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EVALUATION OF TRAINING NEEDS FOR "PETRU MAIOR" UNIVERSITY STAFF INVOLVED IN ENGINEERING FIELD

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ABSTRACT

Present paper presents the results of an activity that took place in the frame of FSE POSDRU/87/1.3/S/60891 – DidaTec- project named "University school for initial and continuous training of didactical staff and trainers working in the field of technical and engineering specializations". The main objective of this project is the development of a training system in order to implement learning methods based on modern information technology and communication techniques. The aim of research was to evaluate the training needs of the academic staff involved in engineering field.

Keywords: training needs, e-learning, IT&C

1. Introduction

In the frame of the DidaTec project one activity had the aim to evaluate the training needs of the academic staff involved in engineering field. This evaluation was made using a questionnaire that was discussed and developed during several stages. The final form of it consists in open questions, with one or multiple answers, designed for the assessment of the following categories:

- experience;
- e-learning;
- IT&C use;
- DidaTec training needs.

The Universities involved in this study were:
- Technical University of Cluj Napoca
- "Politehnica" University of Timisoara
- University of the Nord of Baia Mare
- University of Oradea
- Technical University of Civil Engineering Bucharest
- „Gheorghe Asachi" University of Iasi
- „Stefan cel Mare" University of Suceava
- "Lucian Blaga" " University of Sibiu
- "Petru Maior" University of Tg. Mures.

The questionnaire was developed also like a disseminating method of activities and perspectives of the project to the academic staff from participating universities.

For completing the questionnaire the on line manner was choose, due to its anonymity, independence of completing and interactivity. The questionnaire was integrated in an on line, interactive interface, ZEF (www.zef.fi). ZEF Evaluation Engine® collects data and opinions from individual persons, individuals that can be part of groups, allowing the analysis of information in an innovative,

easy to understand, visual way that can be organized in a valuable and useful evaluation report. ZEF can be used like Z-scored Electronic Feedback, where Z-scored is a statistical evaluation method which eliminates the perturbations and improve the accuracy of answer's analysis. ZEF method allows, more than standard open question method, multiple choices and the possibility of adding the questions:

- on one line (axis) which determines the possibility of a specific, punctual answer in a range between two extreme values;
- on two axis or 2D, where the respondent can give the answer having to judge from two point of views, each axe having its own question, where the answer is in a range between two extreme values.

The invitation for completing the DidaTec questionnaire was sent by e-mail to every member of academic staff from participating universities, using the internal formal information distribution system of each university involved in the project.

Present paper presents the results of the questionnaire for "Petru Maior" University of Tg. Mures (UPM). 50 members of academic staff of Faculty of Engineering responded to the DidaTec invitation and gave the answers to the questionnaire. There were 35 male respondents and 15 female respondents. From the age point of view, figure 1 presents the dispersion of respondent's age. It is to observe that more than 50% are more than 40 years old, with more than 15 years from university graduation, fact which suggests that there is an acute need of training and actualization of the knowledge in the field of how to learn students, how to deliver courses in a modern manner, how to use the ultimate IT&C techniques.
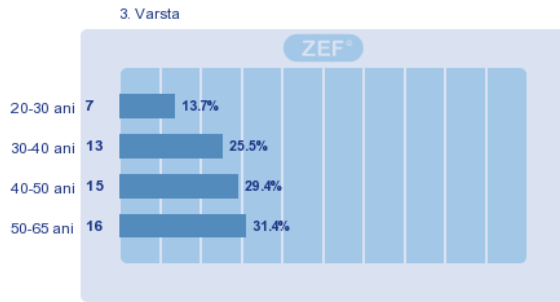
Fig. 1 – The age of respondents of DidaTec questionnaire from UPM

Fig. 4 – Internet use declared by respondents of DidaTec questionnaire from UPM

Figure 2 shows the academic position of the staff from "Petru Maior" University that participate to the questionnaire. The analysis shows a uniform dispersion between all academic positions (less post-doctoral students that are not present in UPM). The majority is represented be lecturers with ages between 30-40 years, they have PhD degree in engineering, good academic experience and are involved in course delivery activities and also in practical activities (laboratories, projects).
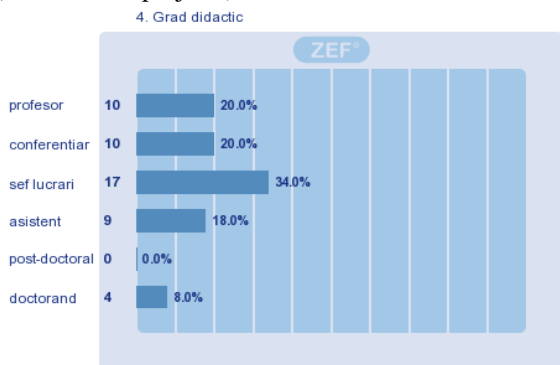
These values (practically all academic staff use Internet on daily basis) are higher that the statistical average values for Romania, for age group 25-40 years, people with university degrees, for which Eurostat studies shows a 21% of daily use of Internet [Eurostat 2009].

