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Assisting tutors at the Hellenic Open University in the processes of designing, planning, managing and reusing learning activities

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The aim of this paper is to present some early findings of the pilot implementation of Learning Design at the Hellenic Open University (HOU). This study represents the first step of a broader effort that seeks to use learning design tools to support tutors and learners in distance education across our university by charting existing international experience and methodology. This study aims to investigate how active tutors and students at the HOU (Greece) approach, understand and deploy LAMS and the additional support and tools they would find helpful. Such work holds interest for all developers and users of learning design tools. Ten semi-structured interviews were conducted with Computer Science undergraduate students, and one tutor who has been using LAMS to support his students in the middle of their first year of distance study. This paper examines the evidence of this case study through a discussion of the issues that emerged from the interviews and a questionnaire from twenty eight students respondents of this group. Students demanded to be tutored on a 'just-in-time' basis, be given more practical tutorial examples, and that exercises be interactive, hands-on, with practical support by peers. Tutors interested in adopting learning design as innovating and enhancing the technological support understand, on the other hand, that it is complex, demanding and time consuming.

Keywords: distance education, higher education, tutors, learning activities, learning design

Introduction

Online learning and teaching is a relatively new process that is changing the tutor's roles and relationships. Classroom teachers depend on a number of visual cues from their students to enhance their teaching and delivery of instructional content. A quick glance reveals who is attentively taking notes, thinking a concept difficult, preparing to make a comment or the students who are annoyed, confused, tired, or bored. The conscientious teacher consciously and subconsciously receives and analyses these visual cues and adjusts the course delivery to meet the needs of the class during a particular lesson. On the other hand, the distant teacher or e-tutor has few, if any, visual cues. Those cues that do exist are filtered through technological devices such as forum threads or/and video monitors. It is difficult to hold a stimulating teacher-class discussion when is mediated by technical requirements and distance (Cafolla and Knee, 1999).

Research comparing distance education to traditional face-to-face instruction indicates that teaching and studying at a distance can be as effective as traditional instruction, when (Moore and Thompson, 1990) a) the method and technologies used are appropriate to the instructional tasks; b) there is student-to-student interaction, and c) when there is timely teacher-to-student feedback. Although technology plays an important role in the delivery of distance education, educators remain the key not the technology of delivery. Distance education and its technologies require extensive planning and preparation of suitable learning activities and supporting services.

Finding, or creating, appropriate e-learning resources and embedding them in well designed learning activities can be both challenging and time consuming. Sharing and adapting effective designs and solutions is both a stimulant and a time saver (Conole, and Fill, 2005).

The Hellenic Open University (HOU) is an adult distance teaching state self-governed university established in 1997 and started offering its first courses in the year 2000. It currently hosts more than 25,000 students providing six bachelor degree courses and 24 postgraduate courses (http://www.eap.gr). Initially, much of its methodology was influenced by the British Open University model. Principally its materials are printed units, with tapes, software and CD/DVD-ROMs as supplementary items. Students are then assigned a personal tutor (approximately 30 students per facilitator) usually in their geographical region. HOU divides administration into eight geographical regions. They attend a number (usually 4 to 6) of face-to-face tutorials during the year, and some courses have a mixture of CMC tutorials and face-to-face tutorials. HOU provides adults with a second chance at higher education, can reach those disadvantaged by limited time, distance or physical disability, and can update the knowledge base of workers at their places of employment. There are students from different social, cultural, economic, and experiential backgrounds.

The HOU traditionally has placed a great deal of effort, time and finance into the production of its courses and particularly the educational content (textbooks, electronic material, etc.). Typical course production can take three to four years, with a large course team working heavily. Once produced, traditional HOU courses typically have a lifespan of seven years (with minor updates during this period mainly with supplementary materials). The workload and input required for presentation of courses is usually considerably less than that of production.

