

Educational technology in youth's health: A conceptual analysis

Tecnologia educativa na saúde das juventudes: Uma análise conceitual

Tecnología educativa en salud juvenil: Un análisis conceptual

RESUMO

Objetivo: Analisar o conceito de tecnologia educativa na saúde das juventudes. **Método:** Trata-se de uma Revisão Integrativa, ao qual se aplicou o método de análise conceitual de Walker e Avant. Foi realizada uma busca nas bases BDENF, LILACS e SciELO com 14 estudos que se relacionaram à temática. **Resultados:** O conceito de "Tecnologia educativa na saúde das juventudes", define-se, como: "Expressão de comunicação e conhecimento em saúde, através de múltiplas mídias, linguagens e ferramentas eficazes para a promoção e educação em saúde". Os principais antecedentes achados: conteúdos desintegrados da realidade; políticas públicas deficientes; relações verticalizadas na área da saúde; metodologia tradicional de ensino; Já os principais atributos, foram: informação, acesso à comunicação, ferramentas tecnológicas, interação virtual, inovação, multimídias, reflexão, internet, oficinas e jogos educativos, metodologias participativas, entre outros. **Conclusão:** O uso desse conceito no Brasil ainda é restrito, refletindo em uma caracterização incompleta do estado da arte deste.

DESCRIPTORES: Tecnologia; Tecnologia da informação; Educação em saúde; Adolescente; Juventude..

ABSTRACT

Objective: To analyze the concept of educational technology in youth health. **Method:** This is an integrative review, to which the conceptual analysis method of Walker and Avant was applied. A search was carried out in the BDENF, LILACS and SciELO databases with 14 studies that were related to the theme. **Results:** The concept of "Educational technology in youth health" is defined as: "Expression of communication and knowledge in health, through multiple media, languages and effective tools for health promotion and education". The main antecedents found: contents disintegrated from reality; deficient public policies; vertical relationships in the health area; traditional teaching methodology; The main attributes were: information, access to communication, technological tools, virtual interaction, innovation, multimedia, reflection, internet, workshops and educational games, participatory methodologies, among others. **Conclusion:** The use of this concept in Brazil is still restricted, reflecting an incomplete characterization of its state of the art.

DESCRIPTORS: Technology; Information Technology; Health education; Adolescent; Youth.

RESUMEN

Objetivo: Analizar el concepto de tecnología educativa en salud juvenil. **Método:** Se trata de una revisión integradora, a la que se aplicó el método de análisis conceptual de Walker y Avant. Se realizó una búsqueda en las bases de datos BDENF, LILACS y SciELO con 14 estudios relacionados con el tema. **Resultados:** El concepto de "Tecnología educativa en salud juvenil" se define como: "Expresión de la comunicación y el conocimiento en salud, a través de múltiples medios, lenguajes y herramientas efectivas para la promoción y educación de la salud". Los principales antecedentes encontrados: contenidos desintegrados de la realidad; políticas públicas deficientes; relaciones verticales en el área de la salud; metodología de enseñanza tradicional; Los principales atributos fueron: información, acceso a la comunicación, herramientas tecnológicas, interacción virtual, innovación, multimedia, reflexión, internet, talleres y juegos educativos, metodologías participativas, entre otros. **Conclusión:** El uso de este concepto en Brasil aún está restringido, lo que refleja una caracterización incompleta de su estado de la técnica.

DESCRIPTORES: Tecnología; Tecnología de la información; Educación para la salud; Adolescente; Juventud.

