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Digimentors – enhancing digital teaching skills of engineering educators in Tampere University of Applied Sciences

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ABSTRACT

Digitalization is a trend in education. To enhance teachers' digital skills, A digimentor service was launched in Tampere university of Applied Sciences at the beginning of 2016. Digitally experienced teachers were assigned as digimentors. Their mission is to give low threshold mentoring support to other teachers on the area of digitalization of teaching. To analyse the results of digimentoring, a survey to teachers in engineering education was made in April 2017. About 70 % of the teachers in engineering education answered to the survey. 53 % of answerers had used the service. 33 % of the answerers had not used, but were willing to use the service. Key results are summarized as follows. The digimentor service is seen as a good method to enhance teachers' digital skills. Its benefits lie on the facts that the service is a low threshold service, which is easily available. The most wanted and used services have been the help concerning the production and distribution of own educational videos and the effective use of learning management system (LMS) Moodle. The main

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reasons that the service was not used yet were the lack of time or lack of vision what to change.

INTRODUCTION

Students entering universities already have skills in digital tools and they are already familiar with digital learning. If engineering educators deny pedagogical and digital development, the attractiveness of engineering education is in danger. In terms of sustainable development and continuing engineering education, digital tools open new possibilities to distance-learning, making education more available to different student groups of age, prior education or geographical location. The digitalization does not only mean a total transform to online education. It also means that the advantages of modern tools and pedagogy are easily exploited throughout teaching. Use of modern teaching methods like Flipped learning [1] or Peer Instruction [2] require the effective use of modern educational tools.

To enhance the digital skills of teaching personnel, a group of digitally advanced teachers were assigned as digimentors, to work as a network, in Tampere University of Applied Sciences. The idea was to offer low-threshold mentor support that is easily available to teachers whenever needed. To monitor results and to develop digimentoring further, a survey to the teaching staff was made in the beginning of 2017. Due to low answering percentage, the same survey was re-made to the teachers of engineering education during April 2017. The results and conclusions from the later survey are presented in this paper.

1 ENHANCING PEDAGOGY AND DIGITAL SKILLS

1.1 Pedagogical methods that require digital skills

In current educational trend, education transfers more towards online education. Teacher in pure online teaching needs at least skills to use learning management systems like Moodle and skills to produce digital learning material and learning activities available to students. The successful online teaching requires also that teacher has abilities to be digitally present in the digital learning world.

The need of digital skills is not limited to online teaching only. The active engagement methods, like Flipped learning [1], Peer Instruction [2-3] and Interactive lecture demonstrations [4], which are proven to produce better learning outcomes [5], are easier to apply when at least some digital learning equipment like audience response system, "clickers", are used.

1.2 Digimentors enhancing teachers' digital skills

The slogan of Tampere University of Applied Sciences' digital strategy is *"Using possibilities offered by digitalisation towards higher quality and more effective higher education – Towards better student and customer experience together!"* [6].

Implementing the strategy requires enhancing the digital skills of the entire teaching staff. Development towards digital age is sensitive and personal process and teachers are on very different stages in the process. Therefore, some of the digitally most experienced well-known teachers were appointed as digimentors. A part of his or her work is to be available and help everyone who needs guidance in personal digitalization. Digimentors work as a network, so they are able to share their skills between each other. As a network, they are able to find solutions outside personal expertise. There are about 1 – 2 digimentors in every unit so each digmentor has from 30 to 70 mentees to mentor.

2 THE AIM OF THE STUDY

The aim of the study is to discover:
- How engineering teachers see the digitalization of teaching?
- How engineering teachers assess their own digital teaching skills
- How much digimentor service has been used
- What are the concrete subjects, in which digimentor service is seen helpful
- What are the advantages and disadvantages seen in digimentor service

