

EXPERIENCES AND ISSUES IN AUTHORIZING E-LEARNING CONTENT WITH SOLUTIONS APPLIED UNDER THE E-LEARNING FRAMEWORK PROJECT

Bekim Fetaji

South East European University

Ilindenska bb, SEEU Campus 305.12 building, Tetovo, FYRO Macedonia, Europe

ABSTRACT

This paper reports experiences and issues in authoring e-learning content as well as the solutions proposed and applied in using the Angel Learning Management System under the E-Learning Framework project. The qualitative research and comparative analyses of authoring e-learning content issues and proposed solution as findings were studied comparing different courses in the University framework but applied for courses in Computer Science department. Our main focus was on e-learning content which we consider as vehicle of the e-learning process and knowledge construction. We also focused in taking into account instructional strategies and pedagogical needs of the learners as priority. The main purpose was to improve the overall e-learning quality and dissemination of knowledge by proposing and applying solutions to the issues from our findings, as well as to provide university wide e-learning support.

KEYWORDS

E-learning content, authoring, learning theory, instructional design.

1. INTRODUCTION

In the South East European University (SEEU), we are using Angel LMS-Learning Management System. In its usage which was limited only inside campus, we have identified several issues regarding authoring e-learning content under the E-Learning Framework project initiated by the Computer Science department. In the project were included four instructors and five students, all from the Computer Science department. However the research was not limited to only this department but different courses using Angel system were reviewed and analyzed, while the solutions proposed were applied to those courses under the computer Science department. The specific issues in authoring e-learning content are studied comparing different courses and more in detail for the Advanced Elective course “Object Oriented Programming in Java” and the two core courses “Software Engineering” and “Algorithms and Data Structures”. Students registered the courses as partial fulfillment toward their BSc degree in Computer Science department.

E-learning is usually defined as interactive learning in which the learning content is available online. Online communication with real people may or may not be involved, but the focus of E-learning is usually more on the learning content than on communication between the learners and tutors. Therefore E-learning content plays key role in E-learning. Documents and media objects in different formats like text, digital images, video, audio, multimedia presentations, interactive multimedia tutorials, external Web documents including discussion board contributions, various blogs, or wiki-like contributions, discussions forums that are used in the learning process can all be defined as e-learning content.

The Angel system initially we have used as support to the traditional classroom, but all learning as well as assessment and research component activities were oriented and focused in using Angel and were more student oriented. The most appreciated from student side were asynchronous activities that allowed more flexibility as they could take place at any time.

Since there was no time constraint, the learning of the students was extended. Students had more time to think, reflect, and investigate an issue in more depth.

We were focused on creating the e-learning content for the subject as well as conducted planning activities for assessing student work by using the Angel system options. We have extensively used the quiz and survey options to assess student knowledge and get feedback from students about the Angel system, its effectiveness, and their like or dislike of certain activity using the system. The students and the team involved, instructor and assistants engaged worked collaboratively. However we were not the only source of information since the students were given additional resources and links as well. We exercised less control than in the traditional classroom environment as the learning was more student centered. Students worked at their own pace and in their own time. Individual student initiated topics in the free discussions and groups of students were responsible for different forums. Based on our comparative analyses and qualitative research as well as on the review of the work of several experts in this field we have come to several important conclusions that helped us in creating sound e-learning course content.

2. AUTHORING ISSUES

According to Boiko,B. (2005), authoring e-learning content can be divided into three major steps or phases: 1) Planning, 2) Writing the content, and 3) Putting the material into an interactive format.

The design and authoring of e-learning content requires major input from instructional designers, graphics designers, and programmers. Normally the instructors are expected to develop the content for e-learning on their own. However they are not aware of the effective methods which can be used to present their content to users. Especially the novice instructors need additional support in developing interactivity since it involves programming. The content developed for e-learning is very different from the classical one print based. Preparing quality e-content delivered digitally is probably the major aspect for long term success of any e-learning endeavor. It is the content, however, that learners care for and they judge it with how much they learn from it.

Authoring issues that we have identified in analyzing different courses using the Angel system and that we addressed with particular solutions are:

1. No planning and needs analyses of the learner profile
2. Focus on new technology, not on instructional design and pedagogical needs
3. Lack of understanding of learning theories and teaching
4. Tedious authoring

In our qualitative research and comparative analyses we have also identified additional issues and manifold arguments which in order to focus on the paper we are not mentioning in the framework of this paper without getting into much detail on them and limiting our selves only on the first four issues from our findings mentioned above.

3. SOLUTIONS

We have addressed the particular authoring issues with comparative analyses, qualitative research as well as on the review of the work of several experts in this field for different courses offered using Angel system. We have tried to implement the solutions proposed in building the courses “Object oriented Programming in Java”; “Software Engineering”; and “Algorithms and Data Structures”.

