Investigation of Source of Motivation in a Hybrid Course

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Abstract

The current study investigated the sources of motivation for learning in a hybrid course. The subjects of the study were 25 students taking a hybrid course that was designed and developed covering computer networks topics. An interview form that revealed answers about the motivation source of the students was developed and used in the study. One on one interviews were made with the students. Students' answers to the questions were recorded and transcribed. The interview data for the students were analyzed by content analysis. Students' responses were interpreted and categorized into two types of motivation, extrinsic and intrinsic. Results indicated that intrinsic motivation and internally rewarded learning is the key element of web based instruction and hybrid courses. Interviews revealed that students with extrinsic motivation are more prone to loosing motivation. It was seen that some students in the hybrid course with extrinsic motivation lost their motivation and will to learn easily by external factors, and were frustrated by the course content. On the other hand, students with internal motivation were more aware of objectives of the course and had the ability to plan and evaluate their own learning. An in depth analysis of students' sources of motivation in a hybrid course on computer networks revealed that intrinsic motivation plays a more important role than extrinsic motivation does.

Introduction

WBI and Hybrid Instruction

Web Based Instruction (WBI) was defined as a learning environment in which learning was fostered and supported through the use of the attributes and resources of the World Wide Web (Khan, 1997). The major advantage of WBI was stated as being able to communicate with any person and/or access many resources independent from time and distance (Hill, 1997). This structure was suitable for constructivism because of the time independency and freedom to access learning material at will. To understand the effectiveness of the WBI environment several instructional models were developed. The models of Reeves and Reeves (1997), Caladine (1999) and Welsh (1997) were important guidelines for the WBI designers.

The idea behind a hybrid/blended instruction is to redesign the instruction to use the advantages of both face to face and online modes of instruction. Some of the activities which students previously did in classroom or laboratory, such as listening to lecture, taking notes, quizzes, pre-lab assignments could be done online. This change could have positive effects on teaching resources like teachers workloads, accommodating various learning styles and hours of classroom time, and course budget. Actually hybridizing different methods of course delivery was not a new idea. Clark (2002) commented that hybridizing has deep roots that lay back to times where books, videos and print materials were used as an integral part of the instruction. Hybridizing could be understood as "mixing" or "blending". In general terms we can refer to hybrid instruction as the blending of classroom-based instruction with instruction via other media.

There are few studies on hybrid instruction. Most of them point towards the advantages of these courses. These advantages mainly come from the online enhancement of the face to face courses. These advantages were listed by Valerie Landau (2002):

- Accessible handouts, syllabi and notes online, cutting down time and resources in photocopying.
- Allows peer to peer collaboration on projects, helping to facilitate and document group work.
- Allows automatic grading of quizzes and tests.
- Allows students to discuss topics and review notes or other course material after the face to face part is over.

The hybrid course design was different than WBI in that it combined the advantages of face to face and online modes of instruction. Sands (2002) provided proposals for hybrid course design and development. Other studies on finding the ideal hybrid structure were done by (Marques et. al., 1998) and Jones, Cranitch and Jo (2001). In both studies hybrid courses were developed and descriptive studies were made. Both studies found

the hybrid course mode superior on traditional course mode. Studies on student achievement in hybrid course showed that students were more successful in the hybrid courses than they do in purely web based or traditional courses (Lilja, 2001; Truckman, 2002, Christman et. al.,1997; Christman and Badget, 1999; Persin 2002). The literature showed that students' course satisfaction was high in hybrid courses (Gray, 1999; Black, 2002). Students' attitudes toward technology and technology integrated courses were indicated as positive in hybrid courses. Several studies showed that a "mixed" course structure was preferred by the students and that hybrid courses effected students learning positively (Gunter, 2001; León de la Barra et al., 1999).

Student Motivation

There are many factors affecting the learning in hybrid courses and one of the important factors is the source of motivation of students. While some students have extrinsic motivation some others have intrinsic motivation. Extrinsic motivation in hybrid courses can lead to externally rewarded learning. Examples of this extrinsic motivation are grades, time, income, legislative power and so on. Intrinsic motivation can lead to internally rewarded learning. Intrinsic motivation is the desired motivation type in courses since individual meaning-making is a critical element of learning. This type of motivation is based on internal values like, the will to learn, the desire to solve a problem, the will to understand the course content, the meaning of course content. Intrinsic motivation can lead to higher levels of learning and critical thinking abilities.