3 DATA GATHERING

The data was gathered in Tampere University of Applied Sciences in its two schools of technology, using Google Forms questionnaire. The link to questionnaire was delivered to engineering educators using email. The questionnaire was open for two weeks on April 2017. About 70 % (N=72) of the engineering education teaching staff answered the questionnaire, although some of the questions were left empty. The questionnaire included multiple-choice questions, Likert-scale questions and open-ended questions. The distribution of answerers' teaching experience is presented in *Fig.* 1.
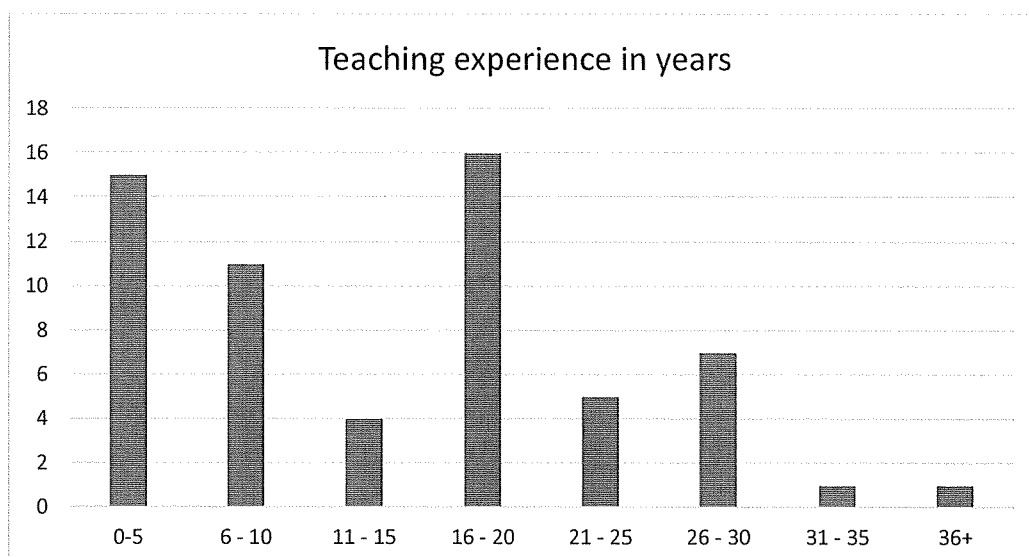

Fig. 1. Answerers' teaching experience

Fig. 1. The answerers are from large variety of experience in teaching.

4 RESULTS

4.1 The importance of digitalization and teachers' own digital skills

According to the study, teachers see the digitalization of teaching important. Most of them assess their own digital skills as medium or slightly above medium in the scale between 1 = Beginner and 5 = Expert. The distributions of the answers are in figures *Fig. 2.* and *Fig. 3.* The open-ended question, in which teachers described their digital skills, got many answers. Most common mentioned digital skills were the use of LMS Moodle, use and production of video material and use of digital quizzes. Some of the teachers had already taught an online course and many of them had experience in distance teaching and learning using adobe connect or similar software.
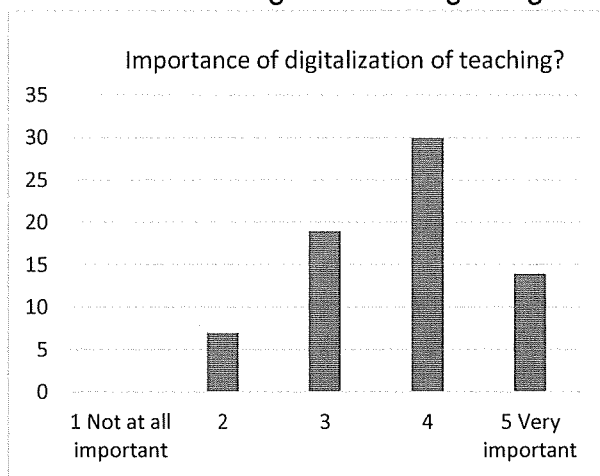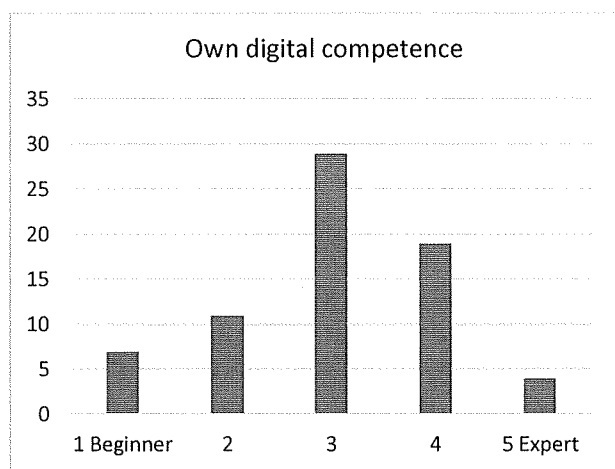

Fig. 2. Importance of digitalization   *Fig. 3.* Teacher's own digital competence

