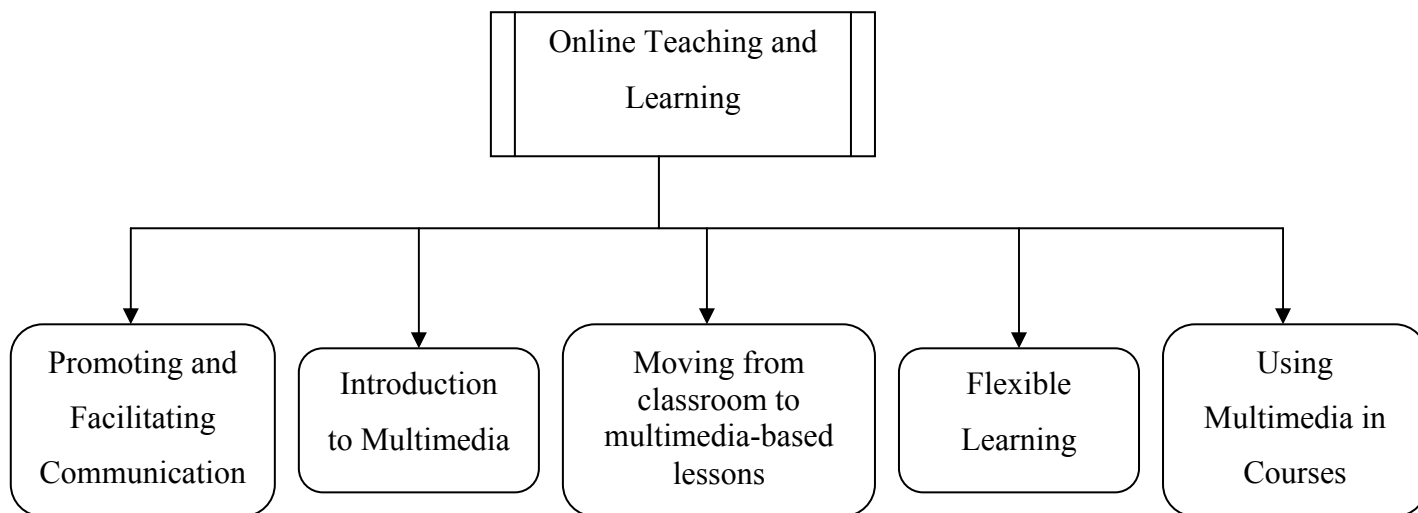
Figure 1. Model of an online teaching system

We can call a computer as a multimedia PC if it has a CD-ROM (compact-disk read only memory), or DVD (digital versatile disc) drive, audio recording and playback, movie player, a fast processor, a RAM (random access memory) large enough to interact with these tools and of course a large hard disk to store all our records.

## 2.2 COMPUTER COMPONENTS

There are 5 categories of components in a multimedia computer; the system unit, multimedia accessories, read/write storage, auxiliary input devices, and communication options. Figure 2 illustrates how these components can be used in online teaching.
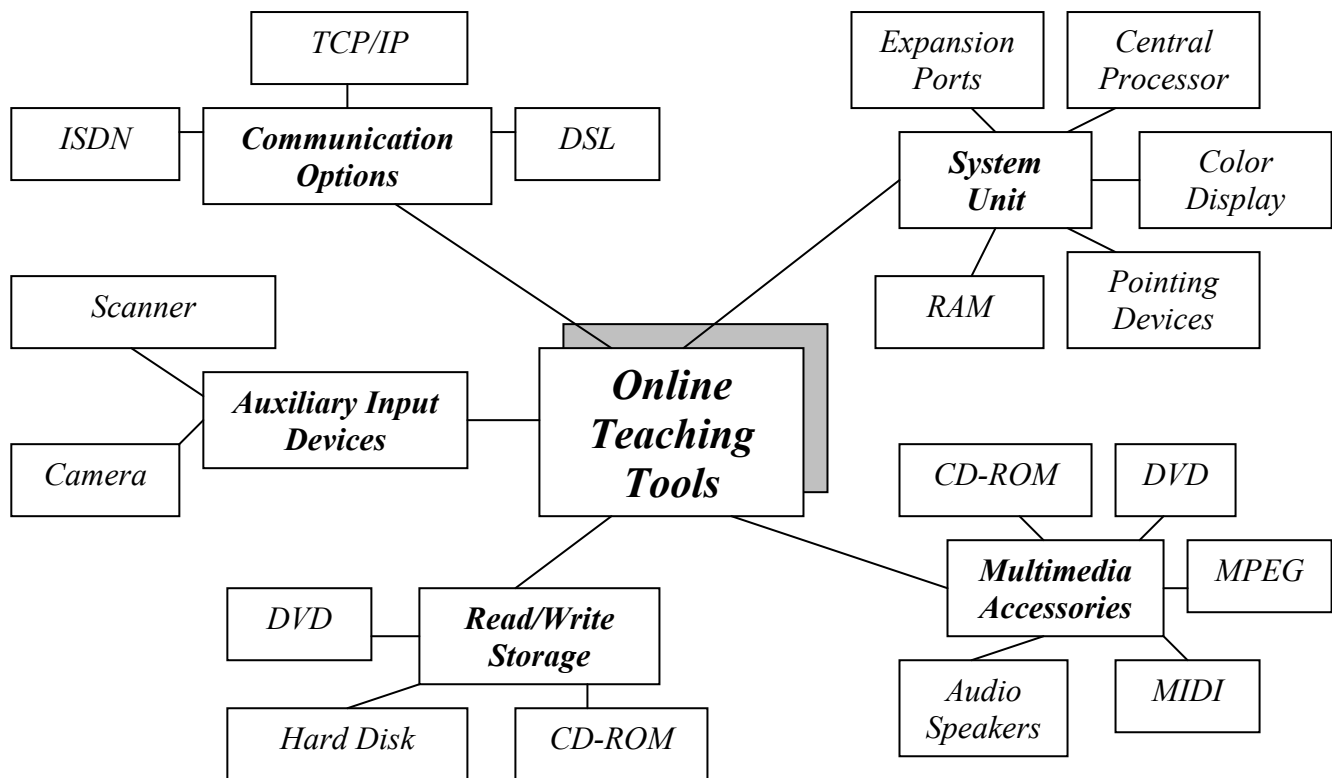
TCP/IP

