

Technology-enhanced learning in nurse professional training: the case of the ENhANCE Greek pilot course

Tecnologie didattiche nella formazione professionale infermieristica: il caso del corso pilota greco ENhANCE

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ABSTRACT Technology-enhanced learning is being used in nurse education and training to promote active development of professional knowledge and skills among university students as well as among professional nurses. Although many studies have focused on enablers and barriers to e-learning in nursing education, there is still little knowledge regarding the specific functionalities that allow to instantiate flexible and effective learning activities as well as the user satisfaction of these functionalities. This study examines the students' opinions about the ease of use and usefulness of the functionalities of the Open Online Tool (OOT) platform that was implemented and used for an online initiative for professional training on Family and Community Nursing (FCN) in Greece. The results of the research showed that most of the features of the OOT were considered by the participants to be easy to use and at the same time useful in contributing consistently to their training.

KEYWORDS Nurse Professional Training; Technology Enhanced Learning; E-learning; Open Online Tool; Students' Satisfaction.

SOMMARIO L'apprendimento potenziato dalla tecnologia viene utilizzato nell'istruzione e nella formazione degli infermieri allo scopo di promuovere attivamente lo sviluppo di conoscenze e abilità professionali tra gli studenti universitari e tra gli infermieri professionisti. Sebbene molti studi si siano concentrati sui facilitatori e sugli ostacoli all'e-learning nella formazione infermieristica, c'è ancora poca conoscenza riguardo alle funzionalità specifiche che consentono di istanziare attività di apprendimento

flessibili ed efficaci così come alla soddisfazione dell'utente circa queste funzionalità. Questo studio esamina le opinioni degli studenti sull'utilità e la facilità d'uso delle funzionalità della piattaforma Open Online Tool (OOT) che è stata implementata e utilizzata per un'iniziativa online per la formazione professionale di infermieri di famiglia e comunità in Grecia. I risultati della ricerca hanno mostrato che la maggior parte delle funzionalità dell'OOT sono state ritenute da parte dei partecipanti facili da usare e allo stesso tempo utili nel contribuire in modo coerente alla loro formazione.

PAROLE CHIAVE Formazione Professionale Infermieristica; Attività Didattiche Online; Open Online Tool; Soddisfazione degli Studenti.

1. INTRODUCTION

In recent years, technology-enhanced learning is being used in nurse education and training with the aim to actively promote the development of professional knowledge and skills not only among university students, but among professional nurses as well. Online learning environments have proven their effectiveness – also when used in blended mode - to sustain students in achieving learning outcomes (D'Souza, Karkada, & Castro, 2014; Gonçalves, Rabeh, & Terçariol, 2015) as well as in practicing strategies to autonomously regulate their learning process (Amandu, Muliira, & Fronda, 2013). Especially regarding nurse training, e-learning has been defined as a potentially valuable way for healthcare professionals to undertake continuing professional development activities (Pawlyn, 2012). More specifically, some authors stressed the importance of e-learning to sustain professional improvement in specific areas, such as emergency nursing (Boczkowska, Bakalarski, Sviatoslav, & Leszczyński, 2018).

From a more general point of view, many studies have investigated facilitators/enablers and barriers to e-learning in nurse education (Button, Harrington, & Belan, 2014; Callinan, 2020; Regmi & Jones, 2020; Uprichard, 2020). Furthermore, other studies have investigated nurses' intention to use e-learning systems (Cheng, 2013), focusing on the importance of the contribution of intrinsic motivation (i.e., flow) in addition to that of extrinsic motivation (i.e., perceived usefulness and perceived ease of use). However, when we move on to nurse professional training, we know little about the way in which e-learning interventions are concretely implemented - what are the specific functionalities that allow to instantiate flexible and effective learning activities - and what the point of view of the students is in terms of user satisfaction with respect to such functionalities.

