Computer assisted active learning system development for critical thinking in history of civilization

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Received July 21, 2009; revised October 16, 2009; accepted January 19, 2010

Abstract

This study investigates a Computer Assisted Learning System (CALS) according to the several factors that promote flow where students are fully involved into the learning activities for history of civilization lessons. The designed CALS supported by meta – cognitive (cognitive maps) and multimedia tools (movies, flash cards and quiz applications) that help students to reach a flow state in learning by actively by engaging students' critical thinking and providing an environment for active participation. The research data was collected using focus group surveys from a randomly selected 54 students enrolled in history of civilization at Bahcesehir University in Istanbul, Turkey. Results showed that 53.7% of students can be in flow via implemented CALS. Also according to the results, the flow has significant predictors in the course enjoyment, perceived competence of course, value–usefulness and the challenge–learning style match according to nature of course in such a CALS.

Keywords: Computer assisted active learning; critical thinking; flow; cognitive styles.

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1. INTRODUCTION

Active learning refers to the technique in which students do more than simply listen to a lecture (Bonwell & Eison, 1991): several strategies promoting active learning have been shown to positively influence students' attitudes and achievements. The computer assisted learning environment, which is heavily based on the usage of multimedia and hypermedia, involves various activities such as interactivity, entertainment, exploration, communication, knowledge and active learning. In such an environment, students experience interactivity, involvement and motivation in their learning (Chen, 1998; Clark, 1994). In order to be actively involved, students must engage in high-order thinking tasks, such as analysis, synthesis and evaluation. Several studies show that there are various factors and
conditions associated with the computer-mediated environment and these are enjoyment, telepresence, focused attention and engagement and time distortion, associated with the concept of flow: (Chen et al., 1998; Shin, 2006; Novak et al., 2000) this is a psychological state, in which an individual feels cognitively efficient, motivated and happy (Csikszentmihalyi, 1996). A person in a flow state is intrinsically motivated, interested in challenging the tasks at hand, unconsciously performs tasks, experiences a unity between consciousness and activities and often, at times, loses the sense of physical time (Csikszentmihalyi, 1990).

1.1. Computers and Technology Usage in History Lessons

The use of technology in history lessons is not a magic tool in itself (Cuban, 1986): the preference of lecturers in the use of technology and their beliefs about using it in lessons plays an important role (Doppen, 2004). For example, historians teach larger courses than in other disciplines and make less use of technology in their classes (Townsend, 2006). The right use of technology is an important issue (Kelly, 2001), as such technology can help enhance teaching and learning only if used properly. The proper use of technology in history lessons can be achieved through the identification of the best way in applying the technology (Stephens, 2005; Lyons, 2004).

Technology can be beneficial for both students and teachers, as it creates many new opportunities for both. For example, the use of computers in the classroom changes the concept of a history course from textbook reading to the authentic interpretation of historical material (Kozna & Johnston, 1991). There are various studies that discuss the use of technology in history classes (Stephens, 2005; Kornblith, 2003; Yang, 2003; Trentin, 2000; Dollinger, 2000) and technology, such as the internet, may be used merely as a source of information (Street, 2007). In addition, technological tools can be incorporated into the curriculum, with regards to history lessons; for example, the use of technology can help students to form a sense of history as a process shaped by individuals and communities in an online format (Thorp, 2005) or it can be used as a communication tool (i.e., interactive weblogs, where teachers post questions and students respond (Risinger, 2006). Web-based tools can also be used in history lessons, in order to allow students to make their own learning choices (Ferster, Hammond & Bull, 2006). It is educational technology that provides students with innovative ways in which to understand complex problems in history (Stephens, 2005). Also, on specific occasions, using the computer in a history or social studies lesson is beneficial for students of all learning styles (Dils, 1999).

1.2. Active Learning and Critical Thinking with Film Discussion in History Lessons

Traditional lectures, that dominated classrooms for much of the 20th century (Winn & Snyder, 1996), mainly employ teacher-centered approaches (McKeachie, 1954; Anderson, 1959); this is where the teacher sets the goals and does most of the talking; there is little verbal participation amongst students. Individual work and teacher evaluation are promoted, with the teacher making most of the decisions. The traditional lectures are hugely based on rote learning, rather than critical thinking, are of no benefit to the students and may even cause students to withdraw from their courses (Yang, 2007). In addition, there is the realisation that students have not really been ‘taught how to think’ (Gibb et al., 2002). Therefore, the higher-thinking abilities of students, such as critical thinking and analysis, must be exercised in history lessons (Reed, 1998).

History lectures are reputedly dull and are repeatedly cited as a root cause of student dissatisfaction and unrest. In contrast, cinema, sound and television have come a long way in providing us with striking
images in our daily lives (Raack, Smith & Raack, 1973). Hence, the use of films in history lessons can be beneficial in encouraging students in history lessons and could be helpful in encouraging higher learning skills within the classroom, such as critical thinking. According to Sexias (1993), ‘... teachers can discuss popular films in class. Also, it is possible to say that most students discuss these films outside of school. In studying history at school, historical characters often fail to ‘come to life’ and this is true of the engaging historical film watched by students. Such students are likely to be literally swept into the ‘historical’ world presented on film but are unlikely to be able to exercise critical judgments of this depiction of the past. Thus, there is a problem in the history classroom in engaging the students’ imagination in the past. A problem in studying popular film is to allow the student to ‘step out’ of the filmic depiction of the past.