ISDN — **Communication Options** — DSL

Expansion Ports — Central Processor

**System Unit** — Color Display

RAM — Pointing Devices

Scanner

**Auxiliary Input Devices** — **Online Teaching Tools**

Camera

CD-ROM — DVD

**Multimedia Accessories** — MPEG

Audio Speakers — MIDI

DVD — **Read/Write Storage**

Hard Disk — CD-ROM

Figure 2. Framework of online teaching tools

## 2.2.1 System Unit

Central Processor: It is the portion of a computer that includes circuits controlling the interpretation and execution of instructions and processing of data.

RAM (Random Access Memory): RAM is the main memory of a computer in which multimedia programs execute. The more RAM you have, the better your multimedia applications will perform.

Color Display: Many webmasters design their pages for 800x600 screens and also there is another thing also important that is the number of colors the system unit can display. Most computers today, have 32-bit color, if not, at least 24-bit color display.

Pointing Devices: They can vary but the most common is the mouse. There are some other alternatives like pens, trackballs, and TrackPoints.

Expansion Ports and Slots: These are other important things you should consider so that you will be available to add multimedia accessories. Other technologies are USB (Universal Serial Bus), SCSI (Small Computer System Interface), and FireWire.

## 2.2.2 Multimedia Accessories

CD-ROM, DVD (Digital Versatile Disc), digital audio that produces a dynamic range, giving faithful sound reproduction, audio speakers to listen to the sound produced, graphics accelerator that is helpful for 3D imaging, video overlay, TV tuner, MIDI (Musical Instrument Digital Interface), and MPEG (Motion Picture Experts Group).

## 2.2.3 Read/Write Storage

At least 4 GB of hard disk space is required. Also CD-ROM and DVD's are some recordable disks.

## 2.2.4 Auxiliary Input Devices

Handheld scanners, flatbed scanners, page-fed scanners or slide scanners can be useful while teaching to the class and inserting new information to the lecture notes depending on the tools that are being used. Also digital cameras or videoconferencing cameras are useful to bring the course into real-life.

**2.2.5 Communication Options**

The data communication protocol used on the internet is TCP/IP (Transmission Control Protocol). Before that, you have to connect via a system that is either a telephone service (56 Kbps) or ISDN (Integrated Services Digital Network) which has speed of 144 Kbps, or DSL (Digital Subscriber Line) that is 2 million bps, network cards that is 10 Mbps and the last one is cable modem which offers speeds range from 400 to 1440 Kbps.

Many useful multimedia applications are possible at reasonable data rates. Among them are the following[3]:

- 64 kbps -- telephone-quality audio,
- 100 kbps -- simple application sharing,
- 128 kbps to 1 Mbps – videoconferencing,
- 1.54 Mbps -- MPEG video,
- 8 Mbps to 100 Mbps – imaging, and
- >100 Mbps -- virtual reality


# 3    HOW TO CREATE MULTIMEDIA

There are six kinds of ways to create a multimedia application: presentation packages, hypermedia programs, animators, authoring systems, web page creation tools and Instructional Management Systems. When you hear all these categories, the same question comes in all minds: "Which one should I use?" Below are some examples to show you the possibilities that can be used according to type of need. Figure 3 represents the tasks for creating a multimedia application.