1.1. *Technology-enhanced learning in nurse professional training*

The usefulness and the preferability of online training for nurses' lifelong learning and professional development activities have been well documented and established over the years (Karaman, 2011). The nursing profession is characterized by the lack of shift stability, round the clock working hours and personal responsibilities that makes the traditional face to face educational paths difficult to manage. Online training courses are offering convenience and flexibility, along with a comfortable learning environment and in most cases low cost of participation. Given the importance of nurse education and the many factors that can hinder learning, it is important to use the most effective techniques. According to Wingard (2005), the key to the success of the nurse's personalized training is the simplicity and clarity of the training, but also the active participation of the nurse in the process. If the training is successful, the nurse will be able to apply the new knowledge and skills to maximize patient's comfort and quality of life.

The evolutionary development of the World Wide Web and the and more specific Web 2.0 have given unlimited opportunities and applications in education. The whole concept of Web 2.0 educational applications is based on personalized learning experiences. Web 2.0 applications are participatory spaces where people can collaborate and share content even if they are in different locations without the need for specialized computer skills (Jimoyiannis, Tsiotakis, Roussinos, & Siorenta, 2013; Skiba, Connors, & Jeffries, 2008). According to Ross and Myers (2017), the use of Web 2.0 tools such as Social Networks is an innovative strategy and can enhance nursing education and in most cases is well received by the students. Such application can promote students' collaboration, communication as well as peer-learning activities, thus contributing to develop skills that are not only essential within the educational path itself but are key even in nurses' everyday practice (Lau, 2011).

Based on these theoretical premises, which act as a reference background, the present study focused on describing the functionalities of an e-learning platform - i.e., the Open Online Tool (OOT) - used during the implementation of an online initiative for professional training on Family and Community Nursing (FCN) in Greece and analysing the students' opinions about the ease of use and the usefulness of each functionality of the platform. More specifically, in this study two predictors of intention to use (i.e., perceived ease of use and perceived usefulness) of the Technology Acceptance Model 3 (TAM3) (Venkatesh & Bala, 2008) were used to search for possible relations between demographic data and students' opinions. TAM3 is a largely used model to describe technology acceptance. In the context of this model, perceived ease of use refers to *"the degree to which a person believes that using a particular system would be free of effort"* (Davis, 1989, p. 320). Perceived usefulness is *"the degree to which a person believes that using a particular system would enhance his or her job performance"* (1989, p. 320).

2. STUDY SETTING

The study was conducted in the context of an online initiative for professional training on FCN targeting Greek nurses. More specifically, this initiative was carried out in the context of the European curriculum for Family and Community Nurse (ENhANCE) Project 2018-2020. The training initiative - the Greek pilot course from now on - consisted of one online course delivering three different editions, replicating each other but with different target users: one for unemployed nurses, one for nurses working in the public sector, and one for nurses working in the private sector.

2.1. The Greek pilot course

The Greek pilot course was intended to provide scientific and professional knowledge in the field of FCN. Additionally, it was designed to develop and cultivate all the necessary skills that a Family and Community Nurse in Greece needs in order to provide sufficient and quality care for patients, families, and communities. The Greek pilot course was delivered by the University of Thessaly (UTH) and - more specifically - through the Lifelong Learning center of the UTH.

The total number of enrolled students was 127 nurses: 40 unemployed nurses in the first edition of the pilot course, 43 nurses working in the public sector in the second edition of the pilot course, and 44 nurses working on the private sector in the third edition of the pilot course.

Although differentiated by target users, the three editions of the course had the same structure and organization. They all had 6 months' duration to fulfill Greek legislation requirements for the appointed ECTS (European Credit Transfer System). Particularly, the three editions of the pilot course were:

- PLC01, which started 30/09/2019 and ended 05/04/2019.
- PLC02, which started 04/11/2019 and ended 24/05/2019.
- PLC03, which started 08/12/2019 and ended 15/06/2019.