Also, many students’ understandings of the history of war and peace, gender relations, intercultural relations and national development are affected by presentations in the popular media (Matthew, Levstik & Levstik, 1991) and this, in turn, can be problematic for such students’ views of history. The study of popular films within the classroom is crucial, so that students understand history correctly and within its context: studying films and analysing their topics, in accordance with real historical facts, can enhance critical thinking. To create such an environment, a student-centred approach should be implemented, in order to prevent problems such as rote learning (as indicated above). A student-centred approach is more likely to involve a teaching methodology and instructional activities, encouraging students in undertaking tasks and thinking about what they are doing. The learner-centred approach attempts to engage students in activities that support knowledge construction through media use and such activities are not designed to control learning. In the student-centred model, learners use media to investigate and to think. This type of learning activity can thus be described as active learning (Bonwell & Eison, 1991).

Some of the strategies used to promote active learning are as follows:

- Students do more than just listen.
- Less emphasis is placed on transmitting information and more on developing students’ skills.
- Students are engaged in activities (e.g., reading, discussing and writing).
- Greater emphasis is placed on students’ exploration of their own attitudes and values (Ragains, 1995).

The key principles of active learning, as suggested by Barnes (1989) are as follows:

- **PURPOSIVE**: the task is seen by the learner as relevant to his or her concerns
- **Reflective**: the learner reflects on the meaning of what is being learnt
- **Negotiated**: the teacher and learner negotiate the goals and methods of learning
- **Critical**: the learner appreciates the different ways of interpreting learning
- **Complex**: the learning tasks reflect real life complexity
- **Situation-driven**: the learning tasks arise out of the needs of the situation
- **Engaged**: the learning activities reflect real-life tasks

### 1.3. Implemented Learning System

Interactive Learning Systems (LS) can support active participation by incorporating the main properties of a system (rather than just showing dull Powerpoint presentations):

- An implemented system supports active learning and critical thinking via
a. Film applications, (where classroom discussions are held)
b. Quiz applications

- Implemented systems using online computer tools, such as
c. Meta cognitive learning tools
d. Flash card quizzes
- Film and Quiz applications (Multimedia tool; PPPs)

The implemented LS suggests that students take more active control in the learning process and the following LS model was implemented to enhance this (as stated in Fig. 1); the active participation of students is essential for the success of the model. The role of the instructor is facilitator and thus the computer applications cannot be considered independently from the system learning environment. Therefore, the success of the computer applications was dependent on the students’ attitudes towards the use of computer tools within the proposed learning environment.

![The Components of the Learning System](image)

**Figure 1: The Components of the Learning System**

The activities were divided into two different components: these were self-study tools that the student can access online and the class tools, which are used in the classroom (the instructor leads the class as facilitator, via the LS). The LS’s activities aim to provide motivation through presenting, engaging and interesting multimedia objects, such as film applications, quiz applications, meta-cognitive tools and flash card tools.

In the film application, the course starts with an introduction to the lecturer. The program also helps instructors at the outset by outlining the important points and objectives of lessons. In this, students are presented with the clear goals of the days topics, so they can be prepared for the lesson and be aware of the associated concepts. The historical films are presented to students and, in this application, selected film parts are presented and the program automatically stops between these parts, in order to present students with questions and information. This helps such students to understand concepts more easily and in an interactive way. The quiz application is performed in class and incorporates three different categories: these are multiple-choice tests, keyword quizzes and concept map quizzes. All require
completion by students.

The meta-cognitive tool displays concept maps in different interfaces, in accordance with students’ preferred learning styles (thus allowing them to organise such concepts in their mind more easily). Finally, the flash card application provides a game-like experience that allows students to accommodate keywords and concepts for the related topics.

1.4. Purpose of the Study

In this study, a learning system was investigated and designed, with the aim being to create an active learning environment for students that incorporated the use of computer tools (in order to enhance students’ critical thinking). Specifically, the learning system was implemented, in order to change the linear logical Powerpoint presentation-based lectures. The developed computer tools are designed to support active learning with non-linear dynamic cognitive mappings, to provide an environment for the discussion of films and to enhance critical thinking by grouping structures within keyword learning in flash cards and several quiz applications. The study also attempts to answer following questions:

1. Does CALS provide an environment in which students can enter into a flow state?
2. What is the relationship (if any) between flow and learning styles, locus of control and motivation of participants?

2. THEORETICAL FOUNDATION

2.1. Flow

Flow is an optimal experience state in which people are fully involved in an activity; they are focused, lose self-consciousness and feel in control of their environment (Csikszentmihalyi, 1975). Csikszentmihalyi (1975, 1990, 1993, 1996) highlights the dimensions of the flow experience as clear goals and immediate feedback; equilibrium between the level of challenge and personal skill; merging of action and awareness; focused concentration; a sense of potential control; a loss of self-consciousness; an altered sense of time and experience becoming auto-telic or self-rewarding.

