

Academic Teachers' Perceptions about ICT in Education, a Survey

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Abstract

In this paper we present the analysis, conclusions derived from a universities/faculties survey, concerning the use and perception of ICT in education. It has been conducted during the third year of implementation of the EU project "Integrating E-Learning across Teachers Curriculum".

Our overall objectives were to understand the relationship the current faculty members have with educational technology, and to determine how educational technology is affecting their teaching practices. Our belief is that this information will be useful for the universities/faculties to build up their future policies.

More specifically, we tried to evaluate the following issues:

- *Faculty perceptions and priorities with respect to educational technology*
- *Faculty experiences with and problems using educational technologies*
- *Faculty preferences regarding technology support and education*

Keywords: teachers survey, ICT in education, ICT perceptions

1 Introduction

Within our project we have been working with the teachers and students at the Teacher Training faculties in the broader terms. Those are four Pedagogical faculties that are educating teachers for pre-school and primary schools; Faculty for natural sciences and mathematics educating subject teachers for secondary schools; and Teacher training faculty that educates language teachers for secondary schools. All institutions are from R. Macedonia. Our EU project partners were University of Groningen, The Netherlands, Catholic University of Leuven, Belgium and University of Edinburgh, UK. The broader goal of the project was to involve the teachers of MK faculties into the technology enhanced teaching, to reconstruct curriculums respecting our EU partners' practices following the basic hypothesis that only critical adoption of appropriate technologies within the curriculum can make the good teaching more efficient and better.

Through the project the teachers were exposed to many different technologies, software tools and new hardware. Some of them were very excited, some were just trying to apply their own traditional teaching methods only supported by technologies, and some were very successful in being creative in their teaching with technologies.

Little research has been done to investigate the impact of digital technology on the working environments of those who teach student teachers, at universities in MK [1]. This survey is our contribution toward that goal.

1.1 Methodology

The survey contained 10 closed and 3 open-ended questions. The approach in this process involves a systematic item writing, revision process and implementation method. We used methodologies of similar surveys by prominent EU and USA universities [2], [3] [4].

Most of the data are presented as percentage. In some questions we use mean of means of the answer to appropriate questions. This statistic represents the average rating given by all survey respondents to all possible answers to that question. We use a scale from 1 to 4, where 4 is “Large degree”, 3 is “Moderate degree”, 2 is “Small degree” and 1 is “Not at all”. We also display the highest and the lowest ranked answers to each question as determined by the mean score. The number of items in the highest/lowest sets was determined by natural breaks in the data, e.g., three answers that are noticeably above or below the mean of means for that question. Where there are no natural breaks, we have tried to provide as much of data as possible. Finally, we provide information about the distribution of responses where appropriate. The range of mean scores for a question indicates how tightly or loosely clustered respondents’ ratings of items in the question were. For instance, a wide range indicates that some of the listed factors attracted them much more to the use of educational technology than others.

1.2 Survey sample

A total of 78 teachers of different ranks participated in the survey. The overall response rate was 82%. From the Teacher training faculties, partners in the project participated 58 and the rest are from other faculties: Faculty of Economics, Faculty of Languages and Faculty of Informatics. The last groups, although not directly involved in the project, volunteered in this survey since during the project period many teachers of these faculties participated in our workshops and other training events. It is interesting that, since we started to use course management software Moodle as a part of the project activities for the Teacher Training faculties, the whole University became attracted to the idea. Our target was initially to put on this platform the list of 14 courses from the Teacher Training faculties, but at this moment 77 courses from different disciplines are using online facilities. The survey results presented here may represent the views and experiences of the other group of teachers (not from the Teacher Training faculties) somewhat less well since their number in our target group is smaller. The division of teachers by ranks was: Full professors 17, Associate professors 48 and Teaching assistants 13.

2 Survey and analysis - highlights

In this section, we present and analyze responses to selected survey questions.

QUESTION 1: “Of the following options, what are the THREE items to which you think it most important for your University/Faculty to allocate resources?”

Scale is “Most important”, “Next most important” and “Third most important”.

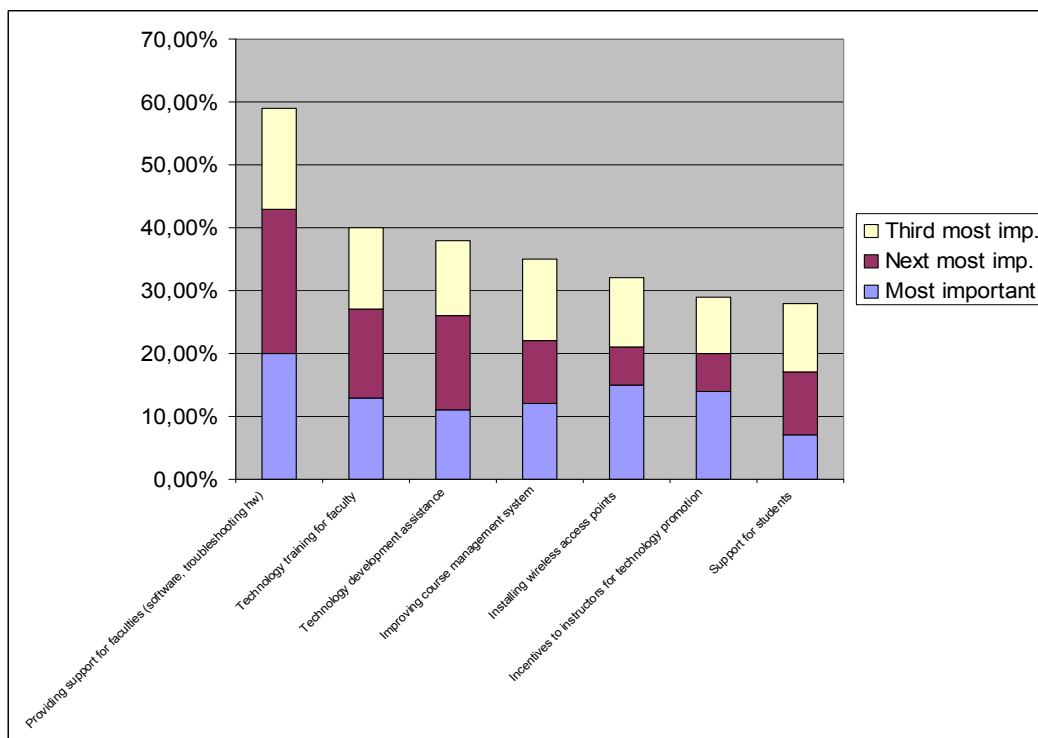


Figure 1

Analysis

The desire for faculty technology support is evident. Nearly 60% of the respondents cited it as one of the top three items. Then, respondents also cited faculty technology development assistance, but it was noticeably ranked lower (below 40%). What is interesting they have lowest ranked the support for the students (below 30%).