HOU s technology strategy is to use new media as they enhance this process, increase access for students and add value to the teaching and learning experience. The Laboratory of Educational Content, Methodology and Technology (e-CoMeT Lab) (www.e-comet.gr) was established as an independent unit with HOU in 1997. Its aims are: (a) to promote scientific research and innovation in the area of open and distance learning technology and methodology, (b) to develop eLearning content and methodologies, (c) to implement cutting edge technologies in educational material development and delivery infrastructures, (d) to support HOU in delivering eLearning services, (e) to certify the educational content used in HOU courses and (f) to offer consultancy services in the adoption of distance and lifelong learning methodology.

ICTs, especially portal-based asynchronous interaction, have been implemented widely across many disciplines, as has multimedia in the form of CD-ROMs. Synchronous Virtual Classrooms and other web technologies are beginning to be usable, now that home broadband access is available to significant proportions of the student population of the University.

Until now, a few academic staff have had the opportunity to explore learning design and implement an effective strategy for acquisition, use and evaluation of either new materials or methods of delivery at HOU. Last year we started an effort to help our instructors clarify the notion of the learning design (LD) as a potential approach to supporting their teaching and learning practice in a simple but systematic approach using the formalism of LD.

This paper focuses on how the tutors were assisted in the processes of trialling learning design methodology and suite of practical tools like Learning Activity Management System (LAMS) that bridge between good pedagogic practice and effective use of e-learning technologies and the wider issues which might arise from the adoption of such system as LAMS across the university. It examines lesson learnt of implementing learning design using LAMS on a group of undergraduate, two practitioners (one instructor and one tutor) and the researcher at the Hellenic Open University in Greece. The group of students in this study is enrolled on the first year of a distance education degree in Computer Science.

Literature Review

Web Based Distance Learning (WBDL) is a form of distance learning based on providing instruction mainly on the World Wide Web. The key to effective distance education is focusing on the needs of the learners, the requirements of the content, and the constraints faced by the instructor. Effective distance

education begins with careful planning and a focused understanding of course requirements and student needs. Goodyear (2000) discusses the emphasis appears to be on tutoring and facilitating rather than 'leadership'. Supporting and facilitating distance education students' learning through the use of a Virtual Learning Environment (VLE) is a relatively new process and one that is changing the tutor's roles and relationships. An important issue is the time management and the concept of tutor overload in a VLE (Barajas & Owen, 2000). E-tutors who are involved in facilitating co-operative or collaborative learning groups need to access their VLE and, possibly, interact with their students regularly e.g. 3-4 times a week. Collins and Berge (1996) have identified four main types of tutor activities to facilitate learning within the VLE: pedagogical; social; managerial and technical.

The field of Learning Design provides a more generic approach to using ICT in education that focuses explicitly on teaching and learning processes rather than just the technology alone. The benefits of Learning Design arise from its emphasis on how an educator selects and sequences a series of student learning activities, with this selection and sequencing described using a standardised and shareable format (Dalziel, 2008).

Learning Activity Management System (LAMS) is a IMS LD "inspired" editing and playback system for planning authoring, managing and delivering learning activities (Dalziel, 2003), whether these are able to be run on-line of off-line, within LAMS environment as learning management system or outside of it within a different system.

LAMS is a new generation web based educational software which moves from a content-centric approach to an activity-sequence based approach. There is a visual authoring interface for tutors to design and create their learning activities (Figure1), using a range of tools which can form the sequence and a Monitor interface through which tutors can track students' progress through the activity sequence.

