● Original article

DIDACTIC STRATEGIES IDENTIFIED BY NURSING STUDENTS

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ABSTRACT: Objectives: To identify the strategies, didactic resources, and digital tools used in undergraduate nursing teaching, based on the students' opinions. **Method:** A descriptive, cross-sectional study carried out between May and August 2016, with 149 nursing undergraduates from a public university in the state of Minas Gerais. Data were analyzed in a simple descriptive way by the Statistical Package for the Social Sciences (SPSS), version 20.0. **Results:** The predominant teaching strategies were: 147 expository-dialogue classes (94.6%); and 131 expository classes (87.9%). The teaching resources were: 148 Data Show, 148 (99.3%); 146 article reading (98%); and 142 slide projections (95.3%). The predominant digital tools were: Digital PowerPoint™ presentation, 147 (98.7%); e-mail, 145 (97.4%); and Google search engine, 144 (96.7%). **Conclusion:** The results demonstrate the need for greater diversification and use of several strategies that employ information and communication technologies in nursing education.
DESCRIPTORS: Information Technology; Means of communication; Teaching; Nursing Education; Nursing.

ESTRATÉGIAS DIDÁTICAS IDENTIFICADAS JUNTO A GRADUANDOS DE ENFERMAGEM

RESUMO: Objetivos: identificar as estratégias, os recursos didáticos e as ferramentas digitais utilizados no ensino de graduação em Enfermagem na opinião dos estudantes. **Método:** Estudo descritivo, transversal, realizado no período de maio a agosto de 2016, com 149 graduandos de Enfermagem de uma universidade pública de Minas Gerais. Os dados foram analisados de forma descritiva simples pelo *Statistical Package for the Social Sciences (SPSS),* versão 20.0. **Resultados**: As estratégias de ensino predominantes foram: as aulas expositivo-dialogadas, 147 (94,6%) e aulas expositivas 131 (87,9%). Os recursos de ensino foram: *Data Show* 148 (99,3%); leitura de artigos 146 (98%) e projetor de *slides* 142 (95,3%). As ferramentas digitais predominantes foram: a Apresentação Digital *PowerPoint,* 147 (98,7%); o e-mail, 145 (97,4%) e a ferramenta de pesquisa *Google,* com 144 (96,7%). **Conclusão**: Os resultados demonstram a necessidade de maior diversificação e utilização de estratégias diversas que empreguem as Tecnologias de Informação e Comunicação no ensino de Enfermagem.
DESCRITORES: Tecnologia da informação; Meios de comunicação; Ensino; Educação em enfermagem; Enfermagem.

ESTRATEGIAS DIDÁCTICAS IDENTIFICADAS CON ESTUDIANTES AVANZADOS DE ENFERMERÍA

RESUMEN: Objetivos: Identificar estrategias, recursos didácticos y herramientas digitales utilizadas en enseñanza de grado en Enfermería, según los estudiantes. **Método:** Estudio descriptivo, transversal, realizado de mayo a agosto de 2016, con 149 estudiantes avanzados de Enfermería de una universidad pública de Minas Gerais. Datos analizados en forma descriptiva simple mediante *Statistical Package for the Social Sciences* (SPSS), versión 20.0. **Resultados:** Las estrategias de enseñanza predominantes fueron: clases expositivo-dialogadas, 147 (94,6%) y clases expositivas, 131 (87,9%). Los recursos de enseñanza fueron: *Data Show*, 148 (99,3%); lectura de artículos, 146 (98%) y proyector de diapositivas, 142 (95,3%). Las herramientas digitales predominantes fueron: Presentación Digital Power Point, 147 (98,7%); e-mail, 145 (97,4%) y el motor de búsqueda Google, 144 (94,7%). **Conclusión:** Los resultados demostraron necesidad de mayor diversificación y utilización de estrategias diferentes que utilicen las Tecnologías de Información y Comunicación en la enseñanza de Enfermería.
DESCRIPTORES: Tecnología de la Información; Medios de Comunicación; Enseñanza; Educación en Enfermería; Enfermería.

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● INTRODUCTION

The teaching-learning process in the undergraduate nursing course has been a source of questions motivating the investigation of strategies, resources, and information and communication technologies (ICTs) used in the nurse training process.