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INTRODUCTION

The advent of technology has provided new and engaging strategies for learning with the active participation of those involved¹, considering that the use of technological tools in the development of educational processes aims to overcome the traditional model of education to focus on the co-production of knowledge and autonomy.²

In this way, educational health technologies must be problematized and contextualized in the social and human dimension in which they are produced, making an interface between education, communication and technology, subsidizing processes in which knowledge is sought in order to intervene with best practices in health education.³

To carry out these educational practices, professionals must make use of Information and Communication Technologies (ICT), considered integrated technological resources that stimulate and disseminate knowledge through simultaneous tools of sounds, images and texts.⁴

These ICTs are now called Digital

Information and Communication Technologies (DICT's), causing changes in the way of living in society by bringing together several resources in a single device, such as cell phones, tablets or laptops, establishing, for that, in addition to a convergence of media and languages, a cultural convergence.⁵

The emergence of new media in DICT's creates possibilities for new formats of expression and communication, and, at school, a way for the student to make sense of what he does, increasing their motivation for learning by approaching the curricula, that is, these DICT's provide a reconfiguration of pedagogical practice, openness and plasticity of the curriculum and co-authorship of teachers and students.⁶

In this way, educational technologies in health have been studied by several professional categories, as a way of understanding them so that they can better work with youth in the proposed actions. Thus, an analysis of the concept of 'educational technology in the health of youth' is considered relevant, in order to strengthen its foundations in the field of health and enhance its use.

A study carried out on the concept of technology in nursing pointed out that changes in health care demands require nurses to have knowledge of this concept, in order to apply it to decision-making, raising the quality of patient outcomes. But popular knowledge about this concept, reported to modern artifacts, makes its understanding in nursing even more difficult.⁷

Another research on technologies and nursing practice showed an increase in the use of technologies, as subsidies for nursing actions, most notably in the last two years. However, there is still a small amount of works that mention or use relationship technologies or light technologies. This fact may be caused by the professionals' difficulty in defining what these technologies are and recognizing them as technological resources.⁸

The nurse, when exercising the role of educator, must develop educational strategies that facilitate meaningful learning.⁹ In this direction, the present study aims to analyze the concept of educational technology in youth health according to the conceptual model of Walker and Avant.¹⁰

METHOD

This is an Integrative Review, carried out between May and June 2019, to which Walker and Avant's¹⁰ method of conceptual analysis was applied in search of the formation of the concept "Educational technology in the health of youth".

The time frame was used, with the purpose of highlighting the publications on the subject in question, from the last 10 years, in the period from 2009 to 2019.

The selection of articles took place between May and June 2019. And to start the concept analysis, a search for articles was carried out in the bases Latin American and Caribbean Literature in Health Sciences (LILACS), Nursing Database (BDENF) and Scientific Electronic Library Online (SciELO), using as inclusion criteria the relationship with the theme, free availability and full texts in Portuguese, English and Spanish.

In this research, we opted for the concept analysis proposed by Walker and Avant¹⁰, which simplified the 11 steps contained in the Wilson model to eight¹¹, which can occur simultaneously, facilitating understanding – they are: 1. Selection of the concept, which reflects the topic or area of greatest interest to the researcher; 2. Determining the objectives of the conceptual analysis, which refers to its purpose; 3. Identification of possible uses of the concept, in which a general search is carried out in the literature in order to get an idea of how it is being focused or applied; 4. Determination of critical or essential attributes, a fundamental step of the analysis, with identification of words or expressions that appear repeatedly and that demonstrate the essence of the concept; 5. Construction of a model case, which is the elaboration of an example based on reality; 6. Development of other cases that help in deciding the essential attributes of the concept; 7. Identification of antecedents and consequences, which

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are the incidents of the phenomenon that occur a priori or a posteriori of it;⁸. Definition of empirical referents of essential attributes, characterized as categories or classes of observable phenomena demonstrating the occurrence of the concept.¹²

In this research, the selection of the concept, the determination of the objectives of the analysis and the defining attributes, the identification of the model and contrary case and of the antecedents and consequents were used, which corresponds to steps 1, 2, 4, 5, 6 and 7. These steps were sufficient to meet the objective of this study.

Searches in the databases were carried out using the following terms: Technology, Information Technology, Health Education, Adolescents, Youth. Of these, only the term 'youth' is not a descriptor in Health Sciences (DeCS), but its use has become essential for the purpose of the research.