More specifically, each edition of the pilot course was organized in twenty-five (25) weeks, with the first week being of orientation to the OOT and to the course. In the remaining twenty-four (24) weeks, ten (10) thematic content modules were addressed covering all twenty-eight (28) core competencies of the ENhANCE FCN Professional Profile (Sasso et al., 2018) and fifty-three (53) Learning Outcomes of the FCN European Curriculum (Alvino et al., 2018). Each week was devoted to a different subject in which related learning outcomes were targeted. The pilot course was supported by twenty-four (24) teachers, one for each week. Teachers were responsible to organize their week in terms of educational material, teaching method, assessment and OOT functionalities to be used.

The total workload was 250 hours of teaching and 750 hours of individual study (where 50 hours consist of work-based learning). The program targeted graduated nurses with 6 EQF (European Qualifications Framework) Level (Pozzi et al., 2020).

2.2. The Open Online Tool (OOT)

The e-learning platform used for the online delivery of the course was the aforesaid OOT. With the aim of developing the OOT starting from existing technological tools, a preliminary analysis of the existing tools was conducted, together with the user requirements' definition (Manganello & Vassilakis, 2019; Manganello, Papadakis, & Vassilakis, 2019). Based on the analysis performed and the defined requirements, the OOT was designed and implemented as a technological tool resulting from the integration of the Moodle¹ platform (i.e., the OOT Courses) and the Mahara² e-portfolio management system (i.e., the OOT Community). With this configuration, the OOT could support users in multiple learning activities, both individual and collaborative, within formal and non-formal contexts.

The OOT was firstly designed to promote practice sharing and collaboration among participants and specific functionalities served exactly that purpose (e.g., forums and interactive webinars based on groups, databases). Secondly, the OOT was designed to support non-formal learning, and for this reason a specific online space was implemented (i.e., the OOT Community) to sustain the creation of a professional community that could continue to engage after the end of the formal training. Furthermore, the OOT promoted Self-Regulated Learning (SRL) (Zimmerman & Schunk, 2001; Persico & Steffens, 2017) through a bespoke functionality called 4Cs Dashboard, designed according to a framework developed by Littlejohn and colleagues (Manganello, Pozzi, Passarelli, Persico, & Dagnino, 2019; Littlejohn, Milligan, & Margaryan, 2012). The whole OOT platform also featured a fictional virtual character (i.e., Nurse Sally, played by a human tutor), who acted as a 'meta-tutor' in the online course, to support learners' meta-reflection and SRL and to stimulate the use of the 4Cs Dashboard functionality. Lastly, the OOT implemented gamification functionalities (i.e., the Level up! plugin) to trigger students' motivation through specific game-based elements (e.g., points, leaderboard, badges) that rewarded individual participation and engagement.

2.3. Learning methods and OOT functionalities used in the Greek pilot course

The Greek pilot course was mainly based on a collaborative and active learning approach, aiming at the

¹ <https://moodle.org>

² <https://mahara.org>

promotion of practice sharing among participants. Within the course, theoretical sessions alternated with active learning activities, to be carried out individually or collaboratively. Finally, gamification was applied at individual and group level, so to support students' engagement and SRL, to promote the construction of a professional community of FCNs. A list of the OOT functionalities used in the Greek pilot course is presented in Table 1.