The means that the professor uses to facilitate the teaching-learning process are defined as the concept of a teaching strategy. This definition includes classroom organization, necessary materials, audiovisual resources, technical visits, case studies, group discussions, use of the Internet, and educational software, among many other options[1].

Studies related to nursing education show the need for continuous improvement the professor's pedagogy regarding the subject, as well as the use of new strategies, resources, and teaching technologies necessary to the teaching practice[2-3].

The National Curricular Guidelines for Undergraduate nursing Courses[4], approved by the National Education Council, emphasize the importance of developing strategies to guide undergraduates through information and communication technologies, because they are considered of extreme importance for training the nurse with a critical and reflective profile.

The term *information and communication technologies* refers to the combination of computer technology and telecommunications technology. This definition encompasses the use of radio, television, telephony (fixed and mobile), computers, and the Internet, having its strongest expression on the Internet and, more particularly, on the World Wide Web (www)[5].

Most teachers consider two major obstacles to the use of ICT in teaching practices: lack of infrastructure and lack of training, specifically training in the area and motivation to change teaching concepts and practices[6].

Technological development and easy access to information nowadays have allowed students' contact with a reality and knowledge beyond the traditional boundaries of school and family, because these social groups are not the only ones responsible for the dissemination of information.

Sources of information are diversified and training institutions have the duty of stimulating new teaching strategies. Thus, educators need training, especially when this teaching has a distance modality, and should assume the role of guides and mediators responsible for indicating to the student the parameters and search criteria for the construction of their knowledge in the face of diverse sources of information[7].

There are several different strategies, didactic resources, and technological tools that can positively influence the teaching-learning process. These strategies, didactic resources, and tools motivate and facilitate the development of mental processes such as observing, comparing, analyzing and synthesizing, providing experiences, and promoting the education of students[1,8-10].

In this way, the use of digital tools, such as the Virtual Learning Environment (AVA); software such as Microsoft Office—Word, PowerPoint™, and Excel—as well as social networks, appears more frequently in the teaching process in general. Nowadays, students have more access to the Internet, which allows for the development of their learning in settings other than the classroom—at home and in other environments in the school, places where there are computers, tablets, or smartphones with an Internet connection[10].

The nursing course is considered a pioneer in the use of educational technologies; however, it still faces major challenges, such as the preparation of professionals for the practice of health in computerized environments. It is imperative for educators in this area to understand and use technological resources in the teaching practice[11].

The adoption of ICT in nursing has the objective of following technological development in undergraduate, postgraduate, and health education[12]. Thus, the objective of this study was to identify the strategies, didactic resources, and digital tools used in undergraduate nursing teaching from the perspective of the students.

● METHOD

This is a cross-sectional study conducted with undergraduate nursing students from a public university in the state of Minas Gerais, Brazil. The sociodemographic profile of undergraduate nursing students was characterized and the teaching strategies, the didactic resources, and the digital tools used according to the students' opinions were identified.

Students who met the following inclusion criteria participated in the study: being regularly enrolled in the second to eighth semester of the course. It is understood that the students in the first period experienced few disciplines and teaching strategies. Therefore, they were excluded from the study, as well as were the students of the ninth and 10th periods, because they were engaged in practical activities only in the supervised academic training programs. Other losses correspond to those students who were not found after three attempted approaches by the researchers.

The instrument of data collection was structured in two parts. Part I consisted of sociodemographic data containing six questions, with one of the questions being about how the student classifies his or her knowledge of information and communication technologies. The response options were: Excellent; Good; Sufficient; Little; and None. Part II consisted of four closed questions with different alternatives about teaching strategies, didactic resources, and digital tools, and three possibilities of answer: Yes; No; and I Don't Know. Attached to part II, a tutorial with the definitions of the items investigated was made available.

Data were collected from the students of each period, at a time and place previously scheduled, between May and August 2016.

Data were recorded in a Microsoft Excel® spreadsheet, analyzed by the software Statistical Package for the Social Sciences (SPSS), version 20.0, and simple descriptive statistical analysis was performed.

The study was carried out with respect for the ethical principles and approved by the Research Ethics Committee of the Federal University of the Triângulo Mineiro (no. 2746/13).

● RESULTS

Of a total of 274 regularly enrolled students, 149 participated in the study. The non-participating students (125) were within the exclusion criterion.

