

Incorporation of information and communication technologies in the teaching-service integration of health courses of a public university

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ABSTRACT

With the objective of analyzing the incorporation of Information and Communication Technologies (ICTs) by the teachers of nine health courses of the Federal University of Pernambuco (UFPE) in teaching-service integration activities in Supervised Curricular Training program (ECS), an observational and descriptive study with quantitative approach was carried out. The sample consisted of course and internship coordinators, as well as supervising teachers of ECS of these courses (27). For data collection, an interview form submitted to face validation and applied face-to-face was used. All 27 teachers selected were interviewed, being 92.6% female and 85.2% with doctorate degree. Most used ICTs (77.8%) in ECS, but differences were observed regarding the chosen media ($p = 0.032$). Facebook (63.0%) was the ICT most chosen and used by teachers (88.9%); followed by Email (59.3%) and WhatsApp (37.0%). Regarding the purpose of use of ICTs in ECS, communication with students and preceptors was predominant, which was also more frequently used by internship coordinators and teachers than by course coordinators ($p = 0.024$). The majority reported having medium domain of ICTs and only 18.5% received training for their use. The majority (77.8%) used distance education methods (EaD) in ECS, although UFPE makes institutional platforms available. ICTs have been incorporated with varied nuances in the teaching-service integration, with applicability differences according to the function performed by teachers in

Descriptors: Higher Education. Social media. Information Technology. Internship. Unified Health System.

1 INTRODUCTION

The transition from the industrial development model to the informational development model has caused an intense transformation in all spheres of social,

political, economic, legal and labor structure¹. Consequently, the evolution of Information and Communication Technologies (ICTs) allowed the majority of the population to have access to information,

which brought about profound changes, especially in the academic field, where knowledge is discussed and constructed².

More recently, in the context of policies to strengthen the teaching-service and community integration to advance in the consolidation of the health care model recommended by SUS, the implementation of the National Curricular Guidelines (DCN) for health courses³⁻⁶ stands out, which aims to replace the conservative teaching model and establish a formative process able to face the prevalent socio-epidemiological profile⁷. Such changes require the incorporation of new teaching-learning strategies and ICTs in their work process^{1,8-10}.

In this context, Supervised Curricular Training programs (ECS) play the role of inserting the student into the SUS¹¹ work in order to develop competencies in different health practice scenarios to face the future world of health work¹². Given the above, ICTs emerge as powerful integration tools between the service and teaching actors¹. Mendes (2008)¹³ defines ICTs as a set of technological resources that, when integrated with each other, provide automation and / or communication in existing processes in business, teaching and scientific research. It is argued that ICTs have increasingly become part of the daily activities of today's society, causing changes in the form of access to information and in the way of studying and learning.

It is considered that ICTs have a formative potential that can contribute to the expansion of pedagogical spaces and times to make curriculum more flexible and to increase the interaction among subjects, both in face-to-face and in distance education (EaD)¹⁴. However, the incorporation of their use as a pedagogical tool in undergraduate courses seems to be heterogeneous. In health education, the use of ICTs has been

consolidated and studies have shown that students are performing better when they have access to online supplementary material associated with traditional classes¹⁵. Emerging technologies are expected to make teaching evolve from the traditional teacher-centered method to a new model centered on an interactive teaching environment, now focused on students¹⁶.

In order to comply with national guidelines for university and health education, UFPE recently stimulated undergraduate courses to promote reformulation of their curricula and to implement a new Pedagogical Project, considering a broader understanding of DCN, valuing the contextualized training by means of active methodologies and favoring the early insertion of students in practice fields, for example in ECS of SUS service network^{5,7}.

In this context, the present study presents an analysis of the stage of incorporation of ICTs in ECS activities performed by UFPE health courses and their use by teachers.