In the LILACS database, 41 studies were located from the intersection: Technology and Health Education and. Then, the inclusion criteria were applied, duplicates were excluded and the abstracts were read, resulting in eight studies, respectively. By crossing Information Technology and Education in Health and Youth, 14 studies were selected and, after applying the inclusion criteria, duplicates were excluded and the abstracts were read, resulting in only one study. Thus, nine studies composed their final sample in the LILACS database, eight articles and one thesis.

In the BDENF, 23 articles were found with the crossing Technology and Education in Health and Youth, and after applying the inclusion criteria and elimination of duplicate articles, 10 were selected for analysis. Of these, after careful reading, only four were listed to compose the sample of this investigation.

In the SciELO database with the crossing Technology and Education in Health and adolescent, seven articles were evidenced, and after exclusion of

duplicates, application of inclusion criteria and careful reading of publications, only one article was selected.

After selecting the articles, a more in-depth reading was performed, and thus, the titles and abstracts were read by the researcher, and the non-relevance of the study resulted in its exclusion.

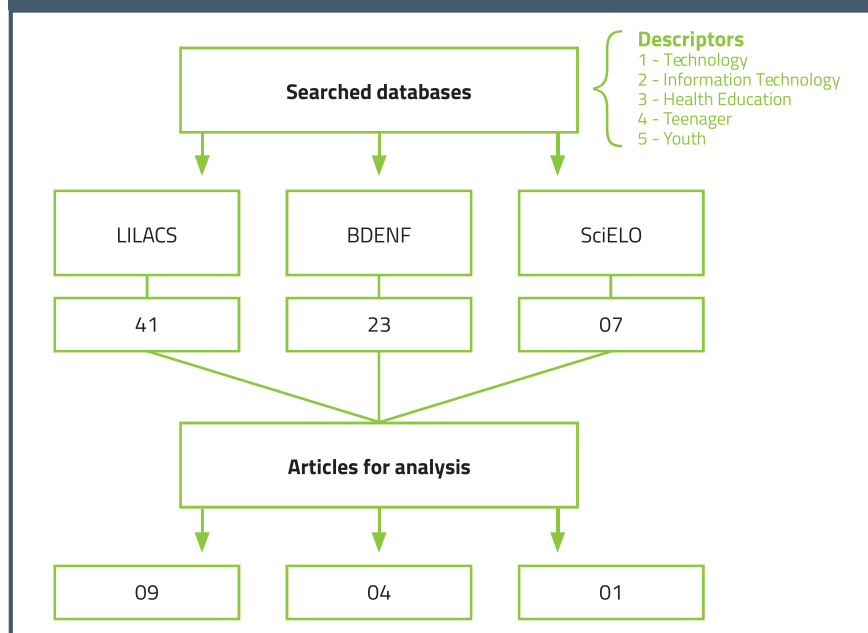
At the end, the complete downloads of the studies were made, and two Excel libraries and spreadsheets were created with identical content for the complete selection of complete post-reading, organization and summarization of the main information, constituting a database, enabling the researchers to analyze the applicability of the review, which included the following variables: article number (N), title, authors, country of study, year of publication, themes of the games and age group. Studies "A" for articles and numbers from 1 to 12 were also used for identification, for example: (A1, A2, A3...A12).

Thus, 14 studies were used as a basis for the proposed concept analysis, as shown in Figure 2.

At the end, the complete downloads of the studies were made, and two libraries and Excel spreadsheets were created with identical content for the complete selection of complete post-reading, organization and summarization of the main information, constituting a database, allowing the researchers to analyze the applicability of the review, which included the following variables: article number (N), title, authors and type of study, year of publication. Studies "A" for articles and numbers 1 to 14 were also used for identification, for example: (A1, A2, A3...A14).

To proceed with the search for the definition of the concept, attributes, antecedents and consequences in the studies, the following questions were carried out: How is the concept of educational technology in youth health defined? What are the specificities that the concept under analysis presents? What events contribute to the existence of the concept under analysis? What are the

Figure 1. Synthesis of searches in LILACS, BDNF and SciELO databases.



Source: Prepared by the authors.

Table 1. Characterization of studies on the use of Educational Technologies in Youth Health, according to Title, Authors and Typology. Fortaleza (CE), Brazil, 2020.