OOT FUNCTIONALITIES	PURPOSES OF THE FUNCTIONALITIES
Webinar	This functionality was used as an online equivalent of traditional lectures. Webinars were also recorded.
Webinar based on groups	This functionality was used to create webinars with breakout rooms, where students could discuss and collaborate asynchronously.
Forum / Forum based on groups	This functionality was used to promote discussion and collaboration asynchronously.
Database	This functionality was used to ask students to share their artefacts.
Choice/Group choice	Both of these features were used to add flexibility and personalization to the learning path. Choice was used to allow teachers to ask a question and set up radio buttons which students could click to select from a number of possible options/ responses. Group choice was used for example to allow students to freely choose one group and enroll themselves in that group.
Assignment/ Assignment based on groups	This functionality was used to provide students with a space into which they (individually or in group) could submit work for teachers to grade and give feedback on.
Quiz	This functionality was used by teachers to design and build quizzes consisting of a large variety of question types, including multiple choice, true-false, short answer and drag and drop images and text.
OOT Community	This functionality was used to invite students to share "informal" contents linked to learning materials that have been explored or developed during formal learning activities in the OOT Courses.
Learning Plans	This functionality was used to organize a list of Learning Outcomes for the course, and to allow students to submit evidence of their (prior) learning, linking it with (some of) the Learning Outcomes of the course.
Level Up!	This functionality was added to the course to give experience points to students as they progress through the course's activities.
Digital Badges	Digital badges were used for celebrating achievement and showing progresses. Badges were awarded based on different criteria - chosen by the teachers.
4Cs Dashboard (Nurse Sally)	<p>The 4Cs Dashboard was used to track and provide a graphical representation of the students' learning behaviours in terms of community building and practice sharing, thus supporting their self-awareness of the enacted behaviours, triggering further their enactment, and possibly having an impact on their future professional working practice as well. More details about the 4Cs Dashboard are presented in Manganello et al. (2021).</p> <p>Nurse Sally acted as a sort of external, virtual tutor, who appeared into a specific Meta-Reflection Forum by introducing herself at the beginning of the course. She also introduced the 4Cs metaphor and, during the course, she prompted students to reflect on what was happening in the community. Moreover, she invited to access the 4Cs Dashboard (individual or community), so that students could monitor the learning process.</p>

Table 1. List of the OOT functionalities used in the Greek pilot courses.

Overall, this study was guided by the following research questions:

RQ1. What is the students’ opinion about ease of use and usefulness of the OOT functionalities?

RQ2. Is there any relationship between individual characteristics of the participants and overall scales score of the OOT functionalities?

RQ3. Is there any correlation of the OOT functionalities between the two evaluation scales, ease of use and usefulness?

3. MATERIALS AND METHODS

3.1. Data

To examine these research questions, we used - for each of the three editions of the pilot course - the demographic data of the students as well as the data of the summative evaluation for the pilot course, whose focus was on the evaluation of the main functionalities of the OOT in terms of ease of use and usefulness (Table 2), in line with the TAM3 (Venkatesh & Bala, 2008). All measures utilized a five-point Likert-type scale ranging from “Strongly Agree” (1) to “Strongly Disagree” (5).

YOUR OPINION ABOUT THE MAIN FUNCTIONALITIES OF THE OOT					
Please indicate, for each of the following functionalities of the OOT, to which extent you agree or disagree with the statement: “This functionality is easy to use” / “This functionality is useful”					
ITEMS	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
Webinar					
Webinar based on groups					
Forum					
Database					
Choice/Group choice					
Assignment					
Quiz					
OOT Community					
Learning Plans					
Level Up					
Digital Badges					
4Cs Dashboard (Nurse Sally)					

Table 2. Students’ summative evaluation – ease of use and usefulness of the OOT functionalities.

For the purpose of this study, we considered the responses to the three instances of the summative evaluation as a single dataset.

The summative evaluation was implemented in the final week of each edition of the course. The main functionalities of the OOT were assessed by 73 participants, 67 were women and 6 were men. Their age ranged from 23 to 61 years with mean at 38 years. The majority of the respondents had 0 to 9 years of nursing practice (50.7%) and were working as nurses (82.2%). The individual characteristics of the participants are shown in Table 3.

CHARACTERISTICS	CATEGORIES	N	%
Gender	MALE	6	8.2
	FEMALE	67	91.8
Age (Years)	20 – 29	16	21.9
	30 – 39	30	41.1
	≥ 40	27	37.0
	MEAN ± SD	37.97 ± 9.69	
	RANGE	23 – 61	
Nursing Practice (Years)	0 – 9	37	50.7
	10 – 19	23	31.5
	≥ 20	13	17.8
	MEAN ± SD	10.97 ± 9.20	
	RANGE	0 – 36	
Currently Working As A Nurse	YES	60	82.2
	NO	13	17.8
NOTE: SD, STANDARD DEVIATION.			