A very interesting result is related to the use of computer for didactic purposes. As figure 5 reveals, 85% of the academic staff use computer on daily bases in order to assist the learning process.

Fig. 2 – The academic position of respondents of DidaTec questionnaire from UPM
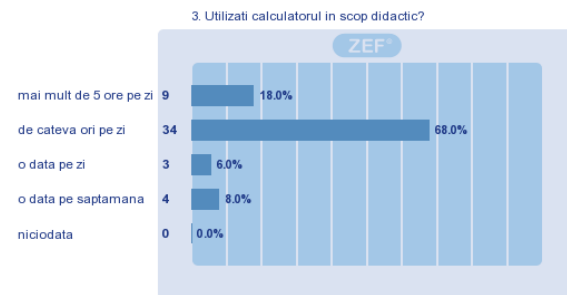
Fig. 5 – Use of computer for didactic purposes declared by respondents of DidaTec questionnaire from UPM

2. Experience on IT&C in education

All respondents declared a very high level of computer use, also they said that they use computer with high frequency. Vast majority declared that they use computer more than 5 hours per day (fig. 3). It is interesting that the lower level of computer use corresponds to professors and associate professors.
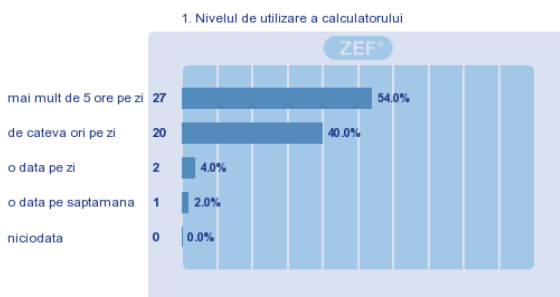
3. The use of eLearning in education

When responded to the question "Do you use before platforms / programming environments /LCMS/ LMS for eLearning?" almost all academic staff declared that they use them very often. As figure 6 shows, in UPM the most used eLearning platforms are University platform, Moodle and Lotus.

A qualitative evaluation was conduct in order to design the strategy for DidaTec project platform tools development and also aiming to indicate to the UPM which are the implementation requests. In this 2D evaluation, x axis represents personal level of use of a specific tool and y axis represents the estimated potential for using in education that is associated by the respondent with that specific tool.

The tools that were taken in account were:
1. Blended learning (online support for face to face activities)
2. E-mail

Fig. 3 – Computer use declared by respondents of DidaTec questionnaire from UPM

When referring to Internet use, the level is lower, only 22% using it more that 5 hours per day (fig. 4).
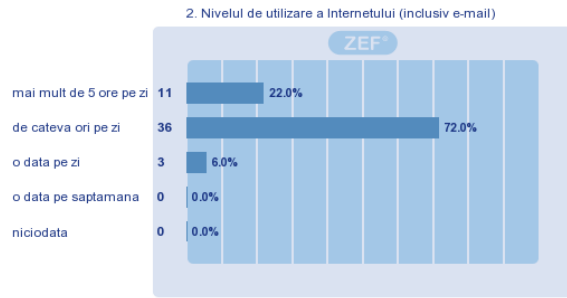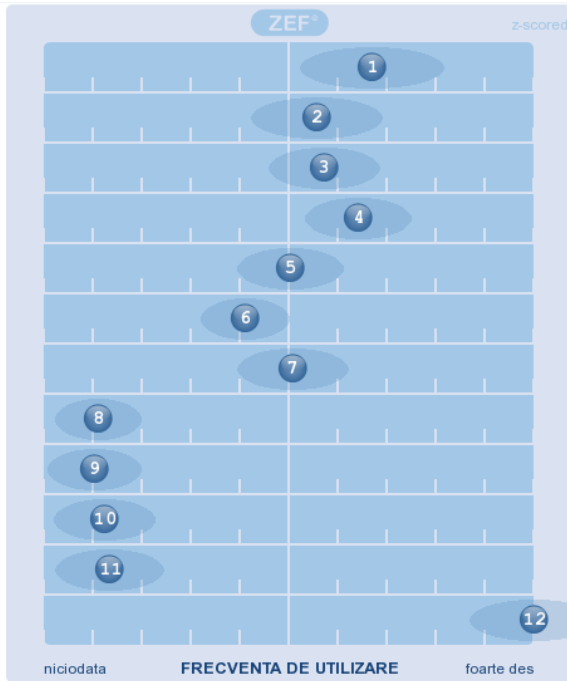
Fig. 6 – Use of elearning platforms in UPM
(1. Blackboard; 2. AEL; 3. Web CT; 4. Lotus; 5. SharePoint; 6. Oracle iLearning; 7. Moodle; 8. Sakai; 9. OLAT; 10. ILIAS; 11. Elgg 12.University platform)