2 METHODS

This study is defined as observational and descriptive with quantitative approach directed to the nine undergraduate courses linked to the Department of Health Sciences (CCS) of UFPE (Physical Education, Nursing, Pharmacy, Physiotherapy, Speech Therapy, Medicine, Nutrition, Dentistry and Occupational Therapy). CCS is located on the university campus of UFPE in the western part of the city of Recife. The study population consisted of teachers of courses involved in actions of teaching-service integration in ECS carried out in the public health care network of the metropolitan region of Recife. It was adopted as an inclusion criterion to be in the period of data

collection in the exercise of the function of course coordinator, internship coordinator and/or ECS supervisor. The sample consisted of all undergraduate course coordinators (9), ECS coordinators (9) and a teacher involved in supervising the internship of each course (9), totaling 27 participants.

Data collection was performed in the first quarter of 2017 through the application of a semi-structured interview form and organized in two blocks. The first one, for sample characterization, sociodemographic variables, professional training and teaching-service integration activities existing in each course were included. The second block included variables to verify the use of ICTs by teachers in activities related to ECS. The questionnaire was individually applied (face to face) to subjects who accepted to participate in the research and signed the Free and Informed Consent Form. The questionnaire elaboration was preceded by a bibliographical review and by the analysis of the Pedagogical Project of courses. To guarantee the quality control of data, two specialists with experience related to the study problem were selected to evaluate the questionnaire in order to obtain the instrument validation. The researcher was trained to conduct data collection with interviewees¹⁷.

Data were descriptively analyzed by obtaining absolute and percentage frequencies. Exploratory analyses were performed using the Pearson chi-square test with Fisher's exact test. Significance level of 5% was adopted. The statistical software used was the Statistical Package for the Social Sciences (SPSS Statistics, version 21.0, IBM Brazil, São Paulo, SP, Brazil).

The research project was approved by the Ethics Research Committee of the Department of Health Sciences of UFPE, CAAE: 63632816.3.0000.5208, Protocol No.

1.956.011.10.

3 RESULTS

All selected subjects responded the interview and had their forms analyzed. The sociodemographic characterization of the total sample indicated that the majority of participants were female. Only 2 teachers, course coordinators, were male. The mean age of participants was approximately 49 years (48.85 ± 10.14). About the academic degree, the majority had a degree in the area of current work, with the exception of one interviewee, ECS coordinator of the medicine course that has a degree in Social Service and PhD in Collective Health. Doctoral level degree prevailed, and supervisors in their entirety had this degree. Regarding teaching-service integration activities, all 9 courses develop ECS in the public health care network, and 5 of them also develop non-compulsory internships, in addition to other activities in the health care network (Pró-PET-Saúde projects) and 7 courses reported participating in Residency programs.

Table 1 presents the results on the use of ICTs in ECS of UFPE health courses, according to the type of study participant. It was verified that the majority of interviewees makes use of ICTs. However, a statistically significant difference ($p = 0.005$) was observed according to participants' function, since less than half of course coordinators reported using ICTs. Regarding the types of ICT most used in ECS, the preference for Facebook was verified in the total sample. There was a statistically significant difference at level of $p = 0.032$ for the use of electronic mail, with the second highest use preference. WhatsApp application was the third most commonly used means of communication in ECS activities in the total sample. Other applications like Youtube,

Instagram, and Dropbox were little mentioned. The use of the Virtual Medicine Learning Environment (AVAMED) at UFPE, in partnership with the Telehealth Nucleus (NUTES), was reported by only one interviewee, who performs the function of supervising professor at ECS of the undergraduate Medicine course.

Table 1. Characterization of the use of ICTs in curricular internships of UFPE health courses, according to the function performed

Variable	Function performed						Total		P
	Course coordinator		Supervising teacher		Internship coordinator		N	%	
	N	%	N	%	N	%			
<i>Use of ICTs</i>									0.005*
Yes	4	44.4	9	100	9	100	22	77.8	
No	5	55.6	-	-	-	-	8	22.2	
<i>Type of ICT</i>									
Facebook	3	33.3	8	88.9	6	66.7	17	63.0	0.069
WhatsApp	2	22.2	4	44.4	4	44.4	10	37.0	0.684
Email	2	22.2	7	77.8	7	77.8	16	59.3	0.032*
Instagram	1	11.1	1	11.1	-	-	2	7.4	1.000
Twitter	-	-	-	-	-	-	-	-	1.000
Youtube	1	11.1	1	11.1	1	11.1	3	11.1	1.000
DropBox	-	-	-	-	1	11.1	1	3.7	1.000
Avamed**	-	-	1	11.1	-	-	1	3.7	1.000
<i>Total</i>	9	100	9	100	9	100	27	100	