The literature shows two models for defining motivation of students for learning. The first one is Malone's (Malone, 1981; Malone & Lepper, 1987, both cited in Alessi and Trollip, 2001, p.25) motivation theory in which he suggested four relevant factors of motivation: challenge, curiosity, control, and fantasy. Malone and Lepper (1987 cited in Alessi and Trollip, 2001, p.26) identified motivators as either intrinsic or extrinsic. Extrinsic motivators were described as independent of instruction. Lepper's (1985, cited in Alessi and Trollip, 2001, p.26) research provided evidence that "extrinsic motivators diminish one's interest in learning because the goal becomes the reward rather then their learning". Malone and Lepper (1987) proposed that intrinsic motivators play a more dominant role on students' learning than extrinsic motivators.

The second motivation theory was that of Keller (Keller & Suzuki, 1988, cited in Alessi and Trollip, 2001, p.25). Similar to Malone's theory he also suggested four components as essential factors of student motivation: attention, relevance, confidence, and satisfaction. The theory is known as Keller's ARCS model of motivation design. Keller did not indicate any desirability of intrinsic or extrinsic motivation, but rather he argues that the instructional designer must be proficient at motivation design as well as instructional strategy and content design.

Method

A "Computer Networks and Communications" course was offered as an elective course to all students of a state university in Turkey in Fall 2002 semester. Twenty-five students attended the hybrid course. In the beginning of the first meeting of the course a short orientation about how to use the web-site was given to the participants. Students were informed about things that were expected from them while using the web-site, what the security policies were, how the site functions, what the Internet address of the web-site was, and how to choose their username and passwords. Students' web-site usage was logged by the log system and the durations and activities of each student were checked each week. Every student had to visit the web-site of the course and had to be active for at least one hour each week. The student could not leave the page open and leave, since the system logged them out after 5 minute inactive time. Students met once a week for one hour to participate in the classroom activities and no lecturing was done in these meetings. As a prerequisite to the course all students, were required to have taken a computer literacy course. This was required to assure that all students participating in the study had the basic knowledge level about computers

The Website of the Course

The "Computer Networks and Communications" course was designed as a hybrid course which required self-paced learning time since the course content was online, creating a significant reduction in classroom lecture time. The course was offered to the students as a hybrid course, which was a mixture of face to face instruction with online learning. For this purpose, a web-site was developed to serve as the Web-based learning environment. The web-site of the course was developed by two faculty members of the Computer Education and Instructional Technology Department of a Turkish state university. Some of the Internet technologies used in developing the web-site can be listed as, Active Server Pages (ASP), Microsoft SQL Server 7.0, Dynamic HyperText Markup Language (DHTML), and Cascading Style Sheets (CSS). The course web-site consisted of course content, syllabus, announcements, assignments, forum and comments parts. In the

web-site there were also some cognitive tools to support student learning such as highlight, notebook, bookmark, search, glossary and history.

Before the study, the "Computer Networks and Communications" course was given as a must course. Although the course had been offered for a long time there were no written goals and objectives. The first step of redesign was analysis of the data about the course. Informal and formal data of students who already took the course in terms of student feedback and grades were investigated. Existing knowledge and skills of the students who registered for the course were also investigated. As the second step, the desired outcomes of the course in terms of goals and objectives were specified and specific learning objectives, assessment instruments, exercises, and topics to be included were documented. These were used to determine the content and visual elements of the web-site of the course. While there were new content and visuals created by the instructor, because of internal validity concerns, majority of the visual elements and the content were adapted to be used from a commercially well-known information source with permission. As the third step, the graphical user interface of the web-site was designed. As the last step of creating the web-site, the content and the visual materials were coded. The content was structured in the web-site according to the syllabus, which was organized week by week. The design and the web-pages were ready to use before the course started. As implementation, chapters were published for student access week by week. The effectiveness of the design and training materials were continuously evaluated through students' comments. The web-site of the course was a dynamic one, working with conjunction to a database.