QUESTION 2: “Imagine a classroom that is technologically ideal for your teaching. Which of the following would that classroom contain?” (Figures 2 and 3)

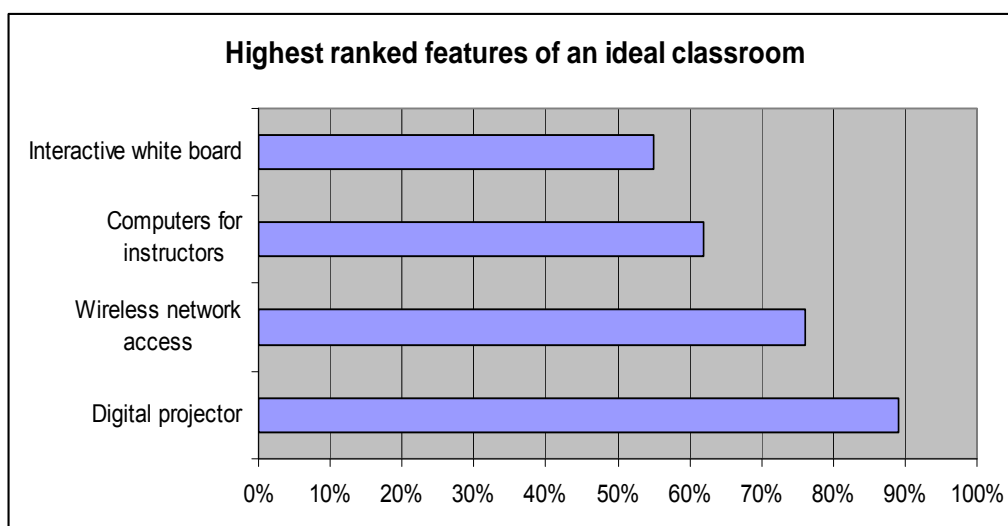


Figure 2

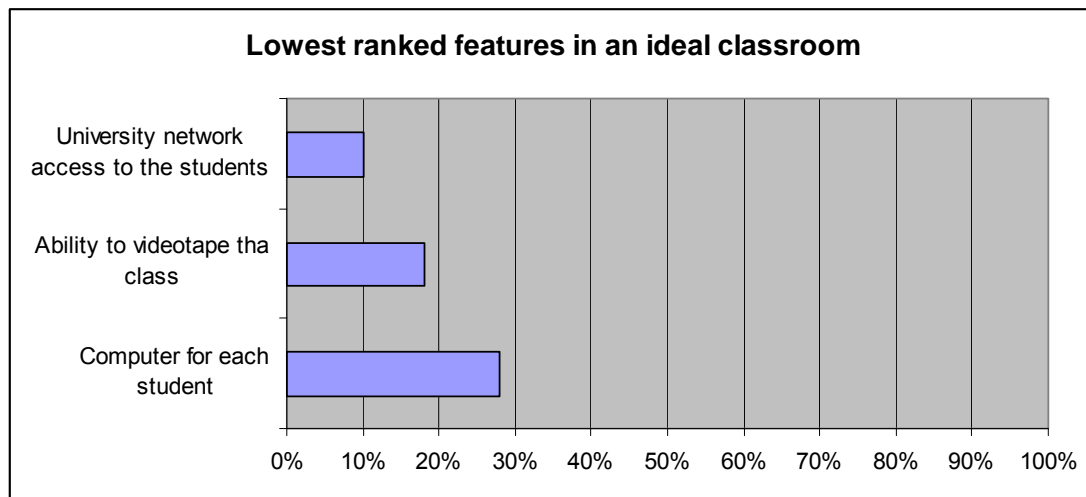


Figure 3

Analysis

Respondents inclined toward wanting their ideal classroom to contain technologies for their own, but not for their students' use, and they choose technologies that can be used primarily to deliver information. Although the respondents could choose all the listed technologies, they showed little interest in technology for students, nor in videotaping their classes. Several respondents indicated that they wanted computers and Internet access for students, but controllable by professors

QUESTION 3: "What are the factors that attract you to the use of the educational technology in your teaching" (Figures 4 and 5)