Table 3. Individual characteristics of the participants (n=73).

3.2. Data analysis

We used descriptive and inferential statistical approaches for the analysis. Means and standard deviations were calculated to describe continuous variables. The categorical variables were presented as absolute (n) and relative (%) frequencies. To investigate possible correlations, we used statistical tests such as independent t-test, paired t-test, analysis of variance (ANOVA) and Pearson's correlation coefficient. The level of significance was set at p-value ≤ 0.05. Statistical analysis was performed with the SPSS statistical software package for Windows SPSS for Windows (version 22.0, SPSS Inc., Chicago, IL, USA).

4. RESULTS

4.1. Students' opinion about ease of use and usefulness of the OOT functionalities (RQ1)

Overall, regarding the ease of use and usefulness of OOT functionalities, participants reported very good levels of satisfaction (mean overall scale score was 1.88 (SD = 0.64) and 1.66 (SD = 0.57) respectively), indicating the proposed e-learning platform as a whole was well accepted and appreciated by participants

Regarding the single functionalities, the responses are contained in Table 4. In the scale “*functionality is easy to use*”, the three functionalities that had the lowest mean score, suggesting a higher ease of use, were the following: “Quiz”, “Webinar”, and “Assignment”. On the other hand, the highest scored functionalities in the scale, indicating that participants felt less confident, were the following: “4Cs Dashboard (Nurse Sally)”, “Digital Badges”, and “Choice/Group choice” (see Table 4).

Similarly, in the scale “*functionality is useful*”, the three functionalities that had the lowest mean score, indicating a greater usefulness, were the following: “Webinar”, “Quiz”, and “Assignment”. On the contrary, the highest scored functionalities in the scale, were the following: “4Cs Dashboard (Nurse Sally)”, “Digital Badges”, and “Choice/Group choice” (see Table 4).

Compared to the evaluation scales, the “*functionality is easy to use*” scale was found to have a significantly higher mean score than the “*functionality is useful*” scale in all functionalities of the OOT except “Quiz”, “Level Up”, and “4Cs Dashboard (Nurse Sally)”. In these three functionalities no statistically significant difference was found (see Table 4).

ITEMS	THIS FUNCTIONALITY IS EASY TO USE	THIS FUNCTIONALITY IS USEFUL	P-VALUE
1) Webinar	1.44 ± 0.69	1.22 ± 0.45	0.001 (*)
2) Webinar based on groups	1.90 ± 0.89	1.63 ± 0.76	0.003 (*)
3) Forum	1.81 ± 0.81	1.60 ± 0.70	0.024 (*)
4) Database	1.85 ± 0.89	1.66 ± 0.75	0.026 (*)
5) Choice/Group choice	2.16 ± 1.12	1.82 ± 0.87	0.001 (*)
6) Assignment	1.64 ± 0.65	1.51 ± 0.60	0.024 (*)
7) Quiz	1.33 ± 0.50	1.33 ± 0.50	1.000
8) OOT Community	1.95 ± 1.00	1.63 ± 0.76	0.001 (*)
9) Learning Plans	2.00 ± 1.04	1.71 ± 0.75	0.001 (*)
10) Level Up	1.88 ± 0.96	1.77 ± 0.91	0.196
11) Digital Badges	2.32 ± 1.12	1.90 ± 0.82	<0.001 (*)
12) 4Cs Dashboard (Nurse Sally)	2.34 ± 1.08	2.16 ± 1.04	0.113
Overall Scale	1.88 ± 0.64	1.66 ± 0.57	<0.001 (*)
Note: Data are shown as mean ± standard deviation.			
Note: 5-point Likert scale was used (1 = strongly agree to 5 = strongly disagree).			