Because the course had high technical knowledge base and a loaded content, more procedural knowledge and skills, and had students with limited prior knowledge about the content, the web-site was relying on guided learning and the activities in the classroom on discovery. The instructional design of the hybrid course was a mixture of objectivist and constructivists approaches. The web-site included objectivist/instructivist (directed learning) and constructivist elements. The objectivist structure in terms of content presentation structure in the web-site was supported with constructivist elements especially in classroom meetings. Group works, games, discussions and projects were constructivist elements planned to go hand in hand with the online part of the course.

The users were authenticated with username and password to access the web-site of the course. The username supplied in authentication initiated the log system, which was internally bound to a database, to keep track of the activities of the students while going trough the content and using the cognitive tools. The screen design of the web-site separated the web page into two main parts. One part was used for visual and/or graphical elements, and the other part was used for content related text in the whole content screen to provide the consistency. A sample content page is supplied in figure 1. A "Jump to" tool in the form of a drop-down menu enabled the students to navigate to any part of the web-site whenever they wanted. The students could always see where they were by the "You are here:" tool. Other tools to mention were site map and help, which were useful for students in navigating between different parts of the web-site.

The main page of the web-site included six links that the students could choose from (Course Content, Syllabus, Announcements, Assignment, Forum, and Comments). Additionally, there were three message notes, first one was a message from the instructor, second one was a note written by the students themselves to remind them things, and the last one highlighted the last content the current user/student visited.

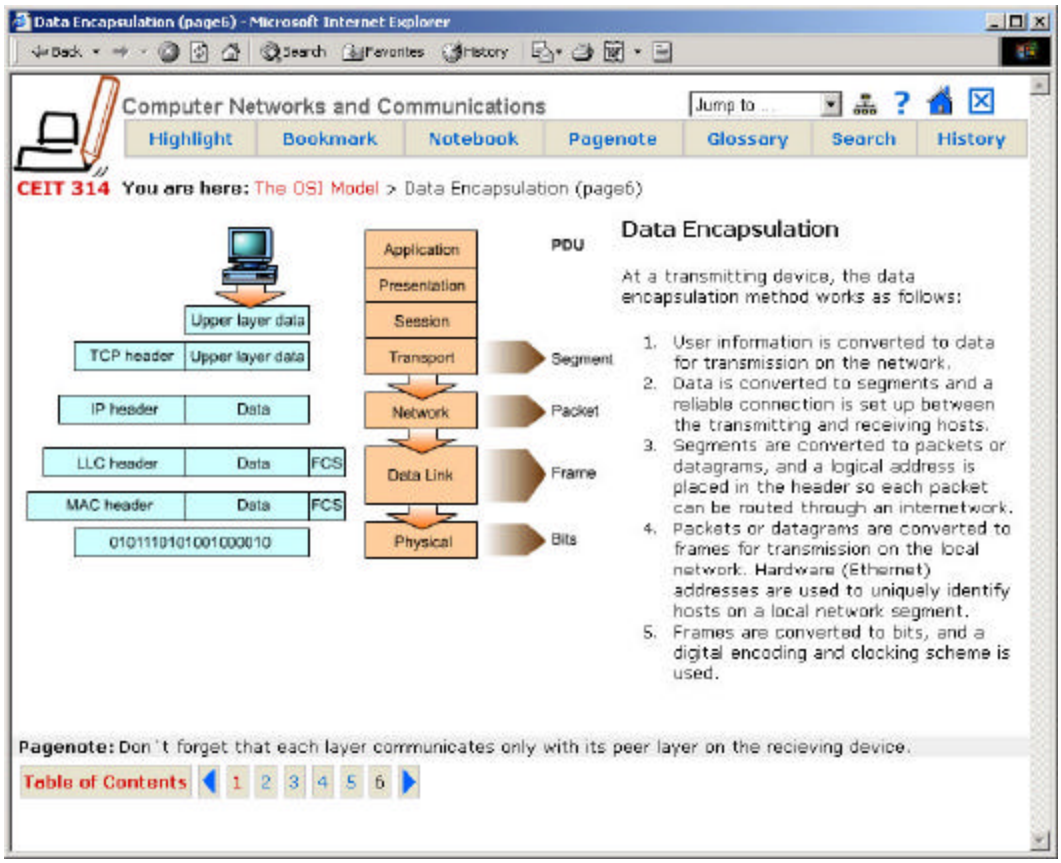

Figure 1- The Content Sturucture of the Web-Site

Procedures

Every student in the hybrid course had to visit the web-site of the course and had to be active for at least one hour each week. The student could not leave the page open and leave, since the system logged them out after 5 minute inactive time. In the one hour classroom meeting, students with suspicious activities and students with visiting time less than one hour were informed to be cautious about their performance related with the course web-site. The differences in learning and teaching activities between the hybrid course and the traditional course were shown by using Caladine's (1999) model which he called "A Model for Learning and Teaching Activities" (MOLTA). The differences between the two courses are summarized in Table 1. The common activities of the two courses are shown in Figure 1. MOLTA classified teaching and learning activities into five elements; delivery of material, interaction with materials, interaction with the teacher, interaction among students and intra-action.