3. Forum
4. Blog
5. Chat / instant messaging
6. Wiki

7. Online knowledge assessment
8. Online questionnaires
9. Sending / online submission of students projects
10. Calendar/ online schedule
11. RSS feeds
12. Animations
13. Online notes (type del.icio.us, citeULike, etc)
14. Social network (Facebook)
15. Podcast and/or audio or video recording of didactic activities
16. Video (inclusive YouTube)
17. Virtual environments (Second Life)
18. Videoconference
19. Audio conference (including Skype)
20. Online educational games
21. Virtual laboratories
22. Smart Board
23. Mobile phone
24. Text messaging by mobile phone
25. Different applications for mobile phone

Analyzing the results of the questionnaire, presented in a very visual way by the figure 7 we can conclude that respondents from UPM consider that:

- calendars/ online schedules, sending / online submission of students projects and e-mail have high potential for education and are already well implemented and used;
- also with good potential and good level of awareness can be considered forums, wikis, videos, RSS feeds, online questionnaires;
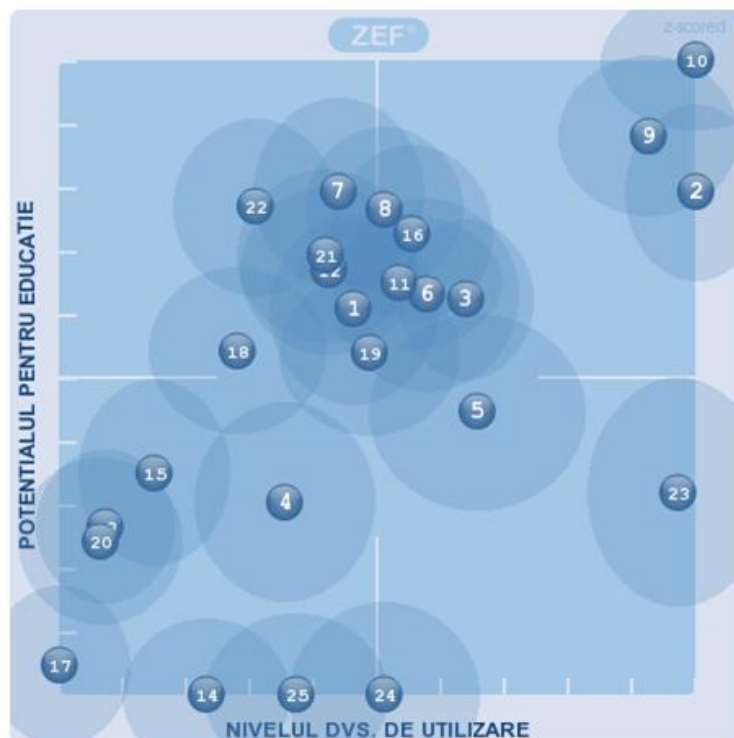

Fig. 7 – The relation between the potential for education and the level of using for different tools that assists modern learning process

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- high potential for education but relative weak use have: online knowledge assessments, Smart Board, virtual laboratories, blended learning, video and audio conferences;
- text messaging and applications for mobile phone are considered with low potential for education, even if they are well known and frequently used;
- chat/instant messaging, blogs, podcasts and on line educational games are viewed as tools that can be useful in some degree for education, the first ones being somehow known, but the last two being considered novelties and being rarely used;
- social networks and virtual environments are considered with very weak potential to be used for educational purposes and very few respondents declared that they use such tools.

The analysis made from educational means point of view reveals that respondents from UPM believe that elements of content have the highest potential for education. In contrast, educational models based on synchronous online communication and interaction are perceive having a lower potential and value for education. This perception is a drawback in the quest of implementing a system for distance learning. It is to say here that the overall result is influenced by the fact that in UPM only few members of academic staff have experience in distance learning. That fact suggests the need of training in this particular field.

Another fact that is to be emphasis is that tools that are extensively used today in academic environment (blogs, podcasts, social networks, virtual environments) [1-5] are not recognized by UPM staff as valuable tools for education. As a consequence there is an urgent need of dissemination of success stories and good practice related to this kind of tools.

