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EDUCATIONAL TECHNOLOGIES IN NURSING ASSISTANCE IN HEALTH EDUCATION: INTEGRATING REVIEW

TECNOLOGIAS EDUCACIONAIS NA ASSISTÊNCIA DE ENFERMAGEM EM EDUCAÇÃO EM SAÚDE: REVISÃO INTEGRATIVA

TECNOLOGÍAS EDUCACIONALES EN LA ASISTENCIA DE ENFERMERÍA EN EDUCACIÓN EN SALUD: REVISIÓN INTEGRADORA

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ABSTRACT

Objectives: to identify the models of Educational Technologies (TE) in the academic publications used in nursing care in health education and to analyze the models of educational technologies regarding type, scope, practicality, challenges, and validation. **Method:** this study is an integrative review with the question “What educational technology models are used in Health Education?” In the LILACS, MEDLINE and BDEnf databases, from 2002 to 2014, using as keywords “educational technology,” “Nursing assistance,” “nursing care,” “health education.” For the analysis matrix, we collected: title, journal, local, year, target public, method, TE, result and article analysis. **Results:** six articles were analyzed, one being international, the TEs used were booklets, game and educational software with different subjects and people. **Conclusion:** the studies had challenges to elaborate the TEs in public and they were practical, efficient and accessible. **Descriptors:** Educational Technology; Nursing Care; Health Education.

RESUMO

Objetivos: identificar, nas publicações acadêmicas, os modelos de Tecnologias Educacionais (TE) utilizados na assistência de enfermagem em educação em saúde e analisar os modelos de tecnologias educacionais quanto ao tipo, alcance, praticidade, desafios e validação. **Método:** revisão integrativa com a questão: “Quais modelos de tecnologia educacionais são utilizados em Educação em Saúde?”, nas bases de dados LILACS, MEDLINE e BDEnf, no período de 2002 a 2014, usando como descritores: ‘tecnologia educacional’, ‘assistência de enfermagem’, ‘cuidados de enfermagem’ e ‘educação em saúde’. Pela de matriz de análise, coletou-se: título, periódico, local, ano, público-alvo, método, TE, resultado e análise dos artigos. **Resultados:** analisaram-se seis artigos, sendo um internacional. As TEs utilizadas foram: cartilhas, jogo e *software* educativo, com diferentes assuntos e públicos. **Conclusão:** os estudos tiveram desafios para elaborar as TEs em relação ao público, mas essas tecnologias se mostraram práticas, eficientes e acessíveis. **Descritores:** Tecnologia Educacional; Cuidados de Enfermagem; Educação em Saúde.

RESUMEN

Objetivos: identificar en las publicaciones académicas los modelos de Tecnologías Educacionales (TE) utilizados en la asistencia de enfermería en educación en salud y analizar los modelos de tecnologías educacionales sobre tipo, alcance, practicidad, desafíos y validación. **Método:** revisión integradora con la pregunta “¿Cuáles son los modelos de tecnología educacionales utilizados en Educación en Salud?”, en las bases de datos LILACS, MEDLINE y BDEnf, en el período de 2002 a 2014, usando como descriptores ‘tecnología educacional’, ‘asistencia de enfermería’, ‘cuidados de enfermería’, ‘educación en salud’. Por la matriz de análisis, se colectaron: título, periódico, local, año, público dirigido, método, TE, resultado y análisis de los artículos. **Resultados:** se analizaron seis artículos, siendo un internacional, las TE’s utilizadas fueron cartillas, juego y *software* educativo con diferentes asuntos y públicos. **Conclusión:** los estudios tuvieron desafíos para elaborar las TE’s en relación al público y se mostraron prácticas, eficientes y accesibles. **Descriptors:** Tecnología Educacional; Atención de Enfermería; Educación en Salud.