## 3.1  Presentations

PowerPoint: It is based on slides and also graphics, charts, equations, animations, sound effects, and images available. It may be the most important opportunity that you can publish your applications using PowerPoint.

DazzlerMax: It is a very powerful presentation tool. Much of what you have to do to create your presentation is knowledge of basic programming techniques.

## 3.2  Hypermedia

Hypermedia links allow students to organize information in many meaningful ways.

HyperCard: This uses the metaphor of a stack of cards and each screen is a card you can place anywhere in a stack and link to any other card.

HyperStudio: This is probably the easiest and most powerful program for use in schools. It makes easy for students to snap pictures, edit movies and create projects combining text, sound, graphics, and video.


## 3.3  Animations

Adobe Premiere: This is probably the most powerful multimedia tool available. Of course, it's more than just an AVI editor. Premiere is full-featured video capture and editing. It displays "filmstrip style" clips and lets you edit. Motion control also allows you to zoom, twist, and rotation and distortion effects.
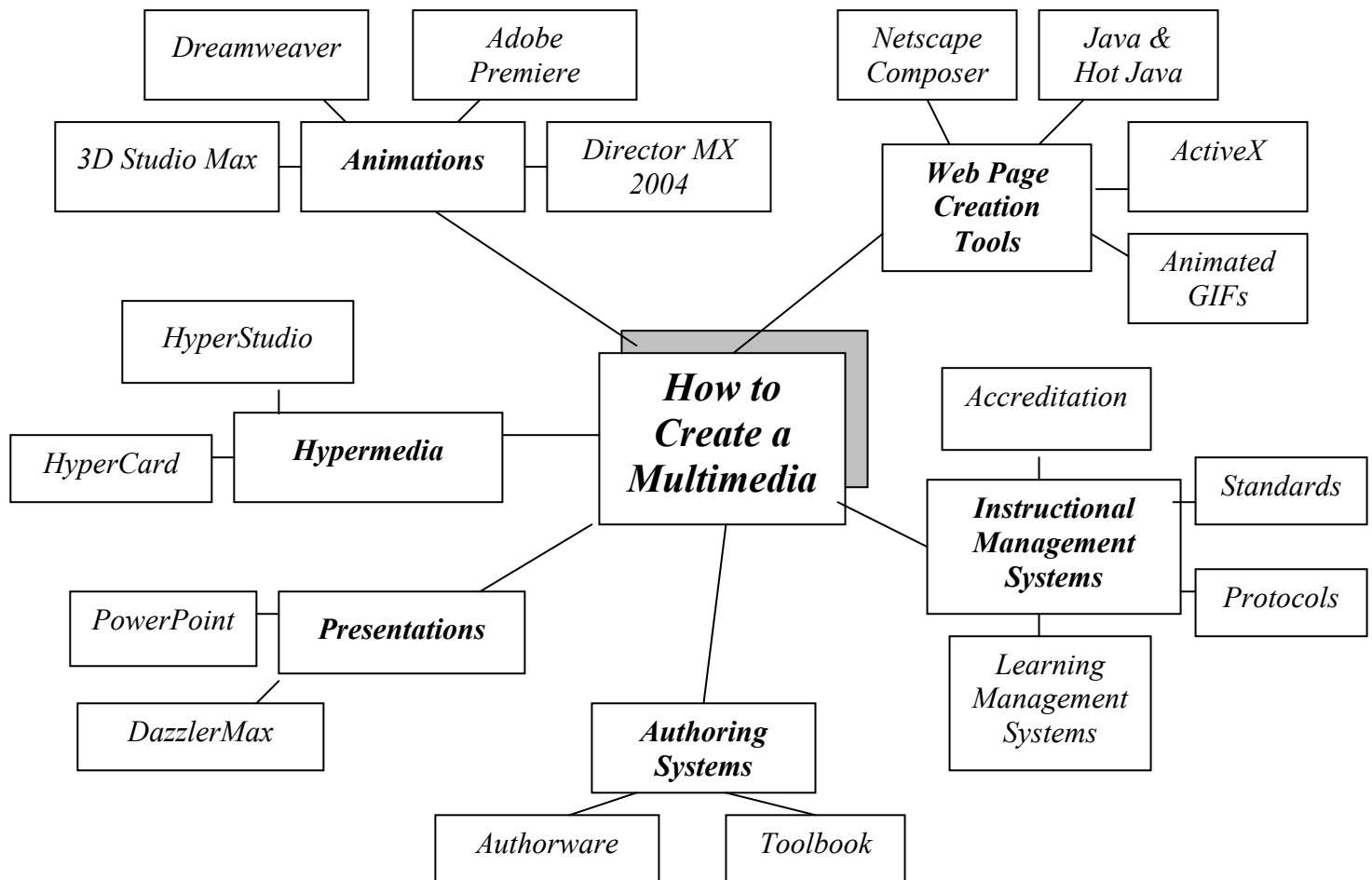
Figure 3. Framework for creating a multimedia application

Think about you don't want to miss your class but there is no way to catch it and you get an opportunity to take it later on video as if you are there. Isn't it wonderful? You have chance to take your class anytime!