The academic period with the highest number of students participating in the study was the sixth period, with 29 (19.5%) students, and the lowest number was the fifth period, with 14 (9.4%) students. There was a predominance of the female gender with 132 (88.6%) participants, and of the age group between 19 and 24 years, with 121 (81.2%) participants. Knowledge about ICT was considered by the participants based on the answers: Excellent; Good; Sufficient; Little; and None. Most evaluations were Good, with 65 (43.4%) responses, followed by Sufficient, with 41 (27.5%).

The most frequent didactic strategies were the expository-dialogue class (147; 94.6%); expository lessons, (131; 87.9%), and exposition and visit responses (130; 87.3%). The less indicated or unknown strategies were "conceptual map" and "role play." with the same frequency and percentage (51; 34.2%) and educational games (55; 36.9%). Regarding the learning environment, there was a predominance of the classroom-based environment (Table 1). It is noteworthy that only the strategy "expository-dialogue class" received answers from almost all of the participants in the research.

Table 1 - Strategies and teaching resources and the environment in which they were developed, according to nursing undergraduates. Uberaba, MG, 2016

Teaching Strategies and Resources	Classroom-based Environment (n) (%)	Virtual and Classroom-based environment (n) (%)	Virtual Environment (n) (%)	No answer
Expository-dialogue class	141 (94.6)	1 (0.7)	7 (4.7)	0 (0)
Expository class	131 (87.9)	5 (3.3)	4 (2.7)	9 (6.1)
Exposition and visits	130 (87.3)	2 (1.3)	2 (1.3)	15 (10.1)
Laboratory simulation	127 (85.3)	0 (0)	2 (1.3)	20 (13.4)
Seminar	122 (81.9)	12 (8.1)	7 (4.7)	8 (5.3)
Problem-solving	120 (80.6)	10 (6.7)	2 (1.3)	17 (11.4)
Case study	117 (78.5)	9 (6)	4 (2.7)	19 (12.8)
Text study	117 (78.6)	13 (8.7)	8 (5.3)	11 (7.4)
Directed study	114 (76.5)	7 (4.7)	9 (6)	19 (12.8)
Clinical teaching	112 (75.2)	0 (0)	4 (2.7)	33(22.1)
Other	112 (75.1)	8 (5.41)	7 (4.7)	149(100)
Portfolio	108 (72.5)	5 (3.3)	17 (11.4)	19 (12.8)
Verbalization and observation group	96 (64.4)	1 (0.7)	6 (4.1)	46 (30.8)
Teaching with research	95 (63.7)	15 (10.1)	18 (12.1)	21 (14.1)
Forum for discussion/debates	92 (61.7)	4 (2.7)	4 (2.7)	49 (32.9)
Environmental study	88 (59.2)	5 (3.3)	2 (1.3)	54 (36.2)
Orientation	81 (54.4)	22 (14.7)	10 (6.7)	36 (24.2)
Individual study	68 (45.7)	10 (6.7)	14 (9.4)	57 (38.2)
Simulated jury	57 (38.2)	0 (0)	2 (1.3)	90 (60.5)
Educational games	55 (36.9)	2 (1.3)	3 (2)	89 (59.8)
Conceptual map	51 (34.2)	0 (0)	8 (5.3)	90 (60.5)
Dramatization–Role play	51 (34.2)	2 (1.3)	9 (6)	87 (58.5)

Regarding the didactic resources used, there was a predominance of the use of *Data Show,* with 148 (99.3%) indications, followed by article reading at 146 (98%), and use of an overhead projector, and the performance of exercises, with the same frequency and percentage: 142 (95.3%). The use of a smartboard was the one with less indications, nine (6.0%), according to table 2.

Table 2 - Didactic resources used according to the nursing undergraduate students. Uberaba, MG, 2016. (continues)

	Yes (n) (%)	No (n) (%)	I don't know (n) (%)
Data Show	148 (99.3)	1 (0.7)	0 (0)
Articles	146 (98)	3 (2)	0 (0)
Exercises for content retention	142 (95.3)	7 (4.7)	0 (0)
Slide projector	142 (95.3)	7 (4.7)	0 (0)
Films/Videos	141 (94.6)	8 (5.4)	0 (0)
Supplementary reading	141 (94.6)	8 (5.4)	0 (0)
White/blackboard	136 (91.3)	13 (8.7)	0 (0)
Textbook	131 (87.9)	18 (12)	0 (0)

Overhead projector	115 (77.2)	34 (22.8)	0 (0)
Informatics lab	109 (73.2)	40(26.8)	0 (0)
Handouts	70 (47)	79 (53)	0 (0)
Smartboard	9 (6)	138 (92.7)	2 (1.3)

The more frequently used digital tools were digital presentation, through the Microsoft Office PowerPoint™ (147; 98.7%); e-mail (145; 97.4%), and Google search engine with 144 (96.7%) indications. As for the less frequently used tools, videoconferences and online forums, both had the same percentage (23; 15,4%), as shown in Table 3.