Table 1-*The Differences between the Hybrid Course and the Traditional Course*

Element	**Traditional Course** (3 hours of classroom meeting each week)	**Hybrid Course** (1 hour of classroom meeting each week)
Delivery of Material	Lectures supported with PowerPoint presentation	Web-site, on-line materials
Interaction with materials	Text books, notes, library books, homework, quizzes, classroom activities.	Multimedia, web browsing, cognitive web tools, homework, quizzes, classroom activities.
Interaction with the teacher	Classroom discussion, face to face questions, consultation	Web announcements, forum, phone, face to face questions, consultation
Interaction between students	Group works, classroom discussions, projects, classroom games	Web forum, e-mail, group works, classroom discussions, projects
Intra-action	Classroom discussions, group works	Classroom discussions, group works, web forum

The students in the hybrid course were interviewed individually to get their perceptions about the dimensions of the hybrid course in terms of their effect on their motivation. The students in the hybrid course were interviewed one-on-one during the last two weeks of the semester. Each interview lasted for about 40-60 minutes. The interviews were recorded having taken students' consent. The recorded interview data was transcribed and analyzed to find out the students' motivation types. To understand students' major sources of motivation, content analysis was carried out on the answers to the questions on each dimension.

Results

The findings of the study showed that motivation and rewarded learning is very important for students' learning in the hybrid course. The analysis of the interview data to find out the type of motivation that was more effective on students learning in the course showed that students had both type of motivation, intrinsic and extrinsic but one of them was more dominant. One indication for intrinsic motivation was "enjoying" the course. Students indicated that they enjoyed some learning activities. Students did not enjoy reading the content from the website, but they enjoyed the real-life experiences, like making a cable installation, configuring a computer or a network device, and making a cabling design for a given building floor plan. They also enjoyed reading and applying real network protocols and addressing schemes like IP. A student said: "I always wondered why we configured the computers with IP address and subnet mask. Now I understand why and how we use it." There were parallel comments regarding student motivation and metacognition.

Students indicating their "joy" of learning the topics in the course were those students with metacognitive abilities knowing "what they learned" and "why and how they learned." For example, such a student said: "I expected that this course would change my way of understanding computer networks topic. My expectation became true, now I look at many things different. For example, when I enter a student computer lab I can determine that the line is going from there, the switch is located there, this is a good or bad way of installation." Students were asked which features of the hybrid course they liked the most and they indicated the following features:

1. The content of the hybrid course (22 students): Computer networks subjects were found interesting by most

of the students. Students stated that they liked to learn about these subjects because they would be useful in their professional life. Almost all students said that they would benefit from the course content in the future.

2. The hybrid structure of the course (16 students): Students indicated their enjoyment in taking an alternatively delivered course after so many traditional courses. It was something new for them. They stated that they found the course structure interesting and useful. They especially liked the course not being fully web based or fully traditional.

3. The learning/instruction activities done in the classroom (15 students): Students stated that they prefer doing activities rather than sitting silently and listening to the instructor. They indicated that they have enjoyed to do practice on the information they read from the web-site.

4. The cognitive tools in the course website (14 students): According to student comments, the cognitive tools were giving the course web-site a professional feeling, making it different than standard, electronic page turning web-sites. One student commented on this: "The tools in the web-site were very usable. I used them for accessing to information quickly and easily."

5. The web-site of the course (12 students): The web-site was found to be very user-friendly, nice looking in terms of graphics and well organized in terms of access to information. The students liked the navigation structure and the information presentation structure.