There are several researchers in the literature, who have studied the concept of flow in a wide range of activities and areas, such as web usage (Chen & Nilan, 1998; Chen, Wigand & Nilan, 1998; Chen, Wigand & Nilan, 1999; Pace, 2000), web marketing (Hoffman & Novak, 1996; Novak, Hoffman & Yung, 2000); information systems usage (Webster and Martocchio, 1992; Agarwal & Karahanna, 2000; Artz, 1996); Human Computer Interaction (Webster, Trevino & Ryan, 1993; Woszczynski et al., 2002; Huang, 2003), and learning (Chan & Ahern, 1999; Konradt & Sulz, 2001; Konradt, Filip & Hoffmann, 2003; Egbert, 2003; Pearce & Howard, 2004; Pearce, Ainley & Howard, 2005; Rong & Min, 2005; Shin, 2006; Liu et al., 2008 and Fu et al., 2009).

Flow is considered in several learning studies; for example, an online learning study (Pearce, Ainley and Howard, 2005) investigated the concept of flow within online learning, whilst another investigated and measured flow in students engaged in virtual learning (Shin, 2006).

The first and original methodology used to measure flow was Csikszentmihalyi’s Experience Sampling Method (ESM). With this, subjects are asked to respond to survey questions several times and randomly during their daily activities. An electronic device reminds them of these questions during their day-to-
day activities (Csikszentmihalyi & Larson, 1987; Csikszentmihalyi, Larson & Prescott, 1977).

The other implemented methodology is a survey, which has proved the most popular method of collecting data. According to Finneran (2005), surveys have been used by several researchers to study flow (Ghani & Deshpande, 1994; Novak et al., 2000; Trevino and Webster, 1992). Such surveys feature closed questions and respondents are asked to rate factors according to general, rather than specific, occurrences. However, in this study we are not trying to find the dynamism of each factor and how its fluctuation influences flow; rather, flow is seen as a factor in itself. Thus, the survey methodology was employed to measure students’ flow. Additionally, the survey was proposed more than once and thus the probability of yielding fair results is much greater.

2.2. Learning Styles

A learning style is a technique that an individual uses to acquire knowledge in a way that is most comfortable to them. Although there is no single perfect theory accepted by researchers, with regards to learning styles (Brumby, 1982), implementing a learning style model may be useful in teaching/learning, if it corresponds with the learning modes of the students. Felder (1988) explained that there were mismatches between the learning styles of engineering students and the traditional teaching styles of engineering professors. In this situation, students got bored and thus become inattentive in class. They scored low on tests and became disillusioned with their course, the curriculum and themselves. There are various types of learning style, including sensory and intuitive; visual and auditory; inductive and deductive; active and reflective and sequential and global. The visual/auditory category has been recently changed to visual/verbal.

Felder (1989 & 1994) states that active learners best retain and understand information by doing something active; for example, by discussing such information, applying it or explaining it to others. Reflective learners prefer to quietly think about something first, sensing learners enjoy learning facts, intuitive learners often prefer to discover possibilities and relationships, visual learners remember what they see (pictures, diagrams, flow charts, time lines, films and demonstrations) and sequential learners tend to gain understanding in linear steps, with each step logically following on from the previous one. Global learners tend to learn in large steps, absorbing material almost randomly and without making connections.

As Felder (1990) claims, in most college classes, very little visual information is presented and thus the majority of students do not learn nearly as much as they would if more visual presentations were used in class.

In this study, only the visual/verbal and sequential/global dimensions were analysed, as our software is designed for these dimensions. In the scoring procedure for visual/verbal learning styles, lower scores indicate a tendency for visual learning styles and a higher score indicates a verbal learning style. The same scoring is also valid for the sequential/global learning styles; lower scores are sequential and higher scores are global.

2.3. Locus of Control

The Locus of Control refers to an individual’s attributes and whether they are the result of internal or external forces (Rotter, 1966). A person with a high internal locus of control believes that events are primarily the result of their own behavior and resources, whilst someone with a high external locus of
control believes that forces are beyond their control. Those students with a high internal locus of control tend to assume that they are responsible for their outcomes; they are more active in seeking information concerning their situation and thus their efforts will be successful. A student with a high external locus of control believes that his successes or failures are largely dependent on external factors, such as luck or chance, and thus they are not as successful.

2.4. Intrinsic Motivation

The Intrinsic Motivation Inventory (IMI) assesses participants' interest and enjoyment, perceived competence, effort, value/usefulness, pressure and tension and perceived choice in performing a given activity. The interest/enjoyment subscale is considered a self-reporting measure of intrinsic motivation, whilst the perceived choice and perceived competence concepts are said to be positive predictors of both self-reporting and behavioural measures of intrinsic motivation. Pressure/tension is theorised to be a negative predictor of intrinsic motivation, whilst effort is a separate variable relevant to some motivation questions (so it is only used if it is relevant). The value/usefulness subscale is used in internalisation studies (Deci et al., 1994), where the idea is that people internalise and become self-regulating, with regards to the activities that they see as useful or valuable. In this study, participants in the focus groups were asked to complete the IMI, in order to investigate their relevant CALS attitudes and experience (including the usage of computer tools).