Table 3 – Use of digital tools according to nursing students. Uberaba, MG, 2016

	Yes	No	I don't know
	(n) (%)	(n) (%)	(n) (%)
Digital presentation (PowerPoint™)	147 (98.7)	1 (0.7)	1 (0.7)
E-mail	145 (97.4)	2 (1.3)	2 (1.3)
Google	144 (96.7)	2 (1.3)	3 (2)
YouTube	130 (87.3)	17 (11.4)	2 (1.3)
Social networks	123(82.6)	22 (14.7)	4 (2.7)
Slide Share	84 (56.4)	31(20.8)	34 (22.8)
Scribd	75 (50.3)	43 (28.9)	31 (20.8)
Moviemaker	71 (47.6)	56 (37.6)	22 (14.8)
Moodle	47 (31.5)	73 (49)	29 (19.5)
E-book	33(22.1)	91 (61.1)	25 (16.8)
Blog	28 (18.8)	107 (71.8)	14 (9.4)
Videoconference	23 (15.4)	109 (73.2)	17 (11.4)
Online forum	23 (15.4)	100 (67.1)	26 (17.5)

● **DISCUSSION**

At present, communication and access to information through computer networks has been facilitated and disseminated among the population, mainly through digital tools such as Internet use, e-mail, videoconferences, and social applications, among others. This fact determined a new profile among students, today considered "digital natives"—that is, those born from the 90s on, due to access to information through the Web[12].

This new profile of students demands from training institutions and their professors the application of new teaching strategies, resources, and methodologies associated with ICT; and new learning environments, which is a challenge for institutions of higher education.

A study carried out in the South of Brazil highlights that, since the advent of the National Curricular Guidelines (DCNs) for the health area, a new educational model has been required to overcome the current traditional and technicist profile, based only on the transmission of information, and the unilateral relationship between teacher and student[12]. Data from this research show that students accept most of the strategies and resources in the face-to-face environment for most teaching strategies, teaching resources, and digital tools, the score of which ranges from expository-dialogue class (141; 94.6%), to dramatization-role play (51; 34.2%).

The lack of recognition by students of teaching strategies such as educational games, role play, simulated jury, and conceptual map is highlighted. These data show that traditional teaching methodologies are still preponderant in the nurse training process in the institution studied.

It is believed that changes in the nursing teaching-learning process are necessary, especially in research institutions, and that strategies are selected based on active teaching methodologies and the appropriation of different ICT resources. These strategies allow the facilitation of learning, intensify the development of the students' intellectual and sensory abilities; motivate and stimulate their creativity; and allow the achievement of autonomy and acquisition of knowledge, skills, and attitudes [13].

It is important to emphasize the need for an assertive attitude on the part of the professor towards these new technologies, especially as a mediator of the learning process, as well as of the leaders of educational institutions, so that there is greater investment in the infrastructure of these institutions[14].

Studies point to the underutilization of ICT in the teaching of undergraduate courses in the area of health and nursing, which is in line with the data obtained in this research showing the use of ICT in seminars and expository-dialogue classes[14-15].

Digital access in educational institutions is a fundamental condition for nursing students to become professionals who are trained and qualified to meet the demands of the current job market. It is necessary to improve and train the professors regarding these technological resources for the adoption of new teaching strategies in nursing courses. In addition, the professors should be open to change, to continuously renew their teaching plans, allowing the insertion of ICT[16-17].

In this study, classroom-based teaching predominated in the teaching-learning process. Undergraduate nursing courses have been using virtual learning environments (AVA) as a means of facilitating learning, but not in the institution investigated. AVA is considered a support tool for face-to-face teaching that is important in the formation of future nurses with digital competences to be applied in their care practice[18].