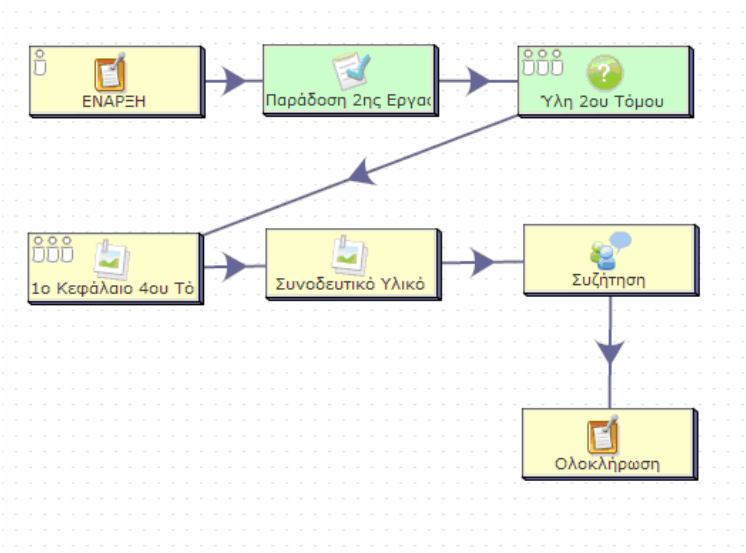

Figure 1: A sequence of Learning Activities in LAMS (1st week of trial)

The case study

During the academic year (36 study weeks at HOU), students have to hand in 4 to 6 written assignments, participate in 4 to 5 optional face-to-face meetings with their tutor and sit for final examinations after an 10-month-period. Tutors have to continuously support their students, provide comments and advice on the written assignments, release marks on their assignments and, organize the face-to-face consulting meetings. Additionally, tutors ought to specify predetermined hours on a weekly basis when their students can communicate with them, in order to discuss educational issues and queries on the educational material and the written assignments.

During the learning process students are guided by a timetable and paper-student guide where the proposed study per week and milestones are outlined. For each volume study, there is a large number of

accompanying materials - supporting electronic media (in forms such as hypertext, video lectures, exercises and examples) and extensive literature available on our website, where the student has personalized access. There is also a discussion forum in which the student discusses his questions with peers and tutor.

One important problem in the current process is that although the student has a wealth of information for the study but generally required a way of organizing information in any given time to study which are accessible by any student when he decided to study.

Methodology

The LAMS tutor pilot trial ran from December 2008 to February 2009 from Educational Content, Methodology and Technology laboratory (e-Co.ME.T. lab) at HOU and had the following aims: i) evaluate the use and suitability of LAMS as learning design system for planning authoring, managing and delivering learning activities at HOU and ii) provide HOU with recommendations for other tutors wishing to design and deliver e-learning activities using learning design in an extended trial during the next academic year.

The evaluation focused on the question "*Does the use of a learning design tool such as LAMS support effective practice in designing for distance learning at the Hellenic Open University?*", where "*effective practice*" was defined in terms of (i) LAMS' acceptability to tutor and students; (ii) its enhancement of the learning experience and outcomes; and (iii) the opportunities that it provides for tutors to reflect on, and share, their practice with other tutors of the same course.

To this end, the evaluation team analysed qualitative data from the interviews and a questionnaire responded to by twenty eight students of this group. Although some quantitative data gathered, we did not envisage conducting statistical analyses since participants would not constitute a random sample and numbers would be too small for formal tests to be meaningful.