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INTRODUCTION

Education is conceptualized as an action to develop the psychic, intellectual and moral faculties; Result of this action; Knowledge and practice of social habits; Good manners.¹ Education can also be defined as a fraction of the experience of self-culture. It is present whenever there are relationships between people and intentions of teaching-learning. It occurs in a variety of environments, including outside school, since everywhere there are networks and social structures of transmission of knowledge from one generation to another.²

Focus on the pedagogies and philosophies existing in that group is necessary to work the education of a population where the methodologies to be addressed differ according to the characteristics of the population. For the children, it is necessary to consider the dimensions that knowledge takes on because it is placed in a relationship linked to the general processes of the child's constitution: expression, affection, sexuality, socialization, play, language, movement, fantasy, and the imaginary.³ While the adults bring baggage to add to what is learned, it is important to undo the prejudice that only the educator holds the knowledge.⁴

The teaching and learning process must always be redefined according to the context, facilitating and streamlining this process with innovative methods. The competencies needed to redeline the activity of teaching and the use of new technologies using in this process text editors, didactic potential of the programs and multimedia teaching tools.⁵

The term technology comes from a gathering of Greek terms - *techné*, which means to know how to do, *logos*, meaning reason, having a literal meaning "the reason of knowing how to do"⁶. The most accepted current conception for Technology is the instrumentalist who understands it as a tool built for a myriad of tasks.⁶

Educational Technologies (TE) are strategies for innovating education, they have been on the agenda since 1970 where the term was already discussed by the Committee on Educational Technology of the Committee on Education and Labor, which defined it primarily as a "half born of the communication revolution that can be used for instructional purposes with the teacher, textbook, chalkboard."

In the health area, there is the educational process of the population with the same needs for innovation that globalization imposes on all other sectors. Education is one of the

fundamental resources for health improvement,⁸ and health education is defined as combinations of learning experiences, designed to facilitate voluntary actions leading to health. It is necessary to combine the multiple determinants of human behavior with multiple learning experiences and educational interventions. Another relevant issue is the need to develop educational activity in a planned way.⁹

The process of moving to an educational-technological approach can be facilitated by some conditions such as dissatisfaction with the current context, the existence of knowledge and skills, availability of resources, availability of time, existence of incentives or rewards, participation, commitment and leadership.¹⁰

Nursing as a science reaches areas such as care, management, and education. The result desired by the teaching process of health education is health promotion, and nurses are the main agents of this process.¹¹ Also, in Law 7498/86 that regulates the practice of the profession, art. 11 subsection II, defines as nursing activity exercised by the nurse as a member of the health team, education aimed at improving the health of the population.¹²

Given these educational technologies are useful and important tools suggested to be used in the teaching process that surrounds nursing care, being employed in health education as a facilitating and supportive means to provide knowledge and health to the population.

OBJECTIVES

- To identify the models of educational technologies used in nursing care in health education in the academic publications.
- To analyze models of educational technologies regarding type, scope, practicality, challenges and validation.

METHOD

This study is an integrative review, a research method that allows the synthesis of multiple published studies and allows general conclusions about a well-defined study area.¹³ The guiding question of the study is "What educational technology models are used In Health Education?".

The searches were carried out in January 2015, using the databases of the Latin American Caribbean Literature on Health Sciences (LILACS), Electronic Index Medicus of the National Library of Medicine (MEDLINE) and Nursing Database (BDEnf), through the

following Keywords: educational technology, nursing care, health education.

The inclusion criteria used were articles in Portuguese, English, and Spanish, available free of charge in these databases, complete articles published from 2002 to 2014, cited in the abstract educational technologies in nursing care in health education. Theses and dissertations, as well as articles that did not

address or refer to educational technologies in nursing care in health education, were excluded from the study. A flowchart demonstrating the selection of articles by database was prepared.

Initially, there were 77 found, 68 were not available for free, three articles had no adherence to the topic, and five were repeated in two databases.