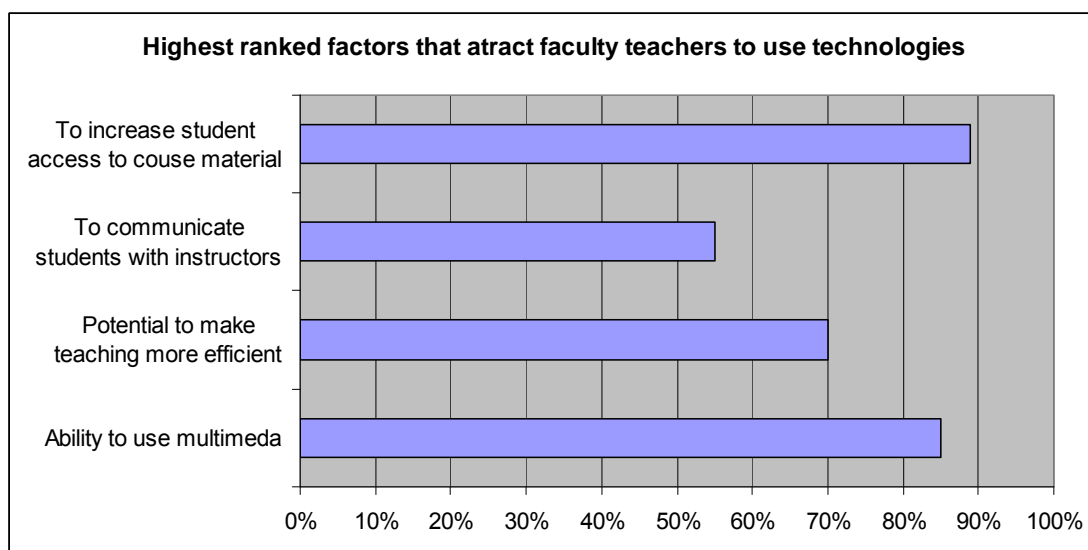


Figure 4

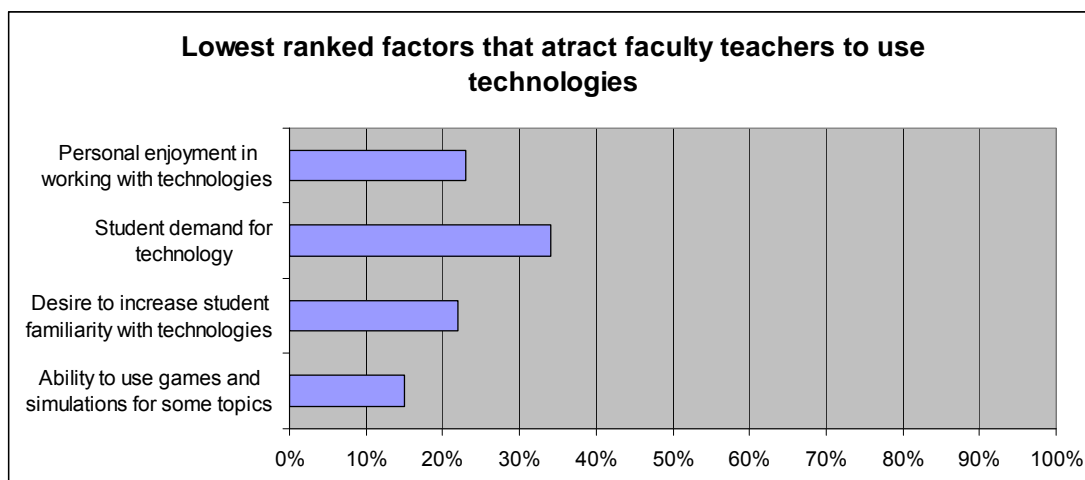


Figure 5

Analysis

The results indicate strong overall attraction to use technologies into teaching. Among other, it is conceivable that respondents choose student-instructor communication option because they want to use technology to initiate a dialogue about course material. But the heavy emphasis on information delivery makes it more likely that the communication has to do with easy making materials available to students, and to stick to the traditional way of presentation way of teaching.

It is also worth noting that the high ranking given to “Ability to use multimedia” parallels our findings that this is the strongest teachers’ interest.

“Students demands for technology” is among the lowest ranked options. This indicates that the teachers are not motivated by a real demand of the students, which is very discouraging because it does not mean that the students in reality are not demanding technologies.

“Ability to use games and simulations” is lowest ranked for two reasons: Many responders think that games are not suitable for educational purposes, and for the simulations they lack specific skills and resources.

What is also striking is the wide range in the ratings given to items, indicating substantial differences to which the items attract responders to the use of technology.

QUESTION 4: “How effective or ineffective do you think educational technology is for implementing each of the following teaching techniques?” (Figures 6 and 7)