* Significant difference (5%), Fisher's exact test

** Virtual Medicine Learning Environment of UFPE

Table 2 presents the results on the use of ICTs by interviewee in their activities at ECS. It was observed that the use of ICTs for the purpose of communication with students and / or preceptors of ECS was predominant between teachers and internship coordinators, and a significant difference was found between types of interviewees only for communication with students ($p=0.005$). All teachers and internship coordinators communicated with students, while only 4 course coordinators affirmed to carry out such communication. Regarding preceptors, this communication was made by 2/3 of teachers and internship coordinators and by 1/3 of course coordinators.

Communication by means of ICTs carried out among the 3 types of teachers during ECS activities showed significant

difference ($p = 0.024$). It was reported from the total sample of supervising teachers that there was communication among them through ICT, and this type of use was less reported by course coordinators. Most ECS coordinators reported using ICTs for this purpose. Communication performed to solve ECS issues with UFPE Academic Dean (PROACAD) was observed more frequently among ECS coordinators and the variation in this frequency in the other two categories was not significant. However, there was a statistically significant difference ($p = 0.024$) among the three types of teachers, regarding the public disclosure of information about ECS. Communication using ICTs for the development of pedagogical strategies and researches at ECS was more reported by supervisors.

Table 2. Use of ICTs in the curricular internships of UFPE health courses according to the type of function performed.

Variable	Function performed								P
	Course coordinator		Supervising teacher		Internship coordinator		Total		
	N	%	N	%	N	%	N	%	
<i>Uses ICTs in internship for communication with</i>									
Students	4	44.4	9	100	9	100	22	81.5	0.005*
Preceptors	3	33.3	6	66.7	6	66.7	15	55.6	0.420
Teachers	4	44.4	9	100	8	88.9	21	77.8	0.024*
Course coordinators	-	-	8	88.9	8	88.9	16	88.9	1.000
Supervising teacher	4	44.4	-	-	8	88.9	12	66.7	0.131
Internship coordinator	4	44.4	8	88.9	-	-	12	66.7	0.131
PROACAD**	3	33.3	2	22.2	6	66.7	11	40.7	0.226
<i>Uses ICTs in internship for other purposes</i>									
Disclose information	4	44.4	8	88.9	9	100	21	77.8	0.024
Teaching strategies	3	33.3	5	55.6	3	33.3	11	40.7	0.693
Research	3	33.3	4	44.4	3	33.3	10	37.0	1.000
<i>Total</i>	9	100	9	100	9	100	27	100	

* Significant difference (5%), Fisher's exact test

** UFPE Academic Dean

Table 3 presents the results referring to domain in the use of ICTs. No significant differences ($p \leq 0.05$) were observed among groups for any of the categories of the three variables studied.

Most of the total sample reported to have medium mastery in the use of ICTs, and the group of teachers presented the lowest values. Only a portion of the total sample reported to have low or regular mastery. However, most of them reported not having ICT-related training, and all ECS coordinators reported that they did not have any training. Among the 5 respondents who reported that they did not have ICT training, most of them were course coordinators. Regarding the use of EaD methods for ECS activities, most respondents reported that they did not use them. Among those who reported using this method, the highest percentages were observed in the group of internship coordinators and the lowest among teachers.

4 DISCUSSION

The results on the characterization of the study sample reveal that the majority of teachers are women, as observed in other similar studies^{18,19}. This finding is consistent with explanations about the historical process of female insertion in the labor market related to the educational field²⁰. However, another study on the sociodemographic profile of health teachers from a public university in southern Brazil showed that more than half of them were male¹⁹.