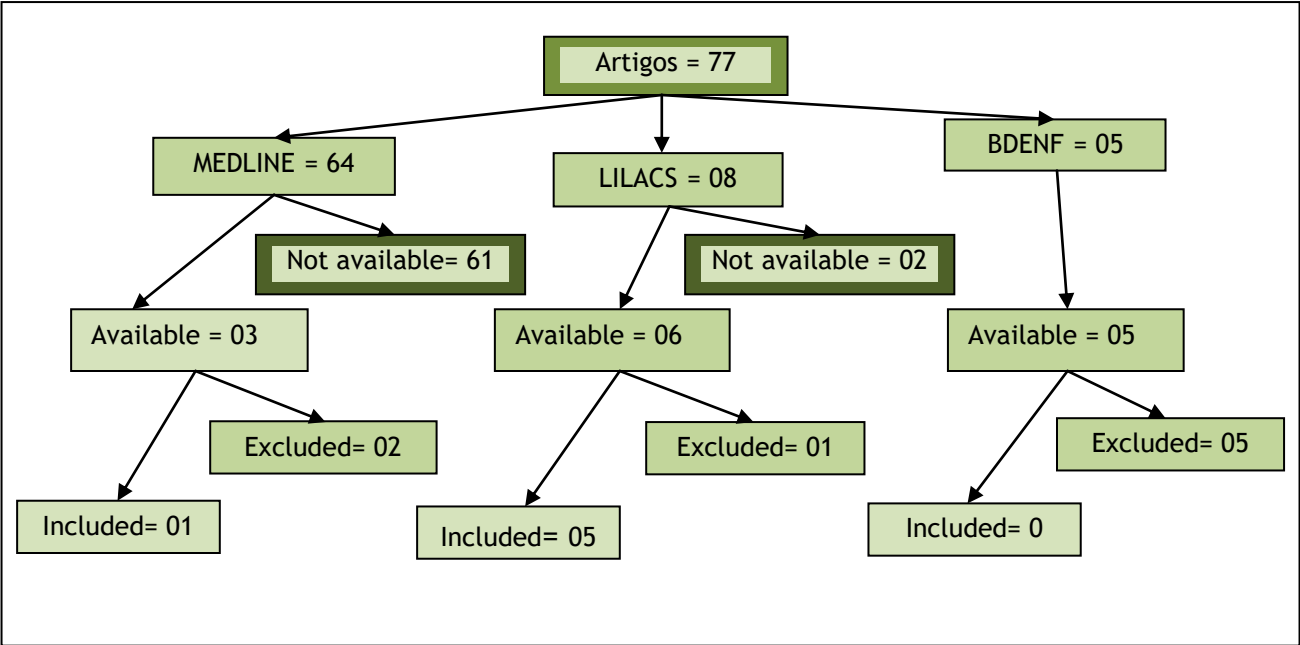


Figure 1. Flowchart demonstrating the selection of articles in the databases searched. Rio de Janeiro (RJ), Brazil, 2015.

For the initial selection of the articles found, an analysis of all the texts available for the separation of these articles was done for later analysis. After this, they were organized in tables so that they could organize the articles obtained in each base and duplicate publications were eliminated from one of them, being considered those having the complete text available. After the pre-selection of articles by a floating reading, a second analysis was carried out by a detailed reading of the selected publications to define the inclusion and exclusion of these productions according to pre-established criteria.

After the final selection of the articles, the information was collected from each one through an analysis matrix where the following sessions were collected: article title, place of publication, place of research execution, year, name of the journal, methodology, educational technology used, type of technology, target audience and

results of the use of the studied technology and analysis of the results.

The analyzed information was categorized to answer the objectives of the study and the guiding question. Three categories were elaborated: Type, Scope, and Practicity of Educational Technologies, Challenges faced with target audiences in the elaboration of TE and Validation of Educational Technology.

RESULTS

After searching the databases, there were six productions found that answered the question guiding the study. An analysis matrix (Figures 2, 3 and 4) with information of interest to the research concerning these productions was elaborated for a later more detailed description.