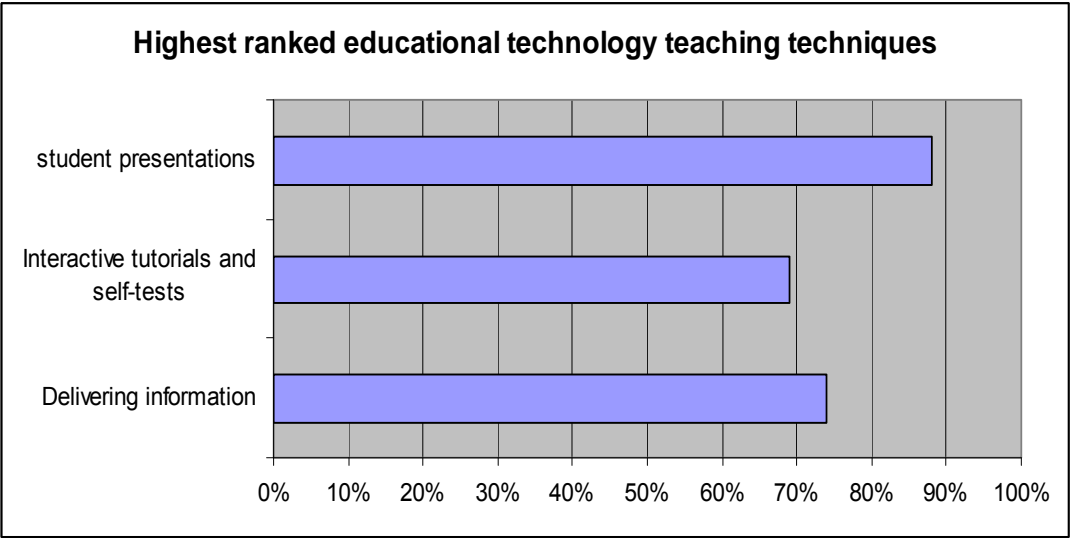


Figure 6

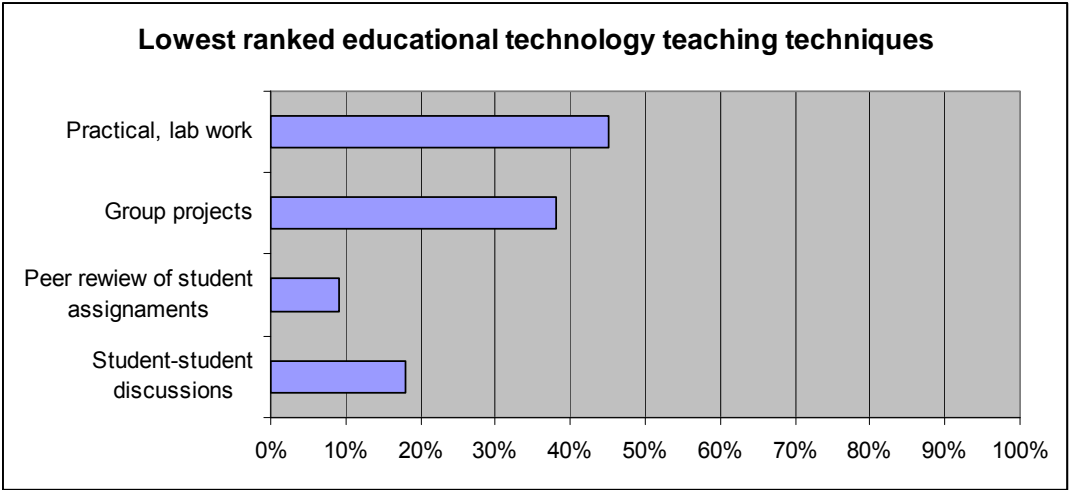


Figure 7

Analysis

There is a very big difference in the ranks between the highest and the lowest ranked technology supported teaching techniques. Again we see a marked emphasis on delivering information, but also on students being active themselves by presenting their work. Teaching techniques that involve student-student discussions, peer reviews and group assignments are near the bottom, even though some of them are well established as effective technology-enhanced learning practices in the literature, also presented and elaborated in our project workshops and working sessions. This disparity simply reflects faculty members’ perception that delivering information with technology is simple and reliable, while interaction is, relatively speaking, more complex and time consuming.

QUESTION 5: “Educational technology can be used either face-to-face in the classroom or lab (e.g. Power Point presentations), or online. What is your experience in using educational technology to enhance teaching?” (Figure 8)

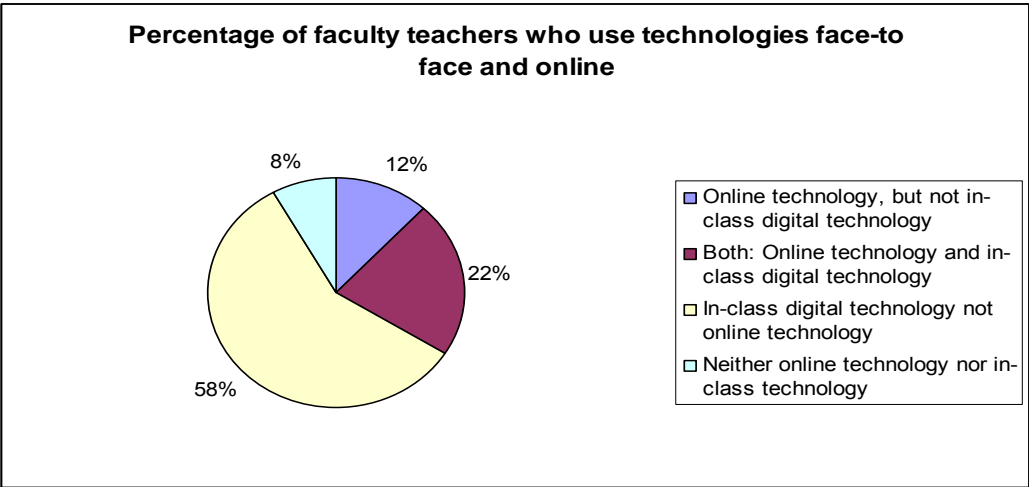


Figure 8

Analysis

It is good to see that only 8% of the respondents reported that they used neither digital nor online technology in their teaching. This indicates that, possibly as a result of our 3 years work on this project, the vast majority of teachers used technologies in some way to enhance their teaching.

On the basis of our experience it is reasonable to suppose that most of the 58% that declared using digital technologies are Power Point users.

The penetration of a Learning Management system like Moodle, which we introduced in the project as a platform for online courses, made a whole difference from some previous surveys [5]. Now we have 20% of teachers using the online teaching.

QUESTION 6: “How much of a barrier (problem) has each of the following factors been to your use of digital technologies in conjunction with your teaching?” (Figures 9 and 10)