3.1 Solution for: No planning and needs analyses of the learner profile

When started to use Angel in different courses especially in elective courses in SEE University there has been evidenced a high drop out rates for such courses. One of the reasons behind this is the failure of content to meet the student’s needs. ‘One size fits all’ solutions that were offered by some instructors were so generic that they often contain an abundance of content much of which was not relevant to the learner. The enthusiasm of the student to complete the course has vanished by having to learn through irrelevant content to get to the material they require. The main reason for this is lack of planning and needs analyses of the learner profile in such courses.

A needs analysis is an effective means of identifying objectives and requirements for e-learning development. Understanding students' needs as well as the specific needs of the course is crucial to the successful design or redesign of any course or learning activity.

The needs relate to the characteristics, concerns and potential constraints of the students. The analysis seeks to match possible or proposed techniques and materials to these needs and thus identify whether the design is appropriate to the intended goals.

A needs analysis will assist in identifying/clarifying staff or students needs and producing clear and measurable outcomes as indicators of success of the e-learning development.

We have approached to this issue with the next proposals and scenarios as solutions which are implemented as such in some courses:

- Since the SEE University has in use three official languages the needs of a particular course might be to create content in all three or just two languages, and with this to provide equal opportunities to all the students. Each particular course should do an initial need analysis at the beginning of the semester and identify the languages in which the particular course will be delivered.

- A lecturer at the beginning of the semester should give students a quiz to test their pre-knowledge of the course content and depending on these results to concentrate more on some topics and less on the others that students already master and have extensive knowledge.

- Using an online discussion tools to support an existing course taught with face-to-face lectures and web resources and at the beginning and the end of the semester to use a survey for students to get feedback for their specific needs as well as for their experiences at the end of the semester with the particular course and their opinion on what level their needs were taken under consideration for that course.

According to (Reiss et al 2004) further aims of a needs analysis are to support the selection of approaches that achieve one or more of the following: 1) are likely to save time or costs, 2) are valuable and viable, 3) are scalable and sustainable.

3.2 Solution for: Focus on new technology, not on instructional design and pedagogical needs

In some courses in SEE University like those from computer Science department the content as well as the syllabus is a subject of change during one academic year and even during the same semester. This change is in order to adapt to the recent advances in this field. However the change of the syllabus should be in correlation with the pedagogical and needs analyses of the students. We need to make sure all curricula are explicit about what employable skills are being developed for our students. The accent should not be put on new high tech developments in the field that the student might end up not needing in the current market place of the region.

Also the content that is created should address the specific pedagogical needs and provide content in formats that are suitable and in correlation with the pedagogical needs and not to concentrate in new technology without regards to the pedagogical suitability of the content as well as it should follow the instructional design techniques and methods.

Instructional design has gained significant prominence in e-learning for a number of compelling reasons. One of them is the possibility for instructional design to systematically address the need for creating and evaluating students' learning experience as well as learning outcome. The other is instructional design can help faculty to focus on using the appropriate format and tools for the appropriate learning objectives.

In short instructional design in an e-learning environment can foster the alliance between technology and education for pushing higher education to transform the academic environment. A properly executed instructional design can help faculty and academic departments develop new modes of instruction that use various technologies and teaching strategies.

The most effective learning involves leading students to a point of reflection on content-what does this mean to me? How can I use it? Is this better than what I am doing now? This reflection is the goal of interactivity.

The opportunities for aligning interactive technologies with pedagogy are enormous and the challenges formidable. As a result, the university has recognized the need to streamline its instructional design process to ensure that courses delivered through e-learning would share course design standards that involve a broad range of interactive technologies.

Through a series of workshops and training programs under the Instructional Support Center (ISC) (<http://www.seeu.edu.mk/english/isc/home.html>) the faculty are encouraged to explore systematic instructional development models, practical information on course delivery technologies, teaching tips, research findings and most important tried-and true techniques to improve instruction.

3.3 Solution for: Lack of understanding of learning theories and teaching

Moving from traditional classroom into e-learning environment learning and teaching should adapt to the new circumstances and possibilities. If the teacher/instructor/lecturer is not aware of the learning theories and what makes good teaching principle the movement into e-learning environment where students depend on good content and interactivity much more this might be a serious issue. Most of the lecturers in the Universities are a good experts in their fields but in academic environment being an expert in your field is not enough and certainly is not equal to being a good teacher too.

Learning is a complex activity, and good teaching takes many years of experience. The skill of a good teacher is in knowing the best thing to do in advance in order to bring a given learner to the next stage of understanding a specific kind of learning task.