Nº	TITLE	AUTHORS	STUDY TYPE	YEAR / COUNTRY
A1	Use of Information and Communication Technologies in the health education of school adolescents. (Uso de Tecnologias da Informação e Comunicação na educação em saúde de adolescentes escolares.)	Ricardo B C, Marina N F, Luciana L G N M et al13.	Experience Report	2012/ Journal of Health Informatics (J. Health Inform.). Brazil.
A2	Validation of educational material as a pedagogical tool on contraceptive methods for adolescents. (Validação de material educativo como ferramenta pedagógica sobre métodos contraceptivos para adolescentes.)	Almeida TG de, Vasconcelos EL, Trindade RFC da et al14.	Methodological Research	2016/ Revista de Enfermagem UFPE online. Brazil.
A3	Use of information and communication technologies in health education in adolescent health: Integrative Review. (Uso de tecnologias da informação e comunicação na educação em saúde em saúde de adolescentes: Revisão Integrativa.)	Pinto ACS, Scopacasa LF, Bezerra LLAL et al15.	Integrative Review	2017/ Revista de Enfermagem UFPE online. Brazil.
A4	School blogs about sexuality: Exploratory documental study. (Blogs escolares sobre sexualidade: Estudo exploratório documental.)	Gabriela Petró VALLIa, Ana Luísa Petersen COGO16.	Quantitative, exploratory documentary research	2013/ Revista Gaúcha de Enfermagem. Brazil.

results of applying the concept under analysis? In the construction of the model and contrary cases, we started with the following questions: Which model case of educational technology in youth health demonstrates all the attributes of the definition of the concept?

RESULTS

Thus, the characterization of the studies included in the sample, on the use of educational technologies in the health of youth, according to title, authors and typology are shown in table 1.

The selected scientific production (Table 01) was published from 2009 to 2018, with two studies from 2018 being identified; one in the year 2017; one in the year 2016; two from 2015; one from 2013; two in 2012; one in the year 2011; one from 2010; and three studies in 2009. Of the 14 selected studies, 13 studies were in Portuguese and one in Portuguese/English. And 13 were scientific articles and a thesis research.

Below, in table 2, the main definitions that were identified in the literature for the concept in question are exposed.

According to the main definitions found in the selected researches, according to table 02, on the concept of "Educational technology in the health of youth", in short, this concept is defined, as: "Expression of communication and knowledge in health, through multiple media, languages, resources and effective tools for health promotion and education, that arouse the interest of adolescents, enabling the empowerment of subjects for social transformation and improvement of their quality of life".

Continuing, in table 3, we present the findings of the literature on the antecedents, attributes and consequences of the concept "Educational technology in youth health", according to the numbering of the studies selected in table 1.

The main antecedents of "educational technology in youth health", according to the documents analyzed, were: School environment with disintegrated