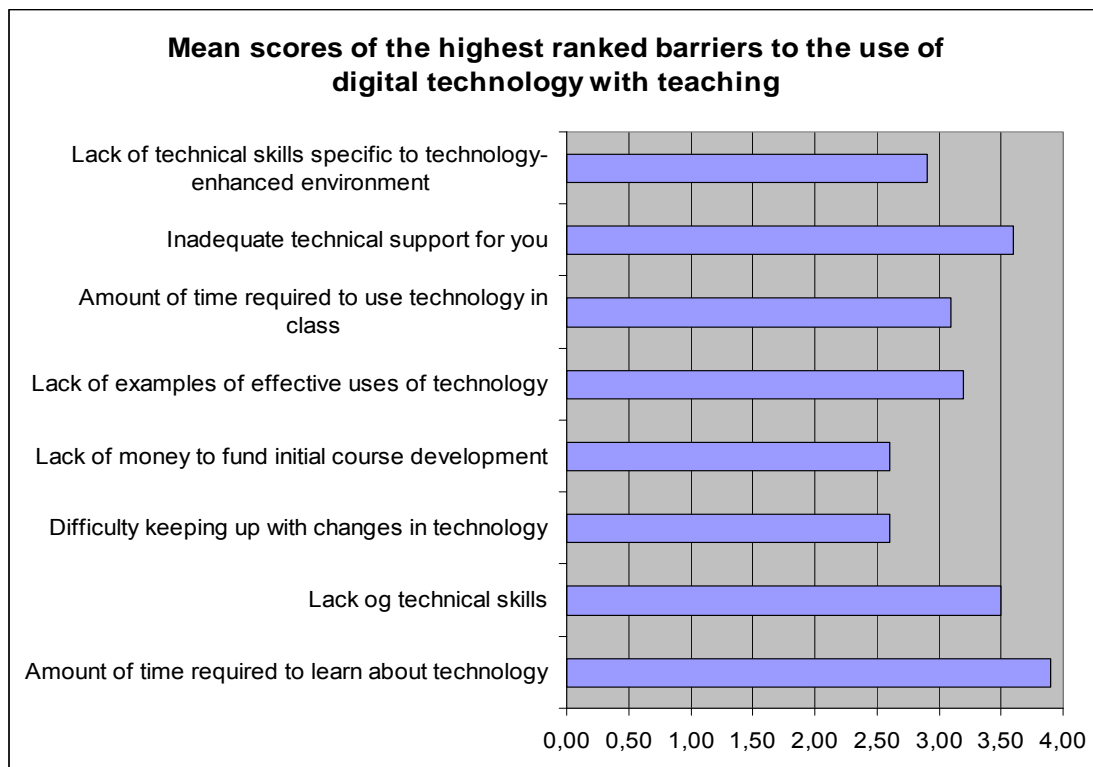


Figure 9

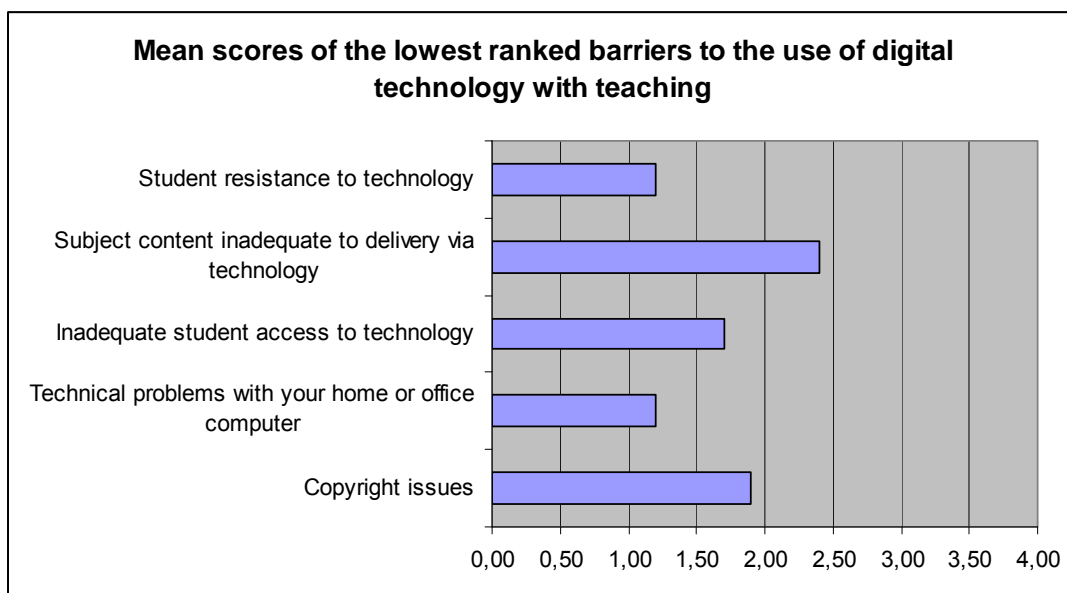


Figure 10

Analysis

When these responses are compared to the answers in Question 3 where they were asked about the factors that attracted them to technology, and when mean of the means of those two are compared, it appears overall that respondents are much more attracted to use the technology than held back from it by barriers.

As can be seen, lack of time to learn about technologies is a dominant theme, also the amount of time required to use technology in the class. Many respondents described in detail their lack of time for training.

The need for technical support is also very highly ranked barrier factor, a result consistent with the desire for faculty technical support. Many respondents emphasised need of well-trained staff.

Lack of technical and teaching skills are among the highest barriers. Further, the high ranking given to the “Lack of models/examples of effective uses of technology” is consistent with the need, expressed in one of the following questions about the specific technologies topics, to see what and how the other faculty members are doing with technology.

It is not surprising at all to see Copyright issues among the lowest ranked barriers, since in MK the law against is poorly enforced. That might also mean that faculty members tend to focus exclusively on educational purpose when considering whether their use of copyrighted material is an ethical use.

Students’ resistance to technology was also low in the ranking, which is interesting in light of how low-ranked student demand was in teachers answers in Question 3. One possible answer is that students neither demand, nor resist technology; another is that faculty members are simply not motivated by students’ desires. In any case, pressure from students in either direction was not apparent in these survey results, where the teachers were the target group.

QUESTION 7: “When you are developing course materials, how often do you use each of the following software tools?” (Figures 11 and 12)