In accordance with the design of the study, the instruments are applied to find the relationship between the instrument parameters and the flow experiences of the students. The instruments and their sub-parameters are displayed in Fig. 2.

Figure 2: Flow Construct and Parameters in Active Learning System

3. METHODOLOGY
3.1. Participants

The focus group study featured 54 students, randomly selected from a previous group of 166 students (whose learning styles were ascertained prior). The participants were undergraduate students taking the History of Civilisation course in the Faculty of Engineering at Bahcesehir University, Istanbul. The subjects were aged between 18 and 20 (SD = 1.71) and there was an equal number of male and female participants.

3.2. Instruments

3.2.1. Flow Survey: The participants in the focus group were asked to complete the survey, in order to investigate their relevant flow experiences via the proposed learning system and tools that this study was based on. The survey featured one initial question that described a desired flow state to students and then the other questions asked whether they had experienced such a state and how often. The survey was randomly proposed to students at the end of their courses and it was implemented 4 times throughout the second semester.

3.2.2. Index of Learning Styles: The participants completed a questionnaire and thus were classified according to the Index of Learning Styles (ILS), which is extensively used in the literature by Felder (1988). The instrument was developed by Richard M. Felder and Barbara A. Solomon and identifies four dimensions of learning styles: active/reflective, sensing/intuitive, visual/verbal and sequential/global. The reliability and validity of the ILS has been tested in several studies and advocated as a psychometric tool (Litzinger, Wise & Felder, 2005; Zywno, 2003).

3.2.3. Locus of Control: The participants in the focus groups were asked to complete the Rotter’s Locus of Control inventory, in order to ascertain the extent of their internal or external reinforcement beliefs. This inventory was developed by Julian B. Rotter, who is famous for his social leaning theory, and the reliability and validity of the Rotter Locus of Control has been tested in several studies and also advocated as a psychometric tool. The Spearman-Brown and KR reliability values of this test are 0.65 and 0.79 and repeated validity values are 0.49 and 0.83 (Rotter, 1966). The usage of this inventory within Turkish universities has been advised in a validity study by Dag (1991). The students responded to this 29-item inventory and the respondents scored as follows: 0-3: Internal Locus of Control (extreme), 4-11: Internal Locus of Control (healthy) and 12-23: External Locus of Control.

3.2.4. Intrinsic Motivation Inventory (IMI): The IMI consists of varied numbers of items from these subscales, all of which have been shown to be analytically coherent and stable across a variety of tasks, conditions and settings. The general criteria for the inclusion of items on subscales were that they should have a factor loading of at least 0.6 on the appropriate subscale and no cross loadings above 0.4. Typically, loadings substantially exceeded these values. McAuley, Duncan and Tammen (1987) conducted a study to examine the validity of the IMI and found strong support for validity.

3.3. Procedure

The focus group study featured 54 students, randomly selected from a previous group of 166 students (whose learning styles were ascertained prior). The participants were undergraduate students taking the History of Civilisation course in the Faculty of Engineering at Bahcesehir University, Istanbul.
The analysis proposed to investigate learners’ attitudes toward the system, in order to answer how meaningful and enjoyable the system is for students and also to gain any factors for the improvement of GPA.

The flow experiences of students were examined in detail according to several factors, such as the dimensions of students’ learning styles, locus of control and motivational factors relating to the model of flow. After the analysis of the results, a research design framework was established, as in Figure 4.

The first phase of the study was conducted with a sample group of 166 students. The subjects were between 18 and 20 (SD = 1.9) and there were an equal number of male and female participants. The instructor followed a traditional teaching style, using PowerPoint presentations. She lectured three chapters of the History of Civilisation course over 5 weeks, using PowerPoint Presentations (PPPs) to simply display texts and pictures during lectures. After this, all participants were asked to fill out a questionnaire and their responses were guaranteed confidentiality. From the results of this questionnaire, the participants were classified in accordance with their learning styles, using the IMI inventory (referred to as the Index of Learning Styles (ILS)) (Felder, 1988).

After this, the instructor lectured on another three chapters, which also took 5 weeks and incorporated the use of PPPs. In addition to weekly lectures, several tests (weekly quizzes, midterm and a final exam) were used, in order to determine students’ first semester achievements. After analysing the students’ learning styles, a meta-cognitive learning tool was developed, in accordance with the results of the learning styles. The students were trained to use the tool and were given a week to do so.

At the start of the second phase, a meta-cognitive learning tool was developed and tested for the purpose of enhanced active learning within the classroom. The second phase of the study was a focus group study that featured 54 students selected randomly from the previous group of 166 students (whose learning styles were ascertained within the first phase of the study).