A5	Validation of an educational game about sexuality for adolescents. (Validação de jogo educativo sobre sexualidade para adolescentes.)	Sousa MG, Oliveira EML, Coelho MMF, et al17.	Methodological Research	2018/ Revista Online de Pesquisa. Brazil.
A6	The use of facebook in health learning: perceptions of school adolescents. (O uso do facebook na aprendizagem em saúde: percepções de adolescentes escolares.)	Aragão JMN, Gubert FA, Torres RAM, Silva ASR, Vieira NFC18.	Intervention, longitudinal study with a quantitative-qualitative approach	2018/ Revista Brasileira de Enfermagem. Brazil.
A7	Construction and validation of an educational booklet for the prevention of sexual violence in adolescence. (Construção e validação de cartilha educativa para prevenção de violência sexual na adolescência.)	SILVA, K. L.19.	Methodological and validation research	2015/ Tese Universidade Federal do Ceará (UFC). Brazil.
A8	Health communication: use of a web radio with schoolchildren. (Comunicação em saúde: uso de uma web rádio com escolares.)	Torres RAM, Silva MAM, Bezerra AEM, Abreu LDP, Mendonça GMM2.	Experience Report	2015/ Journal of Health Informatics (J. Health Inform.). Brazil.
A9	"Papo Irado": Technology of popular education in health with adolescents. (“Papo irado”: Tecnologia de educação popular em saúde com adolescentes.)	Manuela M F C; Karla CLM, Sara TFB et al.20.	Methodological Research	2011/ Revista de APS - Atenção Primária à Saúde.
A10	Educational technologies in the school context: health education strategy in a public school in Fortaleza-CE. (Tecnologias educativas no contexto escolar: estratégia de educação em saúde em escola pública de Fortaleza- CE.)	Gubert FA, Santos ACL, Aragão KA, et al21.	Action Research	2009/ Revista Eletrônica de Enfermagem. Brazil.
A11	Educational game as a health education strategy for adolescents in the prevention of STD/AIDS. (Jogo educativo como estratégia de educação em saúde para adolescentes na prevenção às DST/AIDS.)	Barbosa SM, Dias FLA, Pinheiro AKB, et al22.	Descriptive exploratory study	2010/ Revista Eletrônica de Enfermagem. Brazil.
A12	Connected adolescence: Mapping internet use among young internet users. (Adolescência conectada: Mapeando o uso da internet em jovens internautas.)	Spizzirri, R. C. P., Wagner, A., Mosmann, C. P., & Armani, A. B.23.	Exploratory study of quantitative approach	2012/ Revista Psicologia Argumento. Brazil.
A13	Health Education on STD/AIDS with adolescents from a public school, using educational technology as an instrument. (Educação em Saúde sobre DST/AIDS com adolescentes de uma escola pública, utilizando a tecnologia educacional como instrumento.)	Valesca MBC, Francisca LSF, Valéria M C et al24.	Descriptive and qualitative study	2009/ Jornal Brasileiro de Doenças Sexualmente Transmissíveis. Brazil.
A14	"Love and sex: Myths, truths and fantasies": Young people evaluate the potential of multimedia educational material in health. (“Amor e sexo: Mitos, verdades e fantasias”: Jovens avaliam potencial de material multimídia educativo em saúde.)	Mano, S. M. F.; Gouveia, F. C.; Schall, V. T25.	Methodological Research	2009/ Revista Ciência & Educação.

Source: Prepared by the authors.

content and disconnected from reality; deficient public policies; vertical relationships in the health area; traditional teaching methodology; difficulties of health professionals in developing activities with young people; curative and biological model in health education; unsystematic incipient actions devoid of local policies.

The main attributes found were: information, access to communication, technological tools, interactivity, virtual interaction, innovation, multimedia, dialogue, reflection, internet, educational workshops and games, participatory methodologies, group work and educational materials.

Regarding the consequences, it was observed: Promotion of access and apprehension of information; exchange of information among young people; adoption of preventive behaviors; overcoming the traditional model in the production of knowledge; youth empowerment; acquisition of new knowledge; clarification of doubts; stimulating reasoning and ability to analyze information.

Identification of a model case

Model case: Experience of nursing students in the promotion of health care with young schoolchildren about STI/AIDS transmitted through the Program in Tune in to Health, broadcast by the use of a web radio. The dialogical way in which web radio is used, allowed young people to build knowledge and interact among peers. In this way, it was realized that digital technology is a means of many possibilities, constituting a mechanism to better listen, promote health and ask questions about body care, a bond between health professionals and young students. The use of web radio brought an innovative health practice establishing new care plans.²

Identification of an otherwise

A nurse recently admitted to the Family Health Strategy of the city of Roupagem, she wants to work with the you-

TABLE 2. Definitions for the concept "Educational Technology in Youth Health". Fortaleza (CE), Brazil, 2020.

DEFINITIONS OF THE CONCEPT OF EDUCATIONAL TECHNOLOGY IN YOUTH HEALTH

Various forms of expression that favor communication, knowledge, perceptions and desires of adolescents.
Information through the integration of multiple media, languages and resources, enabling the development of an interactive educational process.
Development of health education activities with technology that arouse the interest of adolescents.
Tools that provide arguments, reflections and collective construction of knowledge among