4.2 The digimentor service

Engineering educators were asked, if they had used the digimentor service. The answer distribution is presented in fig. 4.
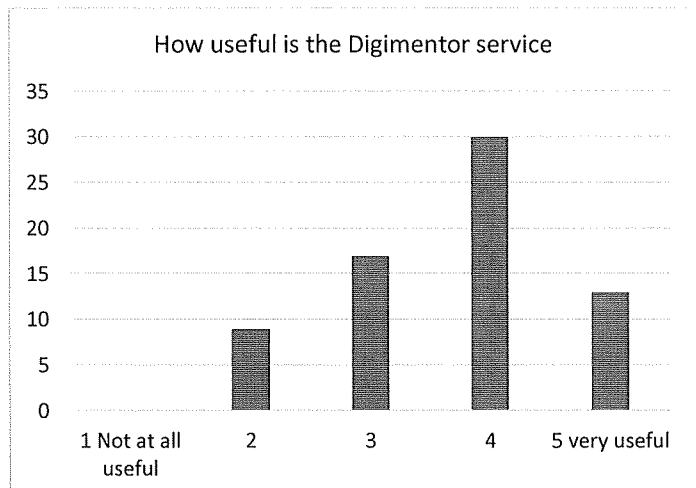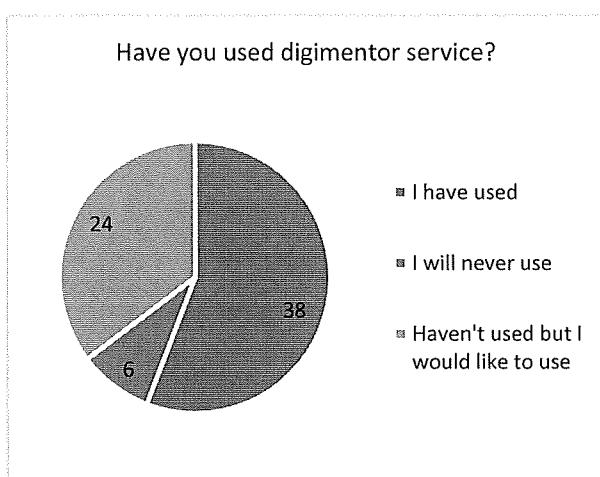
*Fig. 4.*Use of digimentor service   *Fig. 5.* Usefulness, all answers

Among the answerers, 53 % (n = 38) had used the digimentor services during 15 months that the service had been available. 33 % (n = 24) had not used the service, but would like to use, 8 % (n = 6) announced that they have not used and will never use the service. As there were only 6 answerers and their teaching experience varied from 8 year to 42 years so it cannot be said that teaching experience divides teachers at willingness to use the service. One of the answerers was about to retire within one year. Four answers were empty.

The distribution of usefulness concerning digimentor services from all answerers is presented in *Fig.* 5. After all, even though there are 6 answerers who would never use the service, nobody considers it to be totally useless. The usefulness varies a bit between the teachers that have used the service and those who have not. The distributions of usefulness's between those who have used the digimentor service and those who have not are presented in *Fig.* 6. and *Fig.* 7. From figures 6. and 7. it can be seen that the digimentor service is seen more useful among those teachers who have used the service than those who don't.
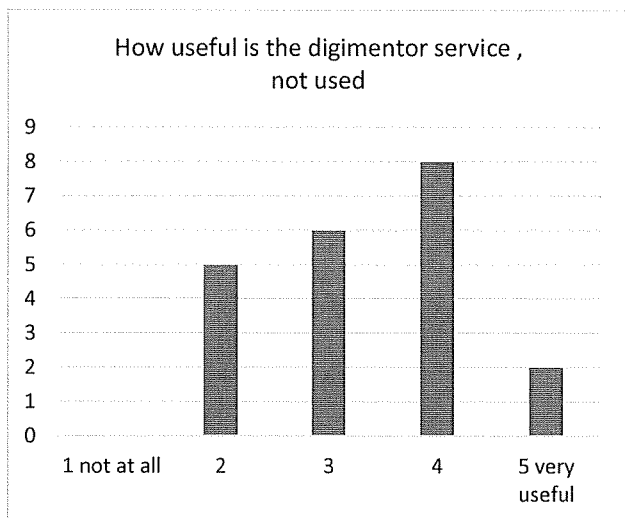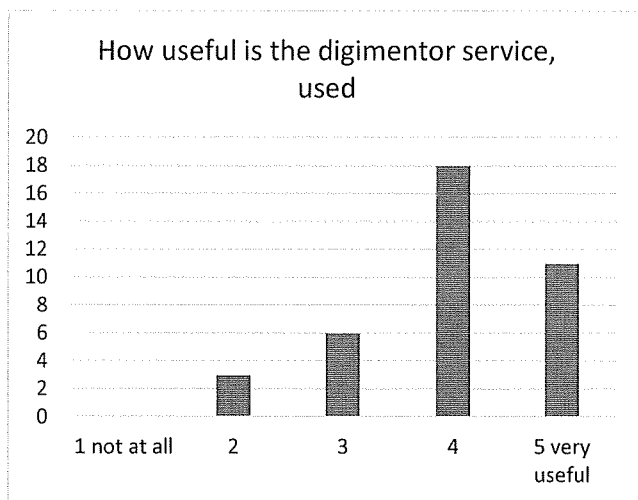

*Fig. 6.*The use of digimentor service, used   *Fig. 7.*The use of digimentor service, not used

Open-ended and multiple-choice questions concerning reasons to use digimentors revealed some thoughts behind the decisions. Those 6 answerers, who announced that they will never use the service, gave explanations like "I already master the things I need" (4 answers) or "I don't need digitalization".