The system tools were used by students for a further 10 weeks. Then, learners’ attitudes towards the CALS were investigated and took 3 weeks, as shown in Fig. 4. In the second phase, the focus group studies were followed up by semi-structured interviews (n = 54) for three weeks. These interviews investigated the attitudes and prior experiences of students in the usage of proposed tools and LS. Whilst the focus group interviews were taking place, the proposed LS was introduced in two separate parts, in order to ensure simplicity within interviews. The first part including movies, presentations and feedbacks via class discussion and was referred to as ‘film application’. The second (quiz application) covered standard quizzes, matching keywords, flash cards and the use of cognitive maps.

### 3.4. Data Analysis

All the questions presented to students, in both inventories and interviews, considered the learning system as a whole (meaning that the computer tools were not separately taken into account). The designed research also considered and was thus valid to the context of the history of civilisation lessons. The responses to the instruments were analysed using the Statistical Package for Social Sciences (SPSS) (version 12.0) and t-tests were used to ascertain the significant differences between variables. Numerous t-tests were run during this exploratory study and ANOVA tests were applied, in order to calculate the variances.
4. RESULTS AND DISCUSSIONS

4.1. Qualitative Analysis

4.1.1. Focus Group Interview: Close Ended Questions: In the interviews, students were asked several close-ended questions where they need to indicate their responses as Yes or No. The first of these questions is: "Have you ever felt that the time passed so fast?" The 94% of students (n = 51) responded positively to this question whereas only 6% of the student (n = 3) responded negatively.

Another of these questions; which is "Did you ever felt that you had enjoyed in the lesson?" It was responded positively by the 93% of students (n = 50) whereas only 7% of the student (n = 4) responded negatively. After immediately this question the students asked to them "What is the part that makes the lessons enjoyable more?" The 82% of students (n = 44) indicated that they enjoyed the films applications with supported computer tools, 7% of the student (n = 4) indicated quizzes after films with supported computer tools and 11% of them (n = 6) indicated as computer tools only. The question "Do you think these applications CALS) in the lessons create a feeling of success for you?" was responded positively by the 74% (n = 40) of the students whereas 26% of the students (n = 14) responded negatively.

Another question asking "Do you think these applications are challenging, compelling, and forceful with opportunities" was responded positively by 76% (n = 41) of the students where as negatively by 24% of students (n = 13). Students also wanted to compare the learning system and its methodologies (tools and application) with previous (first semester) lectures and presentations in the History of Civilization classes using the question: "Do you think the application in these lessons creates a feeling of success more than presentation and other lectures". The 57% of the students (n = 31) responded positively on this question and the 43% of them (n = 23) responded negatively. This indicates a little more than half of the study group thinks that this learning system creates feeling of success more than other classical presentation which was applied in first semester. On the other hand the less than half of the study group thinks the system creates feeling of success either less than classical presentations or same as classical presentation.

Another comparison question asking: "Do you think these applications are challenging, compelling, and forceful with opportunities more than other presentation and other lectures" responded positively by the 65% of the students (n = 35) and negatively by the 35% of the students (n = 19). Again this result indicates more than half of the study group thinks that this learning system creates feeling of challenge more than other classical presentation which was applied in first semester. On the other hand the less than half of the study group thinks the system creates feeling of challenge either less than classical presentations or same as classical presentation. The following students' responses in Fig.3 collected for the question asking what creates the challenge.
Finally students are asked to compare the learning system and its methodologies (tools and applications) in History of Civilization classes with any other class in the university. The question; “Do you think that CALS creates a feeling of success more than any other classes for this lesson” were asked have comparison. The 52% of the students (n = 28) responded positively on this question and the 48% of them (n = 26) responded negatively. This indicates a little more than half of the study group thinks that this learning system creates feeling of success more than other classes which are giving in the university. On the other hand the less than half of the study group thinks the system creates feeling of success either less than other classes or same as them. Final comparison question asking “Do you think these applications challenging, compelling, and forceful with opportunities more than any other classes” responded positively by the 65% of the students (n = 35) and negatively by the 35% of the students (n = 19). Again this result indicates more than half of the study group thinks that this learning system creates feeling of challenge more than other classes which are giving in the university. On the other hand the less than half of the study group thinks the system creates feeling of challenge either less than classes or same as them.

4.1.2. Focus Group Interview: Open Ended Questions: After completing the structured questions the students (n = 54) in the focus study were asked to indicate their point of view, feelings and recommendations about the learning system via these questions Q1, Q2, Q3, Q7, Q8 and Q16 (see Appendix). Students responses quantitative characteristics was coded using word frequencies in textual data according to deductive category application (Mayring, 2000) by using NVIVO software. After the coding the students attitudes toward the CALS was categorized under 8 main themes as in Table 1. the A - CALS support success of learning and likable indicates that students likes the CALS and find that helps their success in learning , B- Bad conditions indicates some problems to implement, C- Dislike the CALS indicates the negative- feelings at film application and E-Feelings at quiz application indicates the emotional responses toward the movies and quizzes, F-What is enjoyable indicates the parts students mostly find enjoyable, G-What can be done more to be enjoyable indicates the students opinions to make lesson enjoyable and finally the H-Other recommendations indicates students other opinions.