Table 4. Opinions about the main functionalities of the OOT.

4.2. Relationship between individual characteristics of the participants and overall scales score of the OOT functionalities (RQ2)

Table 5 shows the relationship between individual characteristics of the participants and overall scales score of OOT functionalities. In the “*functionality is easy to use*” scale was found that participants who were

currently working as nurses had significantly higher mean total score, indicating less ease of use, than those who were not working. No other statistically significant difference was found.

CHARACTERISTICS	THIS FUNCTIONALITY IS EASY TO USE (OVERALL SCALE)	THIS FUNCTIONALITY IS USEFUL (OVERALL SCALE)
Gender		
Male	1.74 ± 0.84	1.72 ± 0.70
Female	1.90 ± 0.62	1.66 ± 0.56
P-Value	0.554	0.788
Age (Years)		
20 – 29	1.79 ± 0.59	1.58 ± 0.57
30 – 39	1.90 ± 0.67	1.68 ± 0.59
≥ 40	1.93 ± 0.64	1.69 ± 0.55
P-Value	0.779	0.824
Nursing Practice (Years)		
0 – 9	1.82 ± 0.59	1.64 ± 0.58
10 – 19	1.97 ± 0.68	1.73 ± 0.58
≥ 20	1.92 ± 0.71	1.60 ± 0.52
P-Value	0.649	0.782
Currently Working As A Nurse		
Yes	1.95 ± 0.64	1.71 ± 0.58
No	1.58 ± 0.53	1.46 ± 0.48
P-Value	0.050 (*)	0.147
Note: Data are shown as mean ± standard deviation.		
Note: 5-point Likert scale was used (1 = strongly agree to 5 = strongly disagree).		

Table 5. Association of individual characteristics with both overall scales of OOT functionalities, ease of use and usefulness.

4.3. Correlation of the OOT functionalities between the two evaluation scales (RQ3)

Table 6 presents the correlation of OOT functionalities between the two evaluation scales, ease of use and usefulness. The results showed statistically significant positive correlation between “*functionality is easy to use*” scale and “*functionality is useful*” scale in all functionalities of the OOT and also between overall scales score.

ITEMS	PEARSON'S R	P-VALUE
1) WEBINAR	0.630	<0.001 (*)
2) WEBINAR BASED ON GROUPS	0.591	<0.001(*)
3) FORUM	0.499	<0.001(*)
4) DATABASE	0.628	<0.001(*)
5) CHOICE/GROUP CHOICE	0.658	<0.001(*)
6) ASSIGNMENT	0.675	<0.001(*)
7) QUIZ	0.669	<0.001(*)
8) OOT COMMUNITY	0.636	<0.001(*)
9) LEARNING PLANS	0.725	<0.001(*)
10) LEVEL UP	0.704	<0.001(*)
11) DIGITAL BADGES	0.671	<0.001(*)
12) 4CS DASHBOARD (NURSE SALLY)	0.602	<0.001(*)
OVERALL SCALE	0.788	<0.001(*)

Table 6. Correlation of OOT functionalities between the scales, ease of use and usefulness.

5. DISCUSSION

The main goal of this study was to examine students' opinions about the usefulness and ease of use of the functionalities of the OOT platform that was implemented and used to support an online initiative for professional training on FCN in Greece.

Our findings indicate that students expressed positive opinions - both in terms of ease of use and usefulness - about all the OOT functionalities used during the course (RQ1).

Particularly, four specific functionalities of the OOT were identified as being among the easiest to use as well as among the most useful: "Webinar", "Quiz, Assignment", and "Forum". While "Webinars" and "Quizzes" might suggest the adoption of more transmissive teaching approaches, the "Forums", as well as the "Assignments" (especially when they are group-based) suggest the implementation of more active and collaborative learning approaches, which is a direction often pointed out as desirable in literature as far as nurse training is concerned (Boyd, Baliko, & Polyakova-Norwood, 2015; Breen, 2015; Zhang & Cui, 2018).