Title	Publication	Execution	Year
1) Manual for the self-care of women with a mastectomy: a validation study ¹⁴	Florianópolis, SC	Fortaleza, CE	2008
2) Educational technology for the practice of Nursing care with mothers of neonates under phototherapy ¹⁵	Florianópolis, SC	Fortaleza, CE	2008
3) Educational game as a health education strategy for adolescents in STD/AIDS prevention ¹⁶	Goiânia, GO	Fortaleza, CE	2010
4) Technology enhanced practice for patients with chronic cardiac disease - Home Implementation and Evaluation ¹⁷		Wisconsin	2010
5) Child health care and validation of educational technology for riverine families ¹⁸	Brasília, DF	Amazônia Legal	2011
6) Educational gerontechnology aimed at the elderly with a stoma based on the complexity ¹⁹	Porto Alegre, RS	Rio Grande do Sul	2012

Figure 2. Title, publication, execution and year of the productions selected for research. Rio de Janeiro (RJ), Brazil, 2015.

Five of the articles found were developed in Brazil and one in the USA. The southern region of Brazil was the one that published the most on educational technologies in health education. However, the Northeast

region of Brazil was the region that most studied the subject. There were two publications in 2008, two in 2010, one in 2011 and 2012.

Text	Type of TE	Method	Target audience
1	Educational Manual	Methodological development research	Women with a mastectomy
2	Educational Album	Descriptive, qualitative study in which educational material was created and applied to didactic resource.	Mothers whose newborn children use phototherapy.
3	Domino type game	Descriptive exploratory study developed in a public primary and secondary school.	Adolescents.
4	Software	A study developed in a residence of 282 patients that aims to improve the self-care of patients with chronic cardiac problems.	Chronic heart patients.
5	Educational booklet	Qualitative descriptive approach with a quantitative and qualitative approach.	Families are bordering the Tapajós River.
6	Educational booklet	Qualitative study with the creation and validation of an educational primer for elderly people with stomas.	Elderly with a stoma.

Figure 3. Type of TE, Method and target audience of the productions selected for the research. Rio de Janeiro (RJ), Brazil, 2015.

Most studies chose the educational booklets with TE (including the manual and the album), being four works developed with this resource. There was only one used a game like TE, and one study used software, which is not

Brazilian. As a method, two publications used a descriptive study, and four had a qualitative approach. All articles addressed different target audiences.

Text	Results	Conclusions
1	The manual was considered suitable to use it in health education.	The TE helps to improve the quality of life of the woman with mastectomy.
2	The TE took knowledge about phototherapy for mothers with children under this procedure.	The TE enables the communication and the humanization of care.
3	The game was effective in acquiring knowledge about STD/AIDS prevention.	The TE allowed reflective, interactive and participatory activities, to facilitate the unfolding of the process and to attract the attention of the public.
4	Improved quality of life management and chronic heart disease, reducing the number of unscheduled consultations to a hospital.	It is possible to create web resources tailored to the patient, the benefits of this intervention were most noticeable in the early post-discharge phase of care.
5	Validating the booklet created to bring information about various contents to families rivers.	It is necessary to promote the health of Riverside families, and it is indicated that health professionals dedicate to the construction of didactic materials.
6	The educational booklet is shown as a useful product for the care of the elderly patient.	The booklet emerges as a pedagogical resource capable of facilitating the dialogical integration between the nurse-elderly with a stoma and the family.

Figure 4. Result and Conclusions of the productions selected for the research. Rio de Janeiro (RJ), Brazil, 2015.

DISCUSSION

◆ Type, Scope, and Practicality of Educational Technologies

Except for Text 3¹⁶ and Text 4,¹⁷ all the literature covered in this study dealing with health education used a booklet like TE, and the first one explored one game as a tool, and the second one used software.