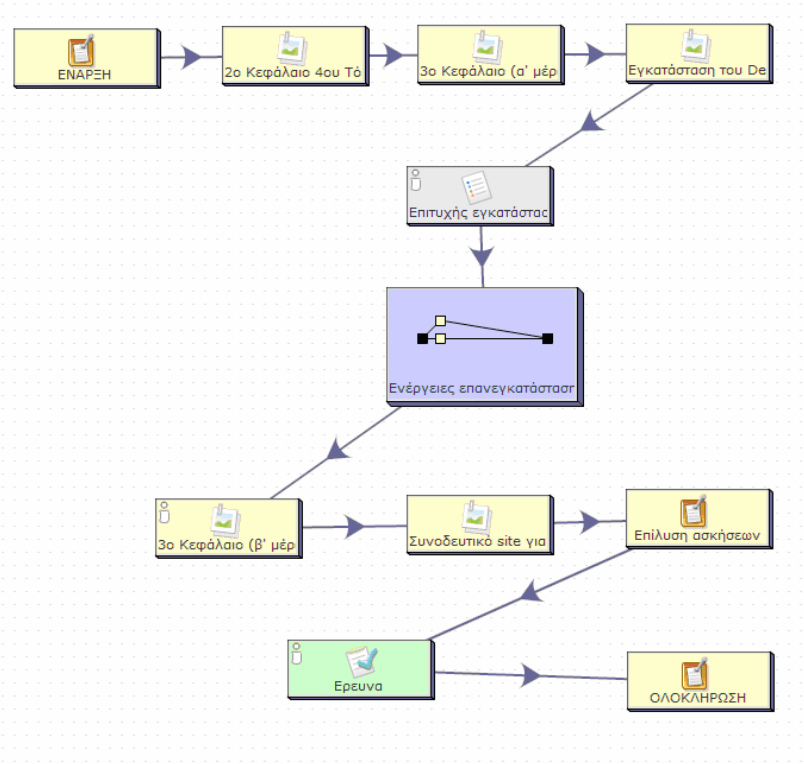

Figure 2: Design of 2nd week's LAMS sequence with more advanced activities.

The tutor and students embarked on this pilot trial had prepared two sequences to accompany an "Introduction to Informatics" (*Introduction to Informatics, Programming techniques, Data structures,*

Programming languages) course in the Computer Science undergraduate program of School of Science and Technology at HOU.

Participants in this LAMS trial were recruited through email invitation and formed a group of 31 students in Athens. Students were told they would benefit from access to LAMS. Until the experiment starting and after the two first written assignments, eight students had dropped out of the focus group (Xenos et al., 2002). In term of setting, twenty three (23) students (14 male and 9 female) were led by its tutor and a researcher who had used LAMS online.

The first sequence was structured around "Programming Languages" and "C" which students usually have difficulties to understanding and usually ask the tutor for additional help. The sequence for the first session was designed with seven (7) learning activities (Figure 1) based on the existing paper material (in digital form). Detailed activities were prepared but these materials were not intended to help students familiarise themselves with LAMS learner environment. After an introduction and orientation students moved on to the first Share Resources activity which included educational material and recommendations about how to use them in efficient and productive way. A Forum activity allowed students to continue their discussion and to reflect with each other and with their tutor.

The second sequence included eleven learning activities (Figure 2). One activity used branches to help students with and without ICT proficiency to install a compiler (DevC). At the end a survey was conducted about their experience with this trial.

Results and Discussion

In the 1st week of the experiment, the first sequence was attempted by 16 students (69.6% of total), 9 (56.2%) of whom completed all the learning activities. In the second phase of experiment the 2nd-3rd weeks 13 students (44.2% of total) started the sequence, 7 of whom (53.8%) completed it.

The final review activity was a questionnaire to assess the extent to which they felt the objectives had been achieved during the pilot. Additional interviews with students recorded by tutor in the next face-to-face meeting.

Participants expected a teacher-centered lecture with the ability to ask questions given more time than the traditional face-to-face classroom. 71.4% of the participating students believed that distance education did not help them understand the lesson and they would prefer traditional classroom teaching (Figure 3). This implies the need for more synchronous meetings and activities based lessons including collaborative activities.

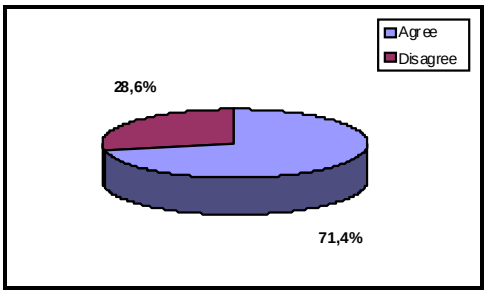

Figure 3: Students stressed the importance of having synchronous face-to-face meetings

In the student feedback questionnaire, when they were asked to agree or disagree that "The LAMS sequence was effective in helping me learn about my subject" on a five-point Likert scale, most selected the rating "very effective" and "quite effective" and only 29% chose the rating "undecided". No-one gave the two lowest rating "not-very effective" and "not at all effective" (Figure 4).