4. IT&C use in education

A qualitative evaluation was realized using a 2D questionnaire approach, having on x axis the personal level of use of a specific software and on y axis the estimated potential for using in education for that particular software. The results are presented in figure 8.
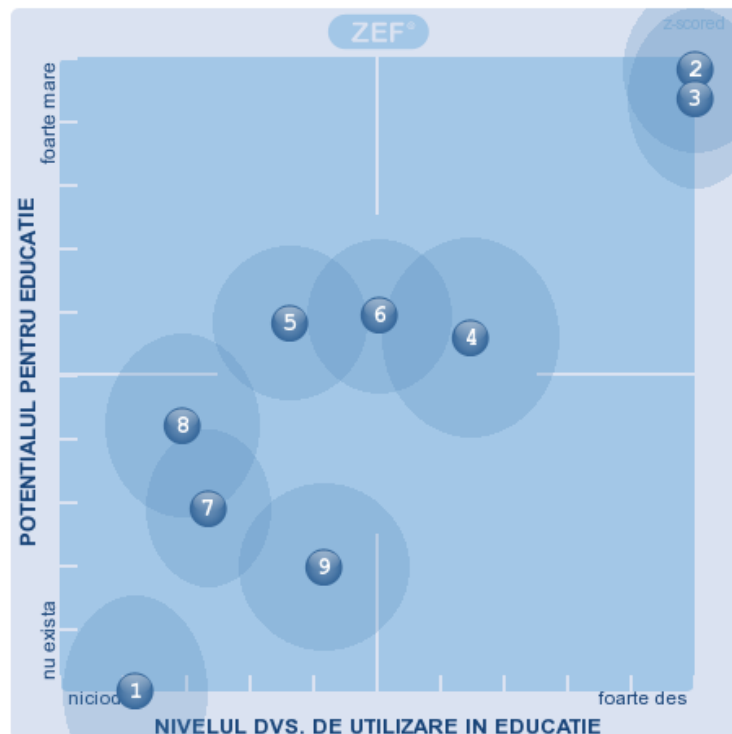

Fig. 8 – Use of different software in UPM

The software that were taken in account were:
1. HTML editing –Adobe Dreamweaver
2. Presentation – MS PowerPoint
3. PDF editing – de tip Adobe Acrobat
4. On line equation editor
5. Animation – Adobe Flash
6. Graphical editing- Adobe Photoshop, Corel
7. Audio / video editing – Adobe Premiere, Quicktime
8. Videoconferencing – Adobe Acrobat Connect Pro, Microsoft Office Live Meeting
9. Screen capture – Adobe Captivate, Camtasia Studio

Analyzing the results of the questionnaire, presented in a very visual way by the figure 8 we can conclude that for UPM staff involved in engineering:

- presentation and PDF editing software have high potential for education and are used very frequently;
- with good potential for education and good level of awareness are on line equation editor, animation and graphical editing software:
- audio/video editing and videoconferencing are viewed as software that can be useful in some degree for education, but they are rarely used;
- HTML editing software is considered with very weak potential to be used for educational purposes and very few respondents declared that they use such software.

It is surprising that respondents considered HTML editing software having a low potential for education, since it is a part of languages that are at the very basis eLearning development. A possible explanation can be that most modern eLearning applications allows HTML text editing without the use of HTML tags, simply by using some friendly interfaces very similar with the case of document editing.

5. DidaTec training needs

In order to design an efficient training program for the academic staff involved in engineering field, the questionnaire also asses some practical aspects such as:

- how do respondents think that training modules can be delivered (face to face, face to face + independent work, face to face + on line activities, only on line activities) – the answers are illustrated by figure 9 that shows that the best approach is the combination of face to face activities with on line ones;
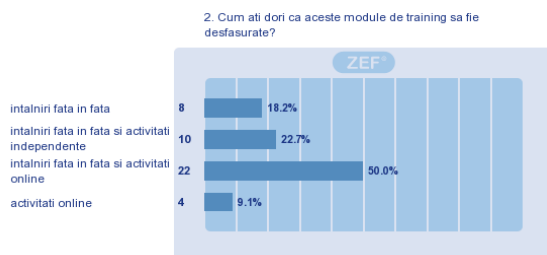
Fig. 9 – The need for delivery of training modules

- how much time are respondents willing to dedicate for DidaTec training; as figure 10 shows the majority of academic staff suggests a training program having a duration of 24 to 48 hours.

6. Conclusions

The most important conclusion of the questionnaire that was administrated in 10 Universities being completed by more than 700 members of academic staff (50 of them being from UPM) is that there is a real training need in the field of IT&C use in education.

Fig. 10 – The expected duration of training modules

Even the use of computer in education is very frequent there is a weak understanding of the way in which IT&C can be better involved in education. Also very few members of academic staff are involved in distance learning education, fact that suggests the need of training in order to acquire modern knowledge and practical skills for this particular field.

The questionnaire revealed that tools that are extensively used today in academic environment (blogs, podcasts, social networks, virtual environments) are not recognized by UPM staff as valuable tools for education. As a consequence there is an urgent need of dissemination of success stories and good practice related to this kind of tools.

The groups that are interested in participation in DidaTec program are heterogeneous (as regards age, didactic experience, level of IT&C use) as a result the program have to be design to consist in personalized modules adapted at the groups typology.

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