The Text 5¹⁸ developed a booklet to assist in the care of the children of Riverside families in the Amazon as TE. The tool created by this group comes to ease the health problems of this population that only has access to medical, nursing and dental services every 40 days through a hospital boat. In the absence of this boat, there is only one community agent in the region. This TE showed to be extremely practical, accessible language, containing fundamental information to maintain the health of these children.

The TE of Text 6¹⁹ is an educational booklet called Gerontechnology that gathers information for the elderly and their family member. Demonstrating the importance of family inclusion in the process of care of the elderly, this technology is also directed to them. They also used the evaluation of the knowledge that was acquired by these elderly people as a strategy in the implementation of TE.

One very important information to be addressed when it comes to health education is the rights reserved to a target audience. In

the case of the elderly patient, many of their doubts revolve around how they will get the material they need because of their stomach. An essential information also addressed in this text.

Text 2¹⁵ creates a booklet technology for neonates under phototherapy. An approach for mothers is very important given the anguish of seeing their newborn children under lights that they are unaware of their need. This material was created in an accessible way, as it can be consulted in any reality. The strategy was even more effective with the interference of a guide to orient and adapt the language.

The TE of Text 2 showed positive results explained by the speech of the mothers of the group evaluated as “the album that the nurse (researcher) showed me was great. It helped me a lot; it helps mothers a lot because it takes away doubts from many things that we do not know.”^{15:41}

In the last work addressed as TE in a booklet, Text 11⁴ created an educational manual for the self-care of the woman with a mastectomy. This one also proved practical, with simple and incisive language to which it was proposed. It is a well-developed, easily understood material that assists and improves patient knowledge and satisfaction, developing actions that influence the health pattern and favors decision-making, as well as contribute to reducing the use of services and costs with health.

The only Brazilian paper that does not address a TE in booklet format is Text 4¹⁶ as previously highlighted. This group developed a domino game with information about sex, STDs, and AIDS. According to the research, this is a tool aimed at working with groups of adolescents about sexuality and diseases that can affect them in the case of carelessness. This tool is dynamic and suited to the intended audience as adolescents need dynamic stimuli to stay focused.

The study carried out pre-test and post-tests with the group of adolescents who participated in the game to evaluate the results provided by TE. It was noticed assimilation of the concepts provided by the game and the intervention of the researchers in the group. The researchers believe that despite these results, it is not possible to assume a change in the behavior of this group because the safe sexual behavior is a consequence of the level of knowledge associated with the cultural context and the beliefs presented by it.

Text 4¹⁷ is an American study that aimed to develop and analyze software with chronic heart disease patients who were under home care. Their goal was to improve the patient's quality of life and consequently their self-care through software that provided information as they assessed that the patient was prepared to receive this knowledge.

Due to differences in Brazilian and American health systems as well as the extent of education and difference in the training of people in both countries, it is debatable whether the model used in the article could be well used in Brazil. It is important to point out that any idea of health education models is accepted, and there is the possibility of extracting ideas in an attempt to adapt the Brazilian reality.

♦ Challenges faced by target audiences in the elaboration of TE

In this category, the productions were analyzed regarding the challenges found to elaborate the TE. Although each author has encountered odd experiences, since each has worked a different audience, the strategies found to overcome these challenges can be adapted to other audiences.

The text 5¹⁸ addressed in its work the creation and implementation of educational technologies for a specific population, the Riverside families in the care of their children. As the author cites, the Caboclos bordering the Amazon are populations that are often isolated, with a peculiar way of life that segregates them from urban society. The

process of knowledge performed of the target public was extremely important for the authors to overcome this obstacle, described carefully in their research. It introduced as methodological phase the process of getting to know the riverside population through visits to the community to follow and experience their reality.

This process used by the researchers was fundamental, so they could apprehend the difficulties of health, popular knowledge and mainly to gather informative resources to compose their educational technology. The authors used the knowledge of home medicines and food available in the region as allies in the maintenance and promotion of the health of the Riverside after the education of the correct way of using them.