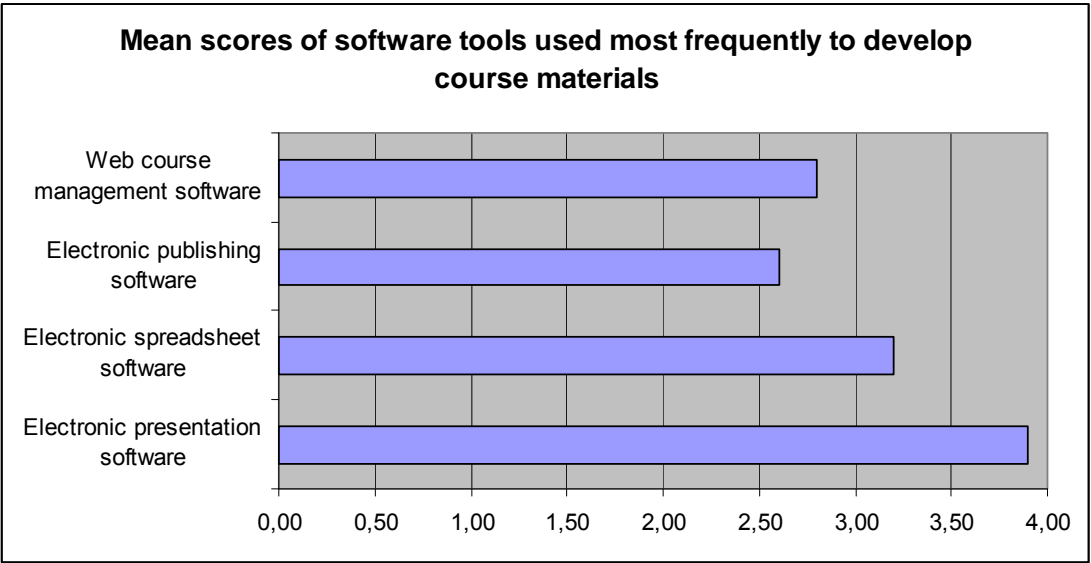


Figure 11

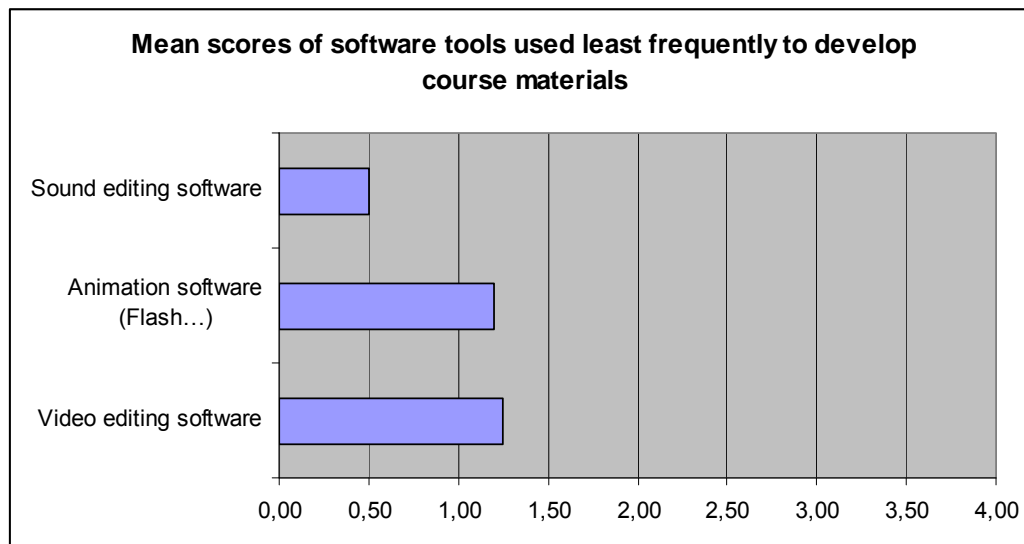


Figure 12

Analysis

Power Point is far most used tool. Video, sound and animation software are used much less frequently. Many of them have never used any of those tools. Overall, there is a clear division between the tools respondents used reasonably often and those used by only several. It is not that they don't want or need to use them, but they are simply too complex to the most of them, for which they need an assistance. This strong division also tells us that there is a strong division into heavy users of certain tools, and complete nonusers. It is encouraging to see that Course management software, which was only introduced within our project, has a factor of over 2.5 which is very encouraging.

QUESTION 8: "How helpful have you found each of the following ways of learning with educational technology?" (Figures 13 and 14)

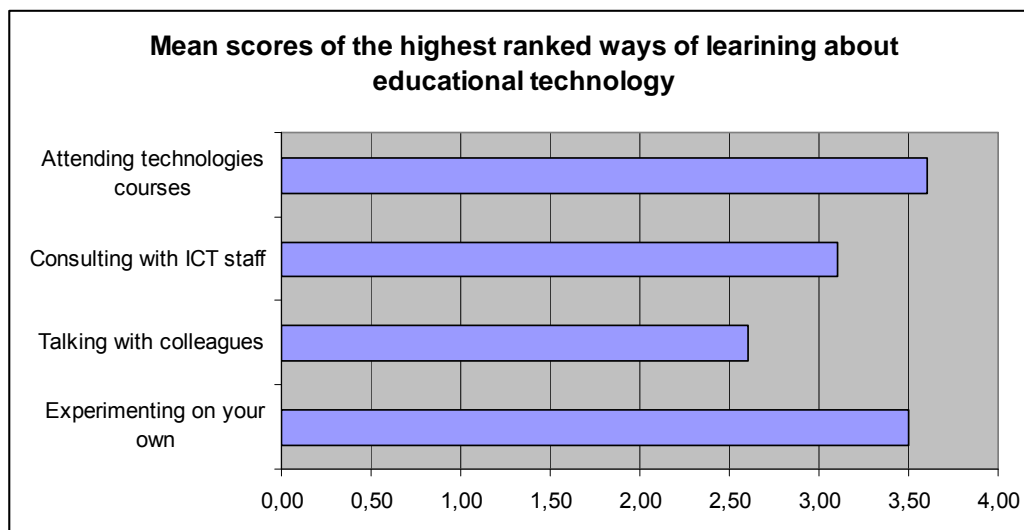


Figure 13

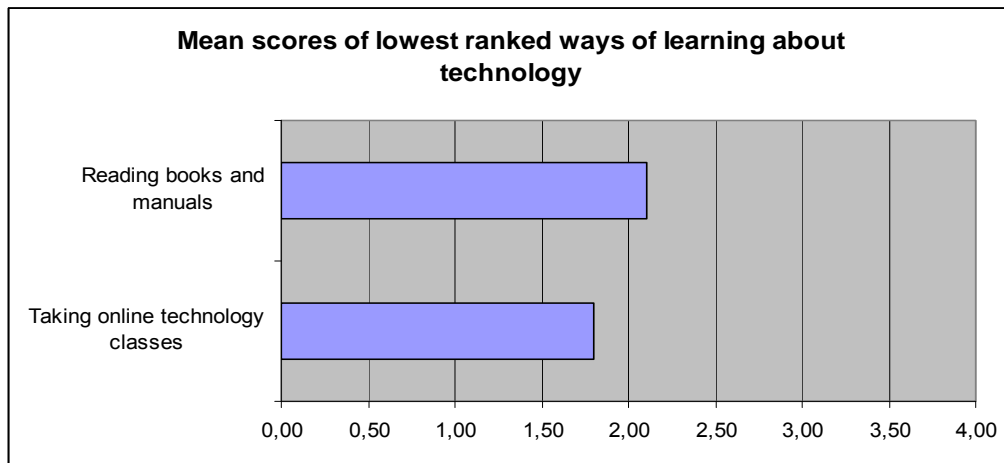


Figure 14

Analysis

The ranking shows that the respondents found many of the ways of learning listed here, at least somewhat helpful. Three out of four top-ranked options involved being face-to-face, and practically every method of learning about technology that puts a faculty member in the presence of another more skilled person was highly ranked. Online classes are not favourable way of learning.