It is worth noting that the Federal Nursing Council (COFEN) opposes health courses that are uniquely distance courses because it considers the methodology inappropriate to the theoretical and practical learning established by these courses. However, it is not against distance education (EaD), and recognizes the importance of the use of new educational technologies for the training of professionals who deal directly with human lives[19].

Among the didactic resources identified, Data Show, articles reading, content fixation exercises, and use of slide projectors predominated. It is known that the use of Data Show, or of educational software, spreadsheets, and other recent technological resources is not translated into real modifications in the teaching-learning process, or into innovation in the teacher's pedagogical actions, especially if these resources are used to reproduce traditional teaching situations[20].

However, the data obtained in this study indicate a distancing of the professors from the use of new didactic resources and modern digital tools in teaching activities in the nursing course, which infers that, in the nursing course of the analyzed institution, the professors are not familiar with AVA and with new teaching-learning technologies.

The digital tools identified in this research related to ICT were the presentations through the software Microsoft Office–PowerPoint™, use of e-mail, and Google's website. These data coincide with a study that observed the use of computers by professors and students in the classroom only when they need to present some task with the help of the Data Show, with slides elaborated and presented through PowerPoint™[21].

Another significant finding obtained in this research is the non-identification of the digital tools videoconferencing, online forums, and blogs by the student in the development of teaching actions. It can be inferred that they do not recognize such tools due either to the unavailability of equipment that allows the use of these digital resources, or the professor's lack of knowledge and use of these tools in their teaching practice.

Videoconferencing has been increasingly used in business, law, and education. One of its advantages is that it saves money. It is widely used in postgraduate programs in health and nursing because it allows interaction without the need of displacements, allowing the participation of geographically distant people, and optimizing the time destined for studies. However, it is worth mentioning that, in order to carry out videoconferences, an entire infrastructure is necessary, such as the availability of equipment, including computers with Internet access, broadband networks, and installation of microphones and cameras. These allow the capture and reproduction of audio, video, and virtual learning environments, and require trained personnel who can properly operate these devices[22].

A study evaluating the permanent education of the nursing team in basic health units in the distance modality showed that videoconferencing and teleconsultancy had a positive impact on staff qualification. These results reinforce the need for teacher training in the use of ICT in the research institution[23].

Online forums and blogs are digital tools that support the approach of study themes by the professor in the virtual learning environment. For these, it is necessary to know all the potentialities and applications of virtual resources to increase the teaching-learning process. The effective interaction between the participants in the online environment allows the construction of knowledge by the student mediated by the teacher [24].

It is essential that health education incorporates the pedagogical advances of active teaching-learning methodologies, establishing new guidelines for the integration between theory and practice, and breaking with the traditional dichotomy between basic education and clinical training. Universities should adopt methodologies that favor the development of critical thinking, the capacity for reflection, and the active participation of students in the construction of knowledge[25].

The use of technologies incorporated into nursing teaching, including Web 2.0 tools such as e-portfolio, web-podcasting, Wiki, Special Interest Group (SIG), tele-nursing, realistic simulation, objective structured clinical evaluation (OSCE), teleimmersion, and virtual environments, allows the creation of an innovative, critical, and reflexive environment that leads to the resignification of the teaching-learning process in nursing[25].

In this sense, other studies on this subject should be carried out, and an emphasis on technological resources and active learning methodologies is suggested. Initiating the use of digital tools, such as blogs, chat, video classes, homepages, interactive e-books, webquest applications, educational software, and digital games should be encouraged. These tools can be used in the teaching-learning process, allowing progress in the quality of nursing undergraduate education [26].

● CONCLUSION

This study allowed the identification of the teaching strategies, didactic resources, and digital tools used in a nursing course in a public educational institution, based on students' opinions.

The data demonstrated the need for greater knowledge about the diversity of teaching strategies, teaching resources, and use of digital tools by the professors in this course to promote greater interaction between teachers and students in face-to-face and virtual learning environments.

There is also a need for efforts and investments to provide resources for the ongoing training of professors in this area, ensuring a better preparation of the teacher in the face of the technological innovations offered in the educational field.

This study has as a limitation the impossibility of generalizations. However, it is believed that the reality presented here can also be found in the national scenario of higher education in nursing. This fact suggests a need to conduct other studies comparing several institutions and other areas of formation.

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