Among those 24 answerers, who announced that they have not used the digimentor service, but would like to use, the most common reason was the lack of time. The second common reason was the lack of ideas or vision, what to change in teaching. The most-mentioned subjects that this group would like to be mentored in future were production and distribution of own educational videos and effective use of LMS Moodle.

Those 38 answerers, who had used the digimentor servce, mentioned several subjects on which they had been mentored. The most mentioned subjects were videos, their

educational use and the effective use of learning management system. Practical tips and hands-on pedagogical support were mentioned as the most concrete benefits gained. Overall the digimentor service was recognized as very helpful way of self-development and it is widely recommended to other teachers in the same stage of personal development. The distribution of answers to question, "Would you recommend the digimentor service to others" is presented in Fig. 8.
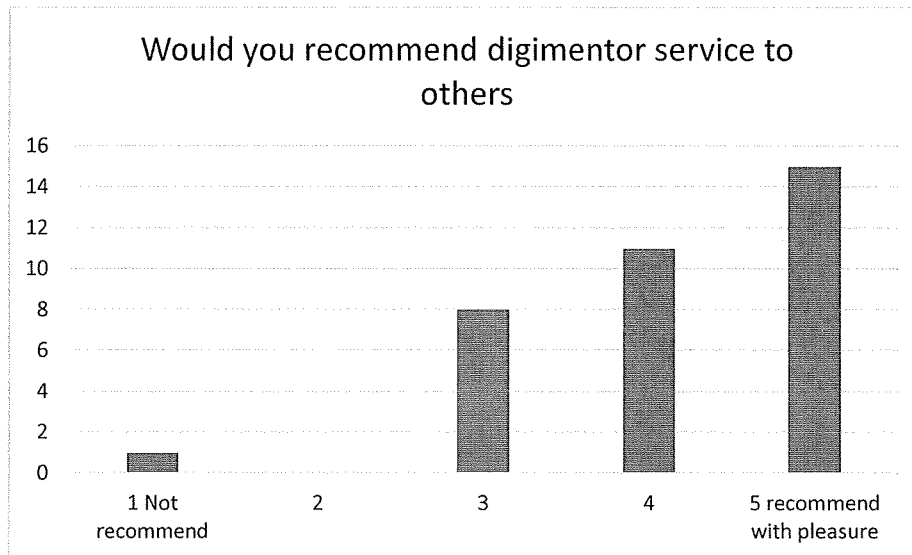

Fig. 8. Would you recommend to others

To improve digimentoring further, the answerers gave their ideas to develop the service further. The service itself was recognized as very helpful and well-working already. The improvements asked were larger workshops on most common subjects. The accessibility of the service could be improved. The digimentors were asked to be even more actively visible in the everyday life on campus. Short informative educational sessions connected to teachers' meetings suggested being worth implementing. University-wide facilities and resources to make own educational videos were mentioned.

Open-ended feedback at the end of questionnaire got many positive and supportive comments concerning the service. The critical comments focused to cost-benefit ratio of the service. Are the benefits gained from the digimentor service worth of the money spent? There were also some skepticism if digitalization improves learning outcomes.

5   CONCLUSIONS

As a conclusion, it can be said that the most of the engineering teachers see the digitalization of teaching as the future of teaching and are willing to improve their digital skills, although some scepticism occurs. The digimentor service is seen as very helpful and easily approachable service to improve teachers' own digital skills. The way to implement the support to digitalization via mentoring lowers the threshold to get help because the help comes from a person who you know and near in the working

community. Help comes from a more experienced peer who is a little further on the path of digitalization. The fact that the service is warmly recommended to others reveals that the quality of the service is good enough and teachers have got help to the issues they need.

To enhance teachers' digital teaching skills more in the future, it is easiest to affect to the teachers who announced that they have "a lack of vision, what to change" This could happen with small informative demonstrations that are tied to teachers' normal meetings and public happenings.

The digimentoring in the Tampere University of Applied Sciences will continue at least to the end of this year, hopefully further. It will not only enhance the digitalization of teaching but also support sharing and collegial culture in the whole working community.

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