QUESTION 9: “Suppose you had a slot of time in which to learn about educational technology. About which of the following topics would you like to learn more?” (Figures 15 and 16)

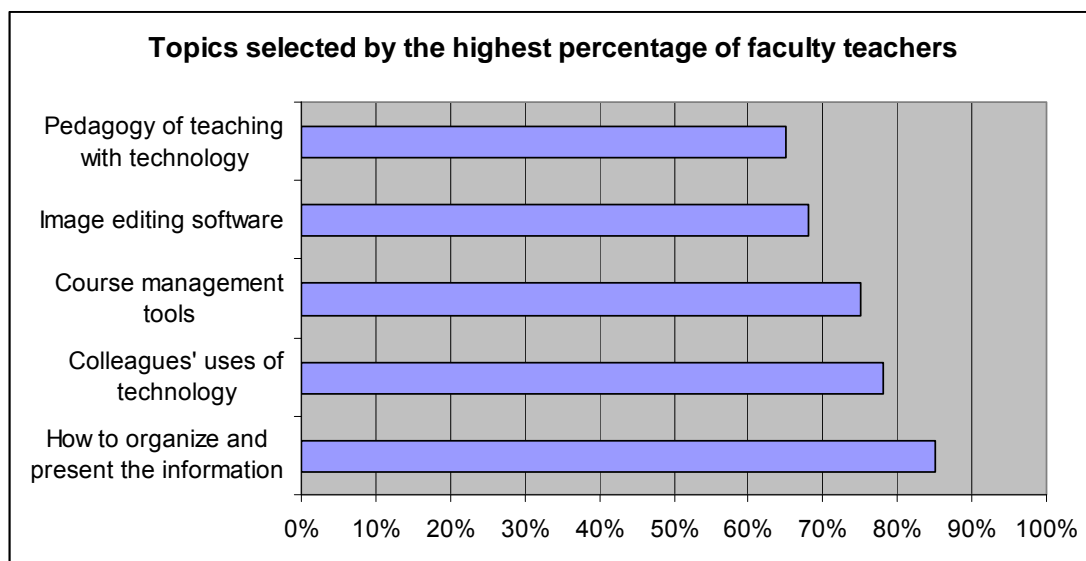


Figure 15

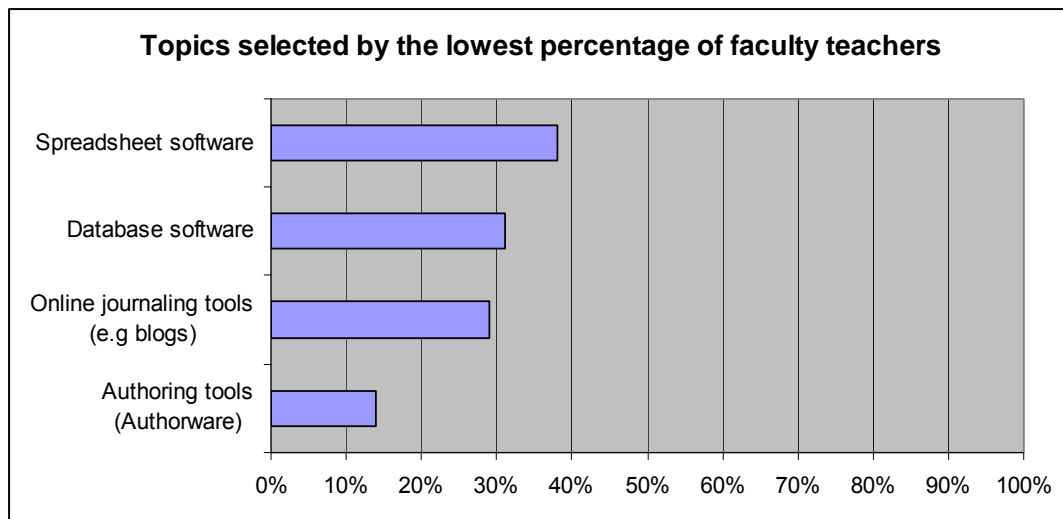


Figure 16

Analysis

The prominent interest in information design displayed in the responses is consistent with the seeing educational technology primarily as a way of delivering information. Another interesting feature of responses is the dominance of non-technical topics among top-rated answers. Respondents appeared to be interested in learning about design, usability, and pedagogy to a greater extent than learning about the changing bits and peaces of technology. This is very satisfying result for the project results, since we were insisting on these priorities for modern teaching. Further, this evidence suggests that faculty interest in their colleagues' uses of technology stems from desire to understand how to use educational technology well. All of this may point to a tendency among faculty members to focus on the educational rather than on the technical aspects of digital technology.

QUESTION 10: "What are disciplines where technology supported learning is most efficient and applicable: Social sciences, Art/Music, Exact sciences, Languages?" (Figure 17)

