Multimedia Planning Method and Mutual Evaluation System on the Web in Computer Literacy Education

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Abstract
Due to the lack of available time within university curriculums it is often very difficult to adequately teach the concept and functions of most programming languages or multimedia environments. Moreover the teaching of these subjects to students from non science/technology backgrounds require further additional time and is not often suited to students who wish to pursue a career as a concept developer or website designer. For these reasons the Multimedia Planning Method was developed in order for students to learn the important issues surrounding software development without becoming involved in the actual learning of programming languages or multimedia environments. In this method students devise plans to market a multimedia product and produce a pamphlet for advertisement purposes. Through this assignment it is felt that students acquire computer skills and gain an understanding of the concept of multimedia. The mutual evaluation system was developed in order for students to evaluate and comment on each others work and to learn the processes involved in software development and design.

Keywords
Multimedia, Mutual Evaluation, Peer Assessment, Individual Learning, Web Based Learning (WBL), Bulletin Board System (BBS)

Background and Objectives
We believe that one of the biggest problems facing the teaching of computing based subjects in higher education centers upon the lack of available time in the curriculum to dedicate to these lessons. For example at our university taught computer programming classes are typically limited only one hour a week. As a result, many universities students are now being taught only how to use COTS (commercially-off-the-shelf) computer software as opposed to learning how to program. To make matters worse, the lack of time dedicated to teaching students how to use the often user friendly but highly specialized functions within a multimedia package means that many users are unable to become confident and proficient users.

It is often difficult to teach any computer based subject to students who are not majors from either a computer science or technology based discipline. In the case of the university named above, students are not typically from a mathematics or computer science background. To teach a computer based subject to students from a different discipline is often a challenging activity for the teachers concerned. Within this paper a method was developed and termed, the Multimedia Planning Method [1][2], the central principle within this method is that it allows students to become familiar with the essence of multimedia development without having to master the software.

An additional problem that has been noted at many universities concerns the evaluation and marking of students work. Students often put a considerable amount of time and effort into their finished work or report and therefore should receive a full evaluation and assessment of their work. It is often the case that the professors in charge of assessing the work do not have enough time to examine each report fully or fully evaluate the design and contents of the deliverable. This results in students receiving a series of brief comments but not a comprehensive analysis and critique of their work.

With these problems in mind, it was decided to develop a mutual assessment method that would not only enable students to evaluate each others work on the web but would also allow professional designers or programmers to evaluate and comment on students work.

The Multimedia Planning Method
For students who are not majors in computer science and technology based subjects it is often noted that they require a longer period of time to learn either how to program or how to use a multimedia package.
Without actually implementing actual multimedia software, it is difficult to understand the concept of multimedia. Therefore a method was developed to understand the concept of multimedia software without the implementation of actual multimedia, “The Multimedia Planning Method”.

Central to this method is the idea that students have to plan the production of a pamphlet which will be designed in a computer based environment (See Figure 1).

Initially students are introduced to a variety of products that were developed using multimedia packages. After this point they begin to consider the issues surrounding the development of a new product using a multimedia package. They are only required to conceptualize the product, its main functions etc, but there is no need for them to actually develop it. Instead students skip the actual development phase and move straight onto the advertising phase where they then think about exactly how they wish to advertise their product in a pamphlet. The benefit of using this approach is that students are not required to develop the software but do instead focus on the planning aspects of software development. They are also required to use their knowledge of the various types of multimedia software available at present, its suitability to various tasks and the issues surrounding the advertising of new piece of software.

**Concrete Method in Classroom**

This method was used for an “Information Planning” class. The students were sophomore and senior female university students who were not majoring in a science or technology based subject. They had acquired basic computer literacy skills such as typing and were proficient users of the internet, word processing and spread sheet packages and had basic information science knowledge. None of the students had any experience with computer programming. The objectives of this class were to familiarize themselves with the main functions of multimedia software and to acquire a basic knowledge of the subject area that would in turn allow them to compete with other graduates for jobs in the information industry sector.