The main reasons cited for not taking full advantage of learning activities offered the students who did not participated refer in order of importance: i) the delay in their study of previous units so that during the time of the experiment they were studying a previous chapter of the course (42.8%), ii) more motivation

and encouragement to understand the educational value of participation in the experiment (28.6%), iii) hesitation to study because of a lack of confidence with the computer (14.3%) and iv) that the text-book was very easy and did not require any kind of help (14.3%).

The student's willingness to continue to participate in a sequence of learning activities was 85,7%. Students clearly recognized LAMS's value as an e-learning tool: *"I like the most that everything was gathered"* and "*The worst thing you could do was just a click below*".

Only two students felt threatened by new mode of delivery «*I dislike boundaries during my study. This tool was very constricting for me"* and the other felt that this tool was slow and difficult for her study. "*I found that studying alone with paper & pencil and text-book was more rapid to complete the required assignment per week*".

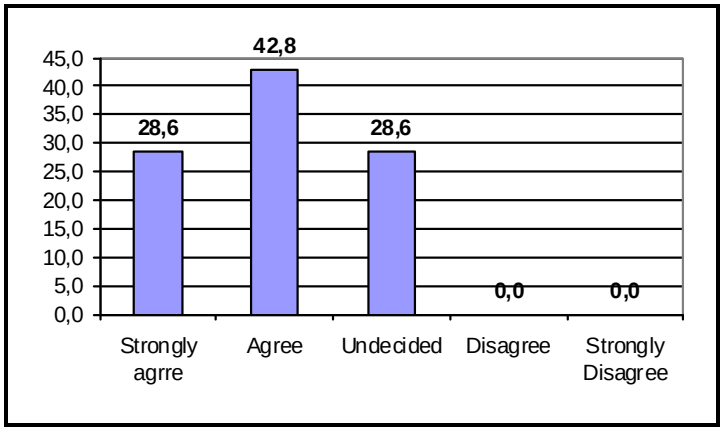

Figure 4: Guidance and orientation using LAMS learning activities helped my study

From a superficial analysis of the sequences, this pilot appears to have used LAMS primarily as a tool for making Web-base resources and other documents more easily available to students in a structured manner (even though this appeared only as a minority reason for using LAMS). However, as the discussion showed that students proposed LAMS is capable of supporting a range of pedagogical approaches the tutor had not considered before and thus stimulated him to use a broader approach in future.

The pilot tutor was enthusiastic about LAMS' capacity to guide students through structured linear sequences and welcomed it as a more effective way to give with ideal way any ideas he had (based on his background and educational experience) to design appropriate and more effective learning path for his students. He referred to the impact which designing and running the two sequences had had on his own pedagogy. "*The sequence learning activities to accomplice their objectives is not obvious. I discovered that is not so easy to guide a distance learner how to achieve his goal*". " … *In addition, during designing the sequence I assessed the existent educational material and infrastructure to record failures on hardware, or concepts understanding, etc. that may exist*". When running the first sequence he was struck by the different pace at which students progressed.

The tutor was able to see in which activities his students had problems so that he was able to intervene. He found it *"very useful for seeing precisely where students are and potentially analysing the reasons why they get stuck"*. For example three students have not been able to install the C-compiler. The intervention of the tutor in the discussion forum solved the problem in a shorter time than the traditional way of communication. It is particularly useful because our students were working remotely and they required further scaffolding.