When the students' interview results on their likes and dislikes are compared, it could be seen that the students had internal and external motives throughout the course. The new hybrid structure, the user-friendly structure of the web-site and the cognitive tools were adding to students' external motivation. Students' enjoyment of the classroom activities and their interest in learning the technology related to computer networks were internal motivation in the hybrid course. One common view of students was that the classroom meetings and the face to face communication with instructor and the peers was a source of motivation. Students indicated that they liked especially to see the instructor and they got motivated through this. Regarding this, while some students said that they understood the topics better through interaction with the teacher and their friends, others indicated they liked to "talk" with the others. Detailed analysis pointed towards intrinsic motivation as the key element for success in the hybrid course. The findings about the factors effecting the students' motivation are summarized in Table 2.

Table 2-*Summary of students' motivation types in the hybrid course*

Factors effecting students motivation	**Type of Motivation**	**Effect on Students**
Studying to the course content through the web-site	*Extrinsic* was an obligation to read at least for one hour, students were logged	Negative – complained about health problems like eye watering and availability of internet access
The structure of the course in terms of "students learning preferences"	*Intrinsic* Individual learning was supported	Positive - students were used to individual learning Negative- students expected to carry on their learning habits
The structure of the course in terms of "logistic preferences"	*Extrinsic* to choose their own study time class hour was only one hour	Positive - students preferred to study at their homes, get access to course content whenever they want.
Expectations from the course related to "external rewards"	*Extrinsic* expecting to find a job, to get a certificate, dedicate less time to the course	Negative - Students were frustrated easily when faced with the requirements of the course.
Expectations from the course related to "internal reward"	*Intrinsic* Enjoying learning computer networks related topics.	Positive - Students liked to understand the meaning and functioning of computer networks and internet they used in their daily life.
Classroom activities	*Intrinsic* enjoying to do practice of what is in the course content, being active rather than passive listeners	Positive – Students could use and show their knowledge to their peers and the instructor.
Cognitive tools in the course web-site	*Extrinsic & Intrinsic* organizing, searching and accessing information fast and easily	Positive – Students could customize the course web-site usage according to their learning preferences like taking notes, highlighting and searching, bookmarking and so forth.
The web-site of the course	*Extrinsic* appealing in terms of graphics design, navigation structure and information presentation	Positive – Students found the web-site easy to study, user-friendly and well organized.
Course content	*Intrinsic* new technology, subjects are valuable in the information society	Positive – Students were aware of that they learned new technologies. Negative – Students with non technical background or previous knowledge found the subjects too technical and hard to understand.
The instructor of the hybrid course	*Intrinsic* student-teacher interaction was informal and friendly, teacher motivated students with positive feedback	Positive – Students were relaxed, and easily communicated with each other and the instructor during the classroom activities.

Conclusion and Discussion

Students' answers indicated two types of motivation while larning in a hybrid course; extrinsic and intrinsic. The study results found out that intrinsic motivation and internally rewarded learning is the key element of the hybrid course. Interviews revealed that students with extrinsic motivation are more prone to losing overall motivation. It was seen that some students in the hybrid course with extrinsic motivation lost their motivation and were frustrated by the course content. On the other hand, students with internal motivation were more aware of objectives of the course, had the ability to plan and evaluate their own learning. They also had the metacognitive skills which are referred by Flavell (1979, cited in Revees and Reeves, 1997) as skills one has in learning to learn. The interview results also indicated that the source of motivation is not discrete but a continuum. This can be interpreted as students have both types of motivation while learning but intrinsic motivation is more important in hybrid environments.

Research points on motivation as an important factor on student achievement. There is also research evidence that motivation is not only a determinant for student achievement but it has to be activated for each task (Weiner, 1990). There are different opinions about which type of motivation is more effective on students learning. The findings of the current study points towards intrinsic motivation as the dominant motivation type in students learning in the hybrid course. This result supports the findings of Lin and McKeachie (1999, cited in Lee & Park, 2003, p.657) who suggested that intrinsically motivated students engage in the task more intensively and show better performance than extrinsically motivated students. However, some older studies showed opposite results for traditional classroom settings (Frase, Patrick, & Schumer, 1970, cited in Lee &Park, 2003, p.657). The contradictory findings have been explained as "possible interaction effects of different types of motivation with different students. For example, the intrinsic motivation may be more effective for students who are strongly goal oriented, like adult learners, while extrinsic motivation may be better for students who study because they have to, like many young children" (Park & Lee, 2003, p.657).

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