We then examined the impact of their demographic characteristics on the overall scales score of OOT functionalities (RQ2). The only statistically significant value in this case was related to the students currently working. With respect to "functionality is easy to use" scale, they had significantly higher mean total score, indicating less ease of use. Particularly, this group of participants needed more time to get acquainted with the implemented e-learning environment. This might derive from the amount of time they could devote to the course, that – being very likely less in respect to the time dedicated by non-working students – would have benefited from easier functionalities. This result should be taken into account in other, future courses

and is probably worth further research.

Finally, this study confirmed a significant positive correlation between the two evaluation scales not only in all functionalities of the OOT, but also between overall scales score - which showed the highest value ever (RQ3). More specifically, the examination of the correlation degree between the two evaluation scales showed statistically significant strong positive linear relationship (i.e., values equal to or greater than 0.7) for “Learning Plans” and “Level Up”. The importance of “Learning Plans” as a tool to support the professional training of nurses has been already pointed out in the literature, particularly for continually assess and improve their practice (Foster, 2007). Therefore, having a tool - perceived as useful and easy to use - to assess and valorize students’ prior learning, exactly in the online training environment where the training intervention takes place - can be extremely effective from the student’s perspective. In reference to Level Up! the importance of enriching the online training environment with gamed-based elements for fostering student’s motivation and engagement should be pointed out. This is consistent with the recent literature on gamification in nursing education that suggests that interactive digital learning in the form of games, gamification, or scenario-based learning has a positive effect on learner engagement and satisfaction (Malicki et al., 2020). Among the other considered functionalities, “Forums” and “Webinars” (both also based on groups) – which showed statistically significant moderate positive linear relationship - can provide students with an opportunity for interaction, collaboration, social interaction, and real time communication. This is consistent for promoting collaboration in active learning contexts, as already underlined with respect to RQ1.

6. CONCLUSIONS

The present study examined the integration of specific functionalities in a web-based platform that was used in the context of a training for family and community nurses. The study examined the point of view of students in terms of ease of use and usefulness with respect to the functionalities offered in the e-learning environment. This is a different approach than existing studies looking at the potential contribution of e-learning environments for healthcare professionals’ training. This study focused on three axes that concerned:

- a. the usefulness and ease of use of the tools developed in the OOT e-learning environment,
- b. the degree of influence of the usefulness and the ease of use of the tools by personal / demographic data, and
- c. the correlation between the usefulness and the ease of use of the specific tools.

The results of the study pointed out that “Webinars”, “Quizzes”, (group-based) “Assignments”, and “Forums” available in the OOT were very useful and at the same time easy for the participants to consistently contribute to their training. This indicates students appreciated both the functionalities more oriented to support transmissive teaching approaches, as well as those aimed to foster more collaborative learning activities. A few difficulties have been detected in the use of some of the functionalities by the working students, thus pointing out for this specific category it is important to pay more attention to the user-friendliness of the e-learning environment. “Learning Plans” and “Level Up!” were the functionalities showing statistically significant strong positive linear relationship when examining the correlation degree between the two evaluation scales of ease of use and usefulness. This indicates students appreciated having specific tools available in the online training environment on the one hand to enhance their previous learning and on the other to foster their level of engagement in the course.

One limitation to this study is related to the measurement of the actual evidence of student achievement. As student achievement is one important factor, student satisfaction with the functionalities used could also

be measured also with respect to the learning outcomes achieved. Discussion of this point, however, falls outside the scope of this study. This could be done, for example, by tracking more data from the actual student learning activities and then analyzing them with respect to the two evaluation scales of ease of use and usefulness. In order to make the study findings generalizable to other nurse professional training settings, it is suggested that future studies explore such scenario by adopting the evaluation method proposed in this study.

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