Dreamweaver: It can be used as a WYSIWYG (What You See Is What You Get) editor or the HTML source can be viewed or altered. CSS, Inserting Fireworks Apps, Flash Integration, Use of Plug-Ins, Java Applets, Navigation, Bar Creation, Table Making, HTML Clean Up, ActiveX, Form Creator are some examples of its features.

3D Studio Max: You can produce complex animations often seen in movies and games. Combining the features of Autodesk design tools, with 3D technology, you can do more than what you expect.

Director MX 2004: The proven multimedia tool for building rich content and applications for CDs, DVDs, kiosks, and the Internet. Incorporate most major media formats, including DVD-Video, Windows Media, RealMedia, QuickTime, and Macromedia Flash to create rich content.

## 3.4 Authoring Systems

Authorware: It is the leading visual authoring tool for creating rich-media e-learning applications for delivery on corporate networks, CD/DVD, and the Web. You can leverage existing PowerPoint presentations to create rich multimedia e-learning content, generate tab navigation and captions, and turn text into speech.

Toolbook: It is the only product in the market to provide a comprehensive, integrated authoring solution to create effective learning content and rich sophisticated simulations quickly.

## 3.5 Web Page Creation Tools

Netscape Composer: The most comprehensive WYSIWYG Web page editor is Netscape Composer, which comes as part of the suite of tools in the newly released Netscape Communicator. When you create

a Web page with Netscape Composer, you work on a screen that makes what you create appears just as it will when viewed in the Netscape Web browser.

Java and Hot Java: Java is an applet development language invented by Sun Microsystems. An applet can make your computer do things like animate objects on the Web page, make sound, play games, and perform calculations.

ActiveX: This is the name of Microsoft's applet technology, which the Internet Explorer supports. Like Java, ActiveX lets you download little applications that run on your computer to bring a Web page to life.

Animated GIFs: Provide an easy way for you to create frame animations without having to learn the complexities of Java programming. GIF stands for Graphics Interchange Format. The GIF file format is the most widely used method of storing bitmaps on the World Wide Web.

## 3.6 Instructional Management Systems

IMS (Instructional Management Systems) is a project which developed in the United States (boasting an impressive collaboration between educational institutions and the computing industry) aimed at standardizing information about courseware.

IMS attempts to address the problems of the perceived lack of open standards in courseware or learning materials and the systems needed to deliver these. It looks at:

- Standards for describing learning resources,
- Communication protocols between learning resources,
- Accreditation (possibly financial) for the subsequent use of learning resources, and
- Systems to manage the overarching delivery and handling of learning resources (known as Learning Management Systems)

## 4 USE OF MULTIMEDIA IN CLASSES

Multimedia's ability of animations, stereo sound, videos and displays in millions of true colors brings hole world in classes. Multimedia can be used in courses such as:

Chemistry: Students have no other alternative than a static photo showing only one position of structures. On the other hand, with Sun's Java, Macromedia's Shockwave or Microsoft's ActiveX, students can rotate and see all stages of models of molecules just by clicking them.

Biology: Instead of looking at a few photos of some animals in a textbook and trying to imagine how actually they look like, students can simulate and adventure all amazing ocean world as in it. They can see all kinds of animals by scrolling or dragging on the screen and also can reach all related content areas.

Economics: When you look at a chart or graphics, you need to manipulate the data to understand the effects of each and that is possible only with multimedia.

Physics: To collect, analyze and model data, students use Analyzer software packages and at the end of their work, they get abstract principles and diagrams of all experiments.

Encyclopedic Resources: Everybody knows the difficulty of finding any information in an encyclopedia. You have to search all textbook and also all updates. In multimedia version on the other hand, you can find any information via rapid full-text searching option. Keep in mind that it also includes explanations with sound and videos.

## 5 CONCLUSIONS

Web pages are created, stored, and sent in an encoded form before a browser turns them into the images that can be seen on the web. This paper opened by explaining how multimedia enables students to represent information using several different media and involving a substantial amount of work, open-ended assignments, theme-based activities and also interdisciplinary activities. People using online teaching draw knowledge and experiences from a wide variety of sources so that they learn to think effectively, practice problem-solving and decision-making.

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