The theme A has 4 sub categories coded as in Table 2 that indicates CALS support students success. The first sub category was coded according to the responses where students indicates they have an attention to lesson, feel interested, feel related and have a positive prejudgment changes toward the lesson. The second sub category was based on the students responds conveying the lesson is enjoyable with films quizzes and online tools, methodology is useful for culture and like methodology more than
classical learning. In the third sub category students indicates they have a better understanding with film application and quiz application, separately. In the fourth sub category, students respond that they see their knowledge will be more permanent and easy to remember with films application and they believe the quizzes application will strengthen their knowledge. As in Table 3, the theme B has 3 sub categories coded which shows that there are some negative effects of the learning system in classroom usage especially in films application and quiz application. C-Dislike The methodology (Negative Attitude to Methodology) has only two students responses (n = 2) that indicates they find the class time so long and the content boring. The theme D with 7 sub categories coded as in Table 4 and theme E with 8 sub categories coded as in Table 5, which are indicating students feelings during the films and quiz applications. The student in the focus study are asked what makes the learning system enjoyable with and responds are coded in the theme F with 4 sub dimensions as in the Table 6. The students recommendations and opinions was coded under theme G with 10 sub categories in Table 7 and H with 7 sub categories in Table 8.

Table 1. Main Results Coding After Focus Interviews

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
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<tbody>
<tr>
<td>A-CALS Support Success of Learning and Likable [Based on Q1]</td>
<td></td>
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<tr>
<td>B-Bad Conditions [Based on Q1]</td>
<td></td>
</tr>
<tr>
<td>C-Dislike The CALS [Based on Q1]</td>
<td></td>
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<tr>
<td>D-Feelings at Film Application [Based on Q2]</td>
<td></td>
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<td>E-Feelings at Quiz Application [Based on Q3]</td>
<td></td>
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<tr>
<td>F-What is Enjoyable [Based on Q7]</td>
<td></td>
</tr>
<tr>
<td>G-What can be done more to be enjoyable [Based on Q8]</td>
<td></td>
</tr>
<tr>
<td>H-Other Recommendations [Based on Q16]</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. A – CALS Supports Success for Students’ Learning and Likable

1. Catch The Students (n = 13)
2. Like The CALS (Positive Attitude) (n = 38)
3. CALS helps to understand better (n = 29)
4. CASLS Strengthen Knowledge (n=41)
5. Catch The Students (n = 13)

Table 3. B – Bad Conditions

1. Improper Physical Classroom Environment (n = 3)
2. Quiz Security (n = 3)
3. Noise (n = 7)

Table 4. D- Feelings at Film Application

1. Attractive (n = 12)
2. Curiosity (n = 6)
3. Enjoy (n = 32)
4. Involve and Lost in The Activity (n = 16)
5. Having attention and concentration (n = 7)
6. Relaxed (n=6)
7. Self Confidence in Learning (n = 4)
Table 5. E- Feelings at Quiz Application

1. Ease at quiz or reduced stress (n = 8)
2. Having attention and concentration (n = 3)
3. Enjoy (n = 15)
4. Relaxed (n = 10)
5. Self Confidence in Learning (n = 7)
6. Anxiety (n = 6)
7. Challenged (n = 2)
8. Bored (n = 2)

Table 6. F- What is Enjoyable?

1. Social Interactions and Collaborations (n = 23)
2. Satisfying Topics of the Films (n = 16)
3. Visual Learning Opportunities (n = 7)
4. Better than Power Points and Classical Lectures (n = 2)

Table 7. G-What can be done more to be enjoyable?

1. More project based learning (n = 3)
2. Nothing, good as it is (n = 8)
3. Less Quizzes (n = 3)
4. More enjoyable topics should be discussed in class (n = 3)
5. More cognitive map application must be implemented (n = 1)
6. More interactivity needed (n = 1)
7. Field trips should included in syllabus (n = 10)
8. More usage of flash cards (n = 3)
9. Music of historical ages should be included into syllabus (n = 1)
10. Shorter lessons or more breaks (n = 3)

Table 8. H- Other Recommendations

1. Answers and results must be discussed immediately after quizzes (n = 6)
2. More film must be showed (n = 1)
3. More quality film (n = 2)
4. Only quizzes instead of midterms and finals (n = 1)
5. Better Environment for the class (n = 10)
6. Class projects are useful for students own learning (n = 1)
7. The topics of syllabus should be change (n = 1)

4.2. Quantitative Analysis:

According to results of analysis in quantitative all the findings can be visualized as the following in Table 9 showing the students which indicates their flow state and Figure 8 showing the statistical significance between variables.
Table 9: Students in Flow

<table>
<thead>
<tr>
<th>Over all flow experience</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always in Flow</td>
<td>29</td>
<td>53.7</td>
<td>53.7</td>
</tr>
<tr>
<td>Never or Rarely in Flow</td>
<td>25</td>
<td>46.3</td>
<td>46.3</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.2.1. Interest/Enjoyment and Flow: Regarding to learning system as a whole within the context of history of civilization lessons the t-test for the independent samples showed the mean for the interest/enjoyment of the students in flow are higher than the students that are rarely or never in flow during the experiences in the learning system (Mean Diff. = .08, df(52)= 3.858, p< .001.). Hence,
students who thinks that this learning system and related activities as interesting and enjoyable more also have a strong tendency to get in a flow experience within the learning systems. This finding is also parallel with previous studies (Csikszentmihalyi, 1982; Shin, 2006; Pearce, Ainley & Howard, 2005). As a result, the flow is a good measure and can be a predictor of interest/enjoyment in the courses.