According to Kolb (1984) learning is a four-step process. He identifies the steps as (1) watching and (2) thinking (mind), (3) feeling (emotion), and (4) doing (muscle).

Based on our observations, students surveys and Piaget (2001) (who described intelligence as the result of the interaction of the person and the environment) we have come to the conclusion that the students gain significant learning benefits when learning from multimedia e-learning content placed in Angel LMS, as opposed to conventional paper based instruction. We strongly believe based on these surveys that the reason for those benefits is not the medium of instruction, but the instructional strategies built into the learning materials. Similarly, Schramm (1977) suggested that learning is influenced more by the content and instructional strategy in the learning materials than by the type of technology used to deliver instruction.

In the Computer Science department of SEE University we encourage students to discover principles for themselves and to construct knowledge by working to solve realistic problems, usually in collaboration with others. This collaboration is also known as knowledge construction as a social process. Some benefits of this social process are:

- 1.) Students can work to clarify and organize their ideas so they can voice them to others.
- 2.) It gives them opportunities to elaborate on what they learned.
- 3.) They are exposed to the views of others.

The teacher's role in e-learning environment followed stages while functioning in three different aspects: cognitive, administrative and affective. In stage one, the planning stage, the role of designer and manager is significant while taking care of the cognitive and administrative aspects. In stage 2, the activity stage, the manager's role is still predominant at the beginning of the activity. Gradually, the facilitating role is prevailing and the focus is on the affective aspect as well as the cognitive aspect. Diversified tasks are performed to create a learning atmosphere that sustains motivation, promotes self-initiation and encourages collaboration. In stage 3, the completion stage, the role of facilitator fades away. A new role emerges, that is, the role of an adjudicator.

It is also clear that students perceive the teacher as playing a role that is different from that of a traditional teacher. The students also feel that the teacher's role evolve from that of a knowledge disseminator to that of a facilitator. The teacher is perceived as a co-learner rather than the information giver.

3.4 Solution for: Tedious authoring

Most users of the Angel system e-learning environment have difficulties with two aspects of the course content. First, most of the staff has problem to gain an understanding of developing instructional materials. For the most classroom teachers, curriculum development has been the assembling of resources and the designing of activities that will help them teach students content that cover curriculum standards. In the e-learning environment they are required to design and develop computer-based self-instructional modules. Even though the Angel help provides a great deal of information regarding the process, they have difficulties going beyond the idea of creating content that provide instructions on how to engage in various activities. The issue of tedious authoring encapsulates among others the creation of content as simple text without any

or limited instructional quality, interaction and multimedia content that would enrich the presentation of their knowledge. Three kinds of interactions are identified in online learning environments. According to Moore (1989), the interactions occur (1) between the learners and the instructor, (2) among learners, and (3) between learners and the content they are trying to master.

In order to avoid tedious authoring and to support the understanding of the instructional and interactive e-learning content we see the solution in avoiding the tedious authoring with proper elements including: Subject/Field expert; Educational/Instructional designer; Assessment expert; Multimedia developer and/or Graphic designer and Computer programmers.

With proper coordination and collaboration of these elements we consider that this issue could be solved very effectively and professionally and as outcome will have increased level of learning and knowledge dissemination.

4. CONCLUSION

We have come to a conclusion that the quality of the virtual learning environment is mainly depending on the quality of the presented e-learning content. As an added benefit of this analyses and proposed scenarios as solutions, the university has been able to create a seamless university wide e-learning support content by using the experiences drawn from these analyses and experiences gained from these courses.

The proper addressing of this authoring issues and solutions proposed, as well as some implemented for the above mentioned courses are in the framework of improving the overall e-learning processes and overall learning quality not only in the University teaching/learning process but they can be broadly generalized and offered as such in different training and similar initiatives. The solutions proposed and applied for the authoring e-learning content issues discussed in the framework of this project led to a number of important results as outcomes:

A common understanding of the overall e-learning process and the role each participant played in its successful completion lead to increased goal congruence. It was also found that multimedia representations of the e-learning content, supporting instructional strategies and design methods were far more effective vehicles into increased knowledge dissemination and higher level of learning. Analysis led to a series of recommendations for changes to methods and procedures currently employed in creating the e-learning content broadly generalized also for other Universities/Institutions/Companies involved in learning/training.

This Analysis also led to the identification of specific activities as targets for the application of e-learning technology specifically focusing in Angel LMS. Creation of a functional e-learning content for the above mentioned three courses form the Computer Science department according to the previously defined solutions under this project that are in congruence with the instructional strategy and design methodology.

The university has recognized the need to streamline its instructional design process to ensure that courses delivered through e-learning in the future would share course design findings from this project.

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