Regarding the pattern of use of ICTs by teachers interviewed in ECS activities, it was verified that most of them, regardless of function, uses ICTs. The lower use of ICT by course coordinators in relation to the other teachers can be justified by the fact that teachers and internship coordinators can perform their functions in direct contact with students and health service professionals in which ECS are performed. This result is

consistent with the official determinations teaching and tutorial supervision should be formulated for ECS, which require that performed by teachers²¹.

Table 3. Domain in the use of ICTs according to the type of function performed.

Variable	Function performed								P
	Course coordinator		Supervising teacher		Internship coordinator		Total		
	N	%	N	%	N	%	N	%	
<i>Domain in the use of ICTs</i>									0.403
High	-	-	-	-	-	-	-	-	
Medium	7	77.8	4	44.4	7	77.8	18	66.7	
Low	-	-	3	33.3	1	11.1	4	14.8	
Regular	2	22.2	2	22.2	1	11.1	5	18.5	
<i>Training for the use of ICTs</i>									0.314
Yes	3	33.3	2	22.2	-	-	5	18.5	
No	6	66.7	7	77.8	9	100.0	22	81.5	
<i>EAD* methods at ECS**</i>									0.842
Yes	2	22.2	1	11.1	3	33.3	6	22.2	
No	7	77.8	8	88.9	6	66.7	20	77.8	
<i>Total</i>	9	100	9	100	9	100	27	100	

Fisher's exact test

* Distance learning; ** Supervised curricular internships

Likewise, supervising teachers and internship coordinators are those who use the different ICT resources more frequently, especially in the following order of preference: Facebook, Email and WhatsApp. In this study, greater use of the WhatsApp application instead of Facebook for the remote communication with ECS participants was expected to be observed, since studies have reported that WhatsApp is the most used communication resource among Brazilians today²². However, other authors²³ reported that WhatsApp is a more reserved and more intimate socialization network, because in order to share this network, users must share the number of their mobile phones with each other. Using Facebook, with just one click, the user adds friends and known people, with access to information available in users' profiles.

Regarding the purpose of ICT use in teachers' activities during ECS, greater use was observed for distance communication, which was more frequently used by ECS teachers and coordinators in the interaction with students and preceptors. This result points to an incorporation of the type of supervision mediated by digital technologies, in addition to face-to-face, and concordances were verified²⁴. Other applications of ICTs with the purpose of qualifying student training in the SUS network²⁵ were also verified, highlighting the dissemination of information and pedagogical strategies. These findings are in line with discussions about the potential use of social networks for pedagogical purposes²⁵. It is argued that Facebook, as well as Google+ and LinkedIn, have these features required to be used as virtual learning environments^{22,26}.

The application of social media as an educational resource has been increasingly observed by users at different schooling levels. More specifically in Dentistry, recent research has revealed that, according to students, the insertion of Facebook and WhatsApp as pedagogical tools is positive, since Facebook can be used due to the easy access to didactic material published in the virtual page of the discipline, whereas WhatsApp would be advantageous in quickly obtaining information about the discipline²⁷.

Therefore, the results found on teachers' preference for the use of Facebook in ECS activities suggest that studies and institutional evaluations on the feasibility of implementing AVA for this purpose should be promoted. According to Oliveira (2007)²⁸, ICTs are important tools capable of increasing the student's chances of learning and whose incorporation in the teaching practice is an irreversible fact. However, Silva and Pereira (2013)² emphasize that virtual environments should be adapted not only to the faculty profile, but also to the use context. Although a portion of respondents have reported using EaD methods, most do not use them. Even with technological advances in the field of health and education, which have expanded opportunities for distance learning in distinct virtual environments, where it is possible to interact and acquire different knowledge in real time²⁹, practice shows little use. The policies of permanent health education (EPS) in SUS consider the possibility of using EaD as a strategic tool for the training of health professionals, with the application of technological resources that enable more interactive educational processes inside and outside the service²⁹.