4.2.2. Perceived competence and flow: Regarding to learning system as a whole within the context of history of civilization lessons the t-test for the independent samples showed the mean for the perceived competence of students in flow are higher than the students that are rarely or never in flow during the experiences in the learning system (Mean Diff. = .06, df(52) = 2.072, p< 0.05). Apparently, students who feel more that they are capable of doing the activities in the learning system and satisfied with their performance at these tasks are also tend to have more chance to be in a flow experience within the learning systems. This finding is also parallel within previous studies (Csikszentmihalyi, 1982; Shin, 2006). As a result, we should say easily the flow is a good measure and can be a predictor of perceived competence of the courses.

4.2.3. Value/Usefulness and Flow: By taking account the learning system as a whole within the context of history of civilization lessons the t-test for the independent samples showed the mean for the value/usefulness of the students in flow are higher than the students that are rarely or never in flow during the experiences in the learning system (Mean Diff. = .05, df(52) = 2.180, p< .05). Hence, students who think more that this learning system and related activities has some value and benefits to them; and believe more the importance of the learning system have a tendency to get in a flow experience within the learning systems. Consequently, the flow is a good measure and can be a predictor of value/usefulness perception of the students on the courses.

4.2.4. Visual/Verbal – Global/Sequential Learning Styles and Flow: Regarding the learning system as a whole within the context of history of civilization lessons the t-test for the independent samples showed the mean for the visual/verbal learning style scores of the students in flow are less than the students that are rarely or never in flow during the experiences in the learning system (Mean Diff. = -2.3, df(52) = -2.066, p< .05). Low scores indicate type of visual and higher scores indicates type of verbal learning style. Hence, students whose preferred learner style is visual learning have a more tendency to get in a flow experience within the learning systems. On the other hand, according to independent samples t-test has no significant differences exists in groups as a mean SEQ/GLO df(52) = .395, p>.05. Therefore, there is nothing to say about the relations in global learner and sequential learner status of flow state.

4.2.5. Locus of Control and Flow: The students in the phase II of the study are grouped as External and Internal Healthy. Regarding the learning system as a whole within the context of history of civilization lessons the t-test for the paired samples showed that there is no significance differences exists in the groups of type of locus of control of the students and the flow experience df(52) = -.808, p>.05. This result can be interpreted that regardless of the control source as external or internal healthy, students can have a focus experience. However, there is a need of a further study on that issue.

4.2.6. Effort/Importance and Flow: Regarding the learning system as a whole within the context of history of civilization lessons the t-test for the paired samples showed that there is no significance differences exists in the groups of type as in effort/importance and flow experiences df(52)= 1.358 , p>.05. According to this result it seems, there is no significant difference where students put a lot of effort into the activity or not and the tendency of having flow experience. However, there is a need of a further study on that issue.

4.2.7. Perceived Choice and Flow: Regarding the learning system as a whole within the context of history of civilization lessons the t-test for the paired samples showed that there is no significance differences exists in the groups of type as in perceived choice and flow experiences df(52)= -1.905 ,
According to this result it can be said that, there is no significant difference where students have a choice to do or not to do the activities included in the learning system and the tendency of having flow experience. However there is a need of a further study on that issue.

4.2.8. Pressure-Tension and Flow: Regarding the learning system as a whole within the context of history of civilization lessons the t-test for the paired samples showed that there is no significance differences exists in the groups of type having pressure-tension and flow experiences df(52)= -.799, p>.05. According to this result it can be said that, there is no significant difference where students have or have not pressure-tension in the activities included in the learning system and the tendency of having flow experience. However there is a need of a further study on that issue.