Students first experience with a piece of multimedia software was a package designed to help learners of English. With each class students were shown a number of different multimedia packages. After this introduction they are asked to set about making project book that should contain details of their own original multimedia deliverable. The project books were also evaluated students can begin to make the pamphlet to advertise their own software.

The pamphlet must contain four pages and must bind like real one. Students are allowed to use any software to make the pamphlet. Although almost all students have only a basic knowledge of Microsoft Word and Windows, they have access to many tools/equipments such as graphic tools, a digital camera, image scanner etc. Traditionally when students wish to learn how to use a new piece of equipment they often find a teacher or an assistant to show them how to use the equipment. But in this situation they are not permitted to ask questions but are instead encouraged to teach themselves. The rationale behind making them learn by themselves is that if teachers/assistants demonstrate the equipment students have a tendency to only learn the procedure and do not gain a well rounded knowledge of the piece of equipment in question.

**Results of Multimedia Planning Method**

In our university, the Multimedia Planning Method has been in use for four years. And almost all pamphlets made by students have been impressive in terms of ideas, design and technology. This result was not foreseen at the beginning of this project. The pamphlets are produced using a variety of software and tools e.g. Microsoft Word, Front Page, Power

![Figure 1: Concept of Multimedia Planning Method](image-url)
Point, Photo Editor, Adobe Photoshop, digital cameras, laptops, image scanner, color printers etc, in spite of most students only having basic computer skills. Figure 2 shows an example of a pamphlet. This sample advertises a piece of software that enables users to see many pictures with music and takes them on a tour of relaxing places such as parks and woodland and the idea of aroma therapy is also introduced. The cover page contains a title and images (the title of this software is FOREST). The contents of this software are explained on pages 2-3. And in the scoop page, there is specified information about the system requirements needed to run this piece of software, the price and the virtual company name and address. To make this pamphlet this student learned Adobe Photoshop by herself.

In this case study, the following data was used to analyze.

1) Comments from the students after each class.
2) A questionnaire about computer skills before the introduction of this method.
3) A questionnaire about their progress during the course of this assignment.
4) A questionnaire about their computer skills after this assignment.
5) Observations and remarks about using this method.

Figure 3 shows a summary of the 5 point scale questionnaire after this method was compared with a normal class where the teacher teaches traditional computer studies. Although satisfaction is rated quite low, other items achieved good scores. Students were highly motivated in terms of their involvement in this assignment and they wanted to produce good work. A possible reason as to why satisfaction was rated so lowly arises from the lack of time that students felt they had to produce the pamphlet.

Each pamphlet was evaluated and marked by students. Using these marks students pamphlets were divided into two groups for further analysis. Table 1 displays two typical kinds of comments from either students whose work was well evaluated or students whose work was evaluated as being poor. It should be noted that the level of computer skills held by both of these students was the same prior to this assignment. When analyzing the methods used in the production of these pamphlets, there have been a number of differences between high-scoring students and low-scoring students that have been found. For example, high-scoring students always appear to ask for someone else’s advice like classmates, other friends or their parent. The results of this questionnaire revealed that high scoring students typically looked to either compete or co-operate with other students. On the other hand, low-scoring students rarely ask questions or consult anyone. They always aim to work and produce the pamphlet on their own. This finding suggests that in order to encourage low scoring students group based projects would be extremely beneficial.
Table 1: Two typical comments from two different students

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<thead>
<tr>
<th>Comments from students who were evaluated well</th>
<th>Comment from students who were not evaluated well</th>
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<tr>
<td>Although I had an extremely hard time because I didn’t have any technical skills before this assignment, I am very satisfied with this assignment. Through this assignment, I think I have gained a lot of new knowledge and skills.</td>
<td>In this assignment, the result was only evaluated. Even if we struggled to make it and took enormous time, only the last design and concept were only evaluated. I am very frustrated and I really wanted them to evaluate my effort and time.</td>
</tr>
<tr>
<td>In our usual class the teacher or assistant helps us. But in this assignment, we had to do all of it by ourselves. I think that why we got so many new skills.</td>
<td>Although I was actually quite excited by this assignment and class, I could not make my work well because there were big gap between my ideal pamphlet and my skills.</td>
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Method 2: Mutual Evaluation System