The Open University of Brazil (UAB) system was created in 2005 and is composed of public universities and offers higher

education courses for populations with low access to university education through the use of the EaD methodology³⁰. From 2007, UFPE began implementing the first distance-learning course³¹. However, these institutional movements do not seem to have sensitized most of health courses as to the advantages of using EaD modalities within UFPE²⁸. Among those who reported using EaD, only one interviewee reported using institutional AVA to develop distance interactions with students and preceptors of services.

It is emphasized that the insertion of recent technological innovations implied changes that require new forms of knowledge construction that go beyond teacher's training^{32,33}. In this context, the mastery of teachers in the use of ICTs was investigated. Most reported to have medium domain that was obtained in practice. These findings are consistent with other authors who identify deficiencies in the use of ICTs by teaching professionals, which are justified by the fact that an expressive number of teachers in professional practice were not born digital, whereas at the present time, students have advanced ICT skills for much faster and easier access to information and for distance interaction with other people^{32,33}. In this perspective, the acquisition of these competences by teachers is considered to be urgent, which will allow them to creatively "reconfigure" a certain technological application for more efficient pedagogical purposes, inserting the emerging technological resources into their teaching practices in an interactive environment now focused on students¹⁵.

Regarding limitations inherent to the type of study adopted, methodological care was taken, so that the results would actually express the opinion of participants, but possible information biases should be

considered.

It is hoped that the findings of this study contribute to the improvement of teacher training processes regarding the more competent use of ICTs in the educational context, establishing a dialogical network of interaction with the aim of promoting the rupture of the distance between subject and society, continuously promoting the qualification of teaching-service integration processes.

5 CONCLUSIONS

ICTs have incorporated with varied nuances in the teaching-service integration processes in health courses of UFPE, with applicability differences according to the function performed by the teacher in internship programs. Despite the AVA institutionalization, the use of multiple tools of general use was observed. Although ICTs are used by most interviewees, it is necessary to improve the domain of use of these resources to improve ECS activities with the introduction of EaD methods available in the institution.

RESUMO

Incorporação das tecnologias de informação e comunicação na integração ensino-serviço dos cursos de saúde de uma universidade pública

Com o objetivo de analisar a incorporação de Tecnologias de Informação e Comunicação (TICs) pelos docentes dos nove cursos de saúde da Universidade Federal de Pernambuco (UFPE) nas atividades de integração ensino-serviço nos Estágios Curriculares Supervisionados (ECS), realizou-se um estudo observacional e descritivo com abordagem quantitativa. A amostra foi constituída pelos coordenadores de curso e de estágios, assim como por professores supervisores dos ECS dos referidos cursos (27). Para a coleta dos dados, utilizou-se formulário de entrevista

submetido a validação de face e aplicado face a face. Todos os 27 docentes selecionados foram entrevistados, sendo 92,6% mulheres e 85,2% com doutorado. A maioria utilizava TICs (77,8%) nos ECS, mas observou-se diferenças quanto à mídia escolhida ($p=0,032$). O Facebook (63,0%) foi a TIC com maior preferência e mais utilizada pelos professores (88,9%); seguido por e-mail (59,3%) e WhatsApp (37,0%). Sobre as finalidades de emprego das TICs nos ECS, predominou a comunicação com alunos e preceptores, que também foi mais realizada pelos coordenadores de estágios e professores do que pelos coordenadores dos cursos ($p=0,024$). A maioria relatou possuir domínio mediano nas TICs e apenas 18,5% obteve formação para seu uso. A maioria (77,8%) empregava métodos de educação a distância (EaD) nos ECS, apesar da UFPE, disponibilizar plataformas institucionais. As TICs mostraram-se incorporadas com nuances variadas na integração ensino-serviço, com diferenças de aplicabilidade de acordo com a função exercida pelo docente nos estágios.

Descritores: Educação Superior. Mídias sociais. Tecnologia da Informação. Estágios. Sistema Único de Saúde.

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