6. CONCLUSIONS

The first and important impressing benefits of such an active learning system is to presenting an environment for the flow experiences for the students. As stated before, flow is a state of complete absorption or engagement in an activity. A flow activity is one in which the mind becomes effortlessly focused and engaged on an activity, rather than falling prey to distractions. Therefore using that kind of a system ensures that students to be actively involve into a learning activity. Secondly this flow concept is investigated in detail according to students’ activities in the system. These investigations as in the Figure 6 showed that some of the students experienced flow in the learning system. Also results (see Fig. 1) showed that in such a learning system the flow measure has significant predictors in the course enjoyment (1), Perceived Competence of Course (2), Value–Usefulness of Course (3) in a active learning environment. Also flow has a predictor which is the (4) challenge–learning style match according to nature of course. Finally, this study demonstrates an initial framework for factors that are related to model of flow where students are engaged into a learning activity in a computer assisted active learning system in the domain of history lesson. However these results and usage of computer tools in learning can be different according to the lesson nature, instructional design and pedagogical contexts. According to all these results and findings above it can be said that students’ attitudes and perceptions are positive toward the learning system as a whole. The designed learning system aimed to create an active learning system enhancing students’ critical thinking. It uses computer applications with changing classical lessons methodology from power point presentations to an active learning strategy to improve learning. It also aims to change the linear logic based on a directed, sequential organization of text to a dynamic non-linear system by providing non linear dynamic concept mappings, chances for the learners to provide ideas in classroom discussion on films, grouping structures within keyword learning in flash cards and quizzes. Also the system creates cases to increase motivation to the learning process, mostly in films.

According to analysis and interviews it seems that the goal of switching to this learning system is succeeded. First of all there is a clear grade improvement by using this system. For example a student having a D increased to D+ in second semester or a student having C to C+ (M = 1.3). The second impressing benefits of the system are presenting an environment for the flow experiences for the students. As stated before, flow is a state of complete absorption or engagement in an activity. A flow activity is one in which the mind becomes effortlessly focused and engaged on an activity, rather than falling prey to distractions. The study results showed that some of the students experienced flow in the learning system. Another significance result is the systems are supporting active learning meaningfully to students. Most of the students indicated that they liked the learning system and its applications and thinks that they are involved into classroom activities. Collaboration as a social event is also highlighted by those student as a positive attribute of the learning system. Therefore it can be concluded that the
The other important result is the learning system is enjoyable for the students. Many of the students in the phase II of the study clearly stated that they have enjoyed in the activity. The final results indicate that the system is beneficial according to student preferred learning styles in some cases. There are some indications of matching learning styles and the learning activities resulted learner benefits as being in flow and grade improvement. However there is no clear evidence the system supports all the learning style types. This study demonstrated the value of integrating computer tools to create an active learning environment for the history of civilization lecture. However the usage of computer tools in learning can be different according to the lesson nature, instructional design and pedagogical contexts. Therefore there is a need of extended research for the other lessons or technologies. Also the usage of this system completely in online environment can also be investigated in a future study. Also the in class discussion can be transformed in to an online process such as forums or chat in a web environment and the effects of this transformation can be studied. In conclusion, the developed and implemented learning system and its computer assisted applications in this study create an opportunity for the students to have a meaningful and enjoyable lesson in the context of history of civilization lessons.

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APPENDIX

Focus Group Interviews and Survey Questions
Q1. Please describe your point of view about the application used in the History of Civilization lessons which includes Films and Quizzes and Online applications as a whole.
Q2. Please describe your feelings (anxiety, relaxation, enjoy etc.) while you are taking application within films supported with computer tools in the History of Civilization lessons.
Q3. Please describe your feelings (anxiety, relaxation, enjoy etc.) while you are taking the application with quizzes supported with computer tools in the History of Civilization lessons.
When you consider the films and quizzes application as a whole in History of Civilization classes;
Q4. Have you ever felt that the time passed so fast?
Yes
No
Q5. Did you ever felt that you had enjoyed in the lessons.
Yes
No
Q6. If your answer for the previous question is YES, which of the following is the part that makes the lessons enjoyable more? (Select Only One Option)
   a) Films application with Supported Computer Tools
   b) Quizzes after films in the application with Supported Computer Tools.
   c) Online Computer Tools Only

Q7. Please describe other things do you think that ensured the lessons to be enjoyable.
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Q8. Please describe the things that can be done more for this lesson to be enjoyable.
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Q9. Do you think these applications in the lessons create a feeling of success in you?
   a) Yes
b) No

Q10. Do you think these applications are challenging, compelling, and forceful with opportunities
   a) Yes
   b) No

If you consider these methodologies (computer tools and in class applications) according to other previous lectures and presentations in the History of Civilization classes:

Q11. Do you think the application in this lesson creates a feeling of success more than presentation and other lectures?
   a) Yes
   a) No (Same or Less )

Q12. Do you think these applications are challenging, compelling, and forceful with opportunities more than other presentation and other lectures
   b) Yes
   c) No (Same or Less )

Q13. If your answer for the previous question is YES, which of the followings are the effective on this issue?
   • Q13.1. Watching films in the applications
   • Q13.2. Topics or Context of the films and lesson itself
   • Q13.3. Quizzes After Films in the application
   • Q13.4. Indicate if other exits: ..............................................................................................................

If you consider these methodologies (computer tools and in class applications) in History of civilization classes with any other class in the university.

Q14. Do you think the applications in this lesson create a feeling of success more than any other classes?
   a) YES
   b) No

Q15. Do you think these applications are challenging, compelling, and forceful with opportunities more than any other classes
   a) Yes
   b) No

Q16. Please indicate your recommendations, thoughts, ideas or anything else would you like to say about these methodologies (computer tools and in class applications) in History of civilization?