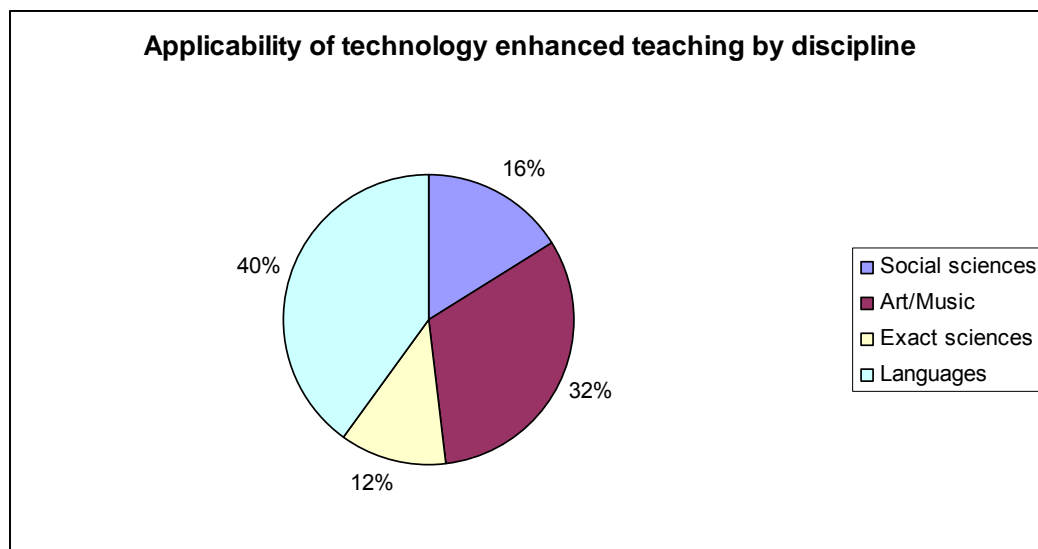


Figure 17

Analysis

The results are reflecting almost exactly our project experience, working with teachers that teach courses in the above categories. We were very satisfied with the response, particularly in languages and arts. It surprised us all the time the lack of imagination of the teachers in exact sciences (maths, physics, biology...) to use enormous repositories with ready made objects, even if most of them are language independent, explaining via animations some very abstract phenomena, etc.

On the other hand, the teachers in arts and music were very creative and really felt that their teaching is made more efficient, attractive and rich with technologies.

QUESTION 11:

“What are the most interesting developments in educational technology that you are aware of (either now, or coming in the future)?”

Here are the different technologies ordered in decreasing priority, given by the respondents:
Wikis, Blogs, Adobe suit, Virtual reality, Student response systems

Analysis

Interestingly “Student response systems” was the single most common answer to this question, although this was not a popular answer to the question that asked respondents to imagine an ideal classroom. All these answers leads us to a conclusion, when we analyze the previous questions and answers, that the listed technologies above have a recognized value and potential for the future, but not what they actually use right now to enhance the teaching.

QUESTION 12:

“What are the most effective ways of using technology in your discipline?”

Analysis

Responses to this question varied widely and fit no easily to a certain pattern. One theme had to do with the use of non-text media, like animations, video and graphics. From one of the previous question answers, one can see that these technologies were poorly ranked in their usage. As concluded there, the majority of the teachers would be very keen to use them, only they lack skills and it seems to them as a complex problem. Group projects/student collaboration also was mentioned by many respondents.

QUESTION 13:

“Do you have any further comments regarding educational technology at your university/faculty?”

Analysis

In responses to this question, many faculty members emphasized the need for support, provided by well trained staff members. General worries about the lack of standardization were mentioned as well, specifically concerns about cross-platform compatibility; different and changing course management systems; lack of centrally supported services and applications; lack of material in Macedonian language on the Web; variations in classroom technology; compatibility with the technology solutions in MK schools; lack of institutional strategy.

3 Summary

We can summarize the following moderate encouraging picture from the results presented above:

- Teachers have moderate to strongly positive attitudes toward educational technologies
- They reported a relatively moderate rate of problems related to their use of educational technologies
- Strongly desired to learn more about educational technologies
- Believed that digital technology is educationally effective in a variety of contexts

Technology as information delivery tool

Faculty teachers appear to see educational technology primarily as a means for the efficient delivery of information. Respondents, unfortunately, consistently rated uses of technology that support collaboration, interaction, engagement, or games and simulations below uses that support information delivery, increased access to and effective information design of course materials, etc.

Time factor

Lack of time is an extremely important issue for faculty teachers. The “amount of time required to learn about technology” was among the highest barriers the respondents cited to their use of technology. Also the “amount of time required to use technology in class” was among the highest ranked. In their open discussions they describe in detail their shortage of time to learn, compared to time spent on administration, lectures, consultations with students and research. Most interesting is that most of them expressed preferences for services that involve others doing things for them (Web site setup and hosting, developing materials, etc.)

Importance of examples/models

Survey respondents indicated that one of the biggest barriers that affect their use of educational technologies is the lack of models and examples of effective use. Talking with colleagues followed only experimenting on one’s own as respondents preferred way of learning. Finally, vast majority reported that they want to learn more about how their colleagues use educational technology.

Training and technical support

Lack of technology support was one of the most important barriers respondents cited to their use of technology. Providing this support is their highest priority. They all emphasized the need for facilities accessible after the working hours and the need for well trained staff members.

Pressure from students

Faculty members are not motivated to use or not use educational technology by student demand or resistance. We often think that student demand motivates faculty teachers to integrate technology into the teaching, which showed not to be exactly the case. The converse is expressed somewhat less frequently, namely that educators are sometimes reluctant to use certain technologies because of students’ resistance. It is interesting to note that neither of these ideas is supported by the data from this survey. Student demand for technology, in teachers prospective was very low on the list that attracts respondents to use of technology, and student resistance to technology likewise was very low on the list of barriers.

Technology users and non-users

Faculty members who do not use educational technologies are more concerned about their lack of skills, knowledge, and access to models, and have more doubts about its effectiveness.

For the purpose of this analysis, technology users were defined as respondents who reported having taught at least one course involving online educational technology uses more advanced technology into teaching. It was the vast majority of respondents (76%).

4 Conclusions

Considering very carefully the findings from this survey, as well as the outcomes from the other research made within the project, a sound strategy was built up and successfully implemented through the following working packages:

1. Revision, reconstruction and innovation of undergraduate and postgraduate curriculum at Tecaher Training Faculties in MK. Courses (non-ICT) were reconstructed, upgraded and new developed to integrate E-Learning into the teaching process, respecting the subject matter content and providing student-centered program
2. E-Learning Expertise Centre (<http://elc.ugd.edu.mk>) was established that is:
3. E-Learning Resource centre for all the Faculties of Pedagogy in our country with full technical support;
4. Support of the teaching process;
5. Support of the practical work of the staff and the students;
6. Regional E-Learning Help Centre for the schools in the region;
7. Training Centre.

8. Necessary E-Learning supporting teaching tools were developed (instructional and authoring software)
9. A general model for E-Learning integration into the teaching process was developed, also applicable for other educational settings
10. System for Quality control and monitoring was developed and introduced

The findings of the survey paved our way towards higher motivation from the teachers and the students, their critical adoption of technologies and changing their attitude towards the learning/teaching process in general.

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