Students' responses to using LAMS were mixed but there were clear indications from all those who found time to use it, of positive engagement and beneficial impact on their learning experience. The results were very encouraging and showed that LAMS assisted the student. Students said that most important for them was the fact that they had direct access to appropriate supporting materials when they needed them because the design of learning activities included the connection of content and the

accompanying material. One student said "*The second important was that «there were all education material together», when something is needed we are able to find it without to spend time for searching"*.

The tutor commented that the focused preparation required by distance teaching and the design tools in LAMS improves his overall teaching and empathy for his students. The anonymity of the chat room may make it easier for students to discuss matters about which they might not want to express in person.

In relation to Aim 1 and the research question, our findings suggest that:

LAMS is capable of supporting a range of pedagogical approaches, in that designers can select those activities that match their preferred style. However, it is time consuming when you try for first time to create a sequence of activities from scratch. The adoption of LAMS within an institution would almost certainly entail an increased workload for the instructor, but with time and experience this load could be expected to lessen. It could be also be possible to distribute authoring between all the tutors. LAMS appears neither to have compromised learning outcomes in comparison with the existing learning environment nor to have resulted in dramatic improvements in achievement. However, using LAMS to raise the level of learning outcomes was not a prime consideration for this pilot trial in a short period of time. Rather, we perceived its benefits to lie in increasing learners' motivation and in encouraging participation by more reticent students. Feedback obtained directly from students suggests that some appreciated the independence and freedom to work at their own pace, while others wanted more examples and direct feedback on their progress. The tutor engaged in some form of reflective activity either while designing a LAMS sequence and afterwards.

In relation to Aim 2, our three principal recommendations to the HOU are to:

- Continue to host and improve the LAMS server in order to enable more tutors to work and trial LAMS into the next academic year.
- Support investigations into i) the student's perspective on LAMS, ii) the administrative functions of LAMS, and iii) the technical and research issues involved in integrating LAMS with other open source applications at HOU (like Moodle, dSpace and LvS.)

Some recommendations for other tutors wishing to design and deliver e-learning activities using learning design in an extended trial during the next academic year:

- Time is an obvious limiting factor but it should be acknowledged that LAMS requires an investment of time for learning the software, depended on tutor's prior ICT skills.
- Keep your sequences simple and straight forward to begin with. Start with a sequence for a period of 15 days according to the students' Study Guide and 5 to 7 activities per sequence, to allow you to get a feel for running it in the group of your students without over-complicating things.
- A common starting point is a Noticeboard explaining to the learners what is expected of them, outlining the learning objectives and outcomes. Use the same activity tool to summarise at the end of the sequence and encourage your students to continue.
- Try to follow up an activity which students do by themselves with a chance for them to discuss or record their reactions. For example, you could follow Q&A with something collaborative like a Chat.
- Encourage the students to take time over the sequence and to avoid simply "clicking" through the activities. Encourage them to review the input from other learners.
- Place a quick Survey at the end of each sequence to capture student feedback and use it when you design the next sequence.
- Avoid more complex activities such as Share Resources + Forum, Grouping and Branching until you and your students are more familiar with the software.

Conclusion and future plans

Given the small number of participants the sort period of trial and their generally advanced level of IT skills it is unwise to attempt to make large-scale generalisations on the basis of this data. Nevertheless, we have a) constructed a comprehensive picture of the types of situations in which LAMS may support

effective practice in terms of tutors' practice and distance students' experience and b) obtained limited, but useful, insights into the opportunities which LAMS affords the tutor to reflect on their own practice and to reuse the same sequence .

This was the first step to a broader effort aiming to use learning design tools to support tutors and learners in distance education across our university by charting existing international experience and methodology. It was hoped that LAMS would enhance the interactivity and the support of the student and their computer science learning generally. The initial findings enabled us to construct a picture of the types of situations in which LAMS can support effective practice at Hellenic Open University. Thus, it is with confidence that we have been able to make recommendations for the future large-scale trial with LAMS for the process of designing for learning in the course.

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