For Text 1¹⁴ and Text 6,¹⁹ the first one creates a TE for women with a mastectomy and the second was for patients with a stoma. These two people have the aggravation of having undergone alterations of the own image, characterizing them as an extremely vulnerable group, having fears and apprehensions beyond all doubts with the health issues related to their pathologies.

In the question of the preparation of TE, Text 6¹⁹ sought to punctuate information that is particularly directed to the aspects of the disease of its population, the mode of stoma functioning and care before taking a holistic approach to the health of these patients. It is important to emphasize that due to the complexity of the information to be given and the need for knowledge of the public, it is necessary to specify the information, without this meaning that the whole has been ignored.

Also in the elaboration of the research above, the authors were careful to use simple language; make the association of theoretical and practical knowledge; alternate written words and images and use short phrases to facilitate the understanding of the information to be transmitted. In the implementation process, we also tried to alternate verbal and non-verbal communication and make the booklet attractive (the type of TE used by the group); make coherence between text and image to facilitate the memorization and retrieval of the information transmitted favoring its assimilation. It is still worth mentioning the fact that they consulted elderly patients with stomas for some time to know what information and knowledge would be interesting to compose this TE.

On the other hand, Text 2¹⁵ works with the population of mothers of neonates in need of hospitalization. As the authors describe, the

experience for these mothers is shocking. Thus, it is necessary to educate these mothers about the pathology of their children to minimize their fears.

In the study elaborated in Text 3¹⁶, the public addressed were adolescents in groups, addressing topics such as sex and STDs. As the more difficult issue to work for this audience, the authors described that as they were in a group, they were difficult to be controlled and kept silent to listen to the instructions of the TE, and also to make them overcome the shyness of speaking openly on the subject.

Text 4¹⁷ worked with patients newly discharged from a hospital with chronic heart disease who still needed home care. As this group used software with TE, they needed these patients to be literate and self-sufficient despite the disease.

♦ Validation of Educational Technology

Validity is the degree of an instrument appropriate to perform the assessment of what it is supposed to measure. Thus, when an instrument is submitted to the validation procedure, it is not the instrument that is being validated, but rather the purpose for which the instrument is being used.¹⁴

It is understood that the validation process of TE is essential for the responsibility that each researcher has to take information in the correct way and with the greatest possible coverage. This process is most often done by experts in the area, who help by giving suggestions for suitability of the material. There is no obligation for the tool to be evaluated by the user of the tool, but it is advisable that this measure is performed to verify if the TE has the desired reach.

Text 1¹⁴ and Text 5¹⁸ validated their TEs with the help of tool specialists and users, concluding that their technology is perfectly plausible for use in their patients.

The Text 6¹⁹ used an opinion of only one specialist associated with the public in its evaluation, and it would be interesting that they could listen to other experts because it would enrich their technology even more.

Text 2,¹⁵ Text 3¹⁶ and Text 4¹⁷ did not validate their TEs. However, they applied their tools to the target audience and obtained good results. If the TEs were validated with specialists, they could become even more effective in the process of health education.

CONCLUSION

Given the above, it is shown the importance of using new tools in health education of the population and how

educational technologies can prove effective in this process. The study shows the importance of the knowledge of the target audience to be reached regardless of the type of TE that is intended to be addressed. This knowledge provides greater interaction with this audience and addresses educational content by the reality without running the risk of material becoming “out of reach” for this audience.

As evidenced in the revised literature, another important aspect to be addressed is the language in the technologies that make understanding easier for the lay population, making TE truly effective. Also, the association of theory with lived practice is also a strategy that can be used for assimilation of past content.

Nurses need to be aware of the scope and ease of use of TEs, since the greater the ease of use of the TE, the better the dissemination of the content. This should be effective even when used without guidance, and should be self-explanatory. Despite globalization and increased use of the computer, the study shows that the educational technologies most used for the public studied are the educational booklets.

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