There are many students that take this particular class. Therefore, it is too difficult to evaluate all the pamphlets properly in detail and to write good comments as time is often limited. Furthermore, multimedia software and the designed pamphlets have to be evaluated on many points such as concept, design and technology and so on. The mutual evaluation system on the web was especially developed for the task of pamphlet evaluation. This method was used our previous Problem Based Learning System and students could receive fair-minded evaluation each other [3]. Therefore, the mutual evaluation was implemented in this system. The system could also be used by the teacher prior to the assignment being issued to students as a means of illustrating the nature of the task and using previous students’ work as examples of what has been produced, the differences between high scoring and low scoring students work Although this method was developed for this project, it can be generalized and used in other classes to assess other styles of report or assignments. Figure 4 shows the web image of the Mutual Evaluation System.
This system has the following functions/pages.

1) Logon: each student has to use their own account because students are required to evaluate other students’ pamphlets independently and these evaluations should be secret.

2) List of pamphlets: Almost 70 pamphlets’ their names, thumbnails, current score, and short PR comments are listed.

3) Evaluation: All four pages of pamphlet thumbnails are shown and each has its own BBS (bulletin board system) where students can post comments. Furthermore, students can evaluate the pamphlet using 5 point scale on points such as concept, design, technology (making the pamphlet) and total evaluation (whether student would want to buy the product or not) (See Figure 4 Left). When students click the thumbnails a larger image is displayed.

4) Ranking of pamphlets: Based upon the result of the ranking exercise by students, all pamphlets are ranked (See Figure 4 Right). The total points and the average of summation are calculated on the background when every rank is posted and the ranking of pamphlets are changed using this average point automatically in real time. The site only lists the top 20 pamphlets.

This system was developed under the Microsoft Internet Information Server and Active Sever Pages Technology. Microsoft Access was used as the database. All pamphlets’ page images were input as JPEG format in this system. Depending on the access speed in students’ home internet environment three different compression rate of images could be selected in order to aid students’ evaluation of the pamphlets from home.

Results of Mutual Evaluation System

All students are required to comment and evaluate at least 10 pamphlets. And in order to evaluate from a professional viewpoint, 4 professionals (designers and programmers) were requested to issue their comments and rate each pamphlet.

This mutual evaluation system was appreciated by both students and professionals. Many comments and rating were posted using this system. The results generated by the questionnaire revealed that many students felt that this mutual evaluation was good system, that their assignments and efforts were well evaluated and that the comments from other students were helpful.

Discussion

Using this Multimedia Planning Method, students were not only able to learn multimedia software concept but also gained many computer skills through the production of pamphlets. Although current practices usually dictate that lessons should be teacher orientated, the implementation of this method has shown that students could and did learn by themselves. The successful factors identified in this self learning environment are as follows. 1) Role Playing (A student is a producer or designer in a virtual company and they have to propose their own plan to their virtual boss.) 2) An examination genuine software and the issues underlying the production of a pamphlet 3) The teacher never teaches a procedure. 4) Environment (Students could freely use the computer rooms, laptops, personal computers, digital cameras and image scanners) 5) Evaluation from other students.

In this Multimedia Planning method students are not required to learn how to code. The results of this study suggest that students do not necessarily need to be able to program in order to conceptualize the processes required to produce a working piece of software. It is not suggested that this method be adopted in classes or programs whose primary goal is to produce computer programmer. Instead the implementation of this method should be for students who wish to pursue a career in the areas of concept planning or website design. This method was successfully implemented in a University and it is felt that it could be adapted to suit the needs and facilities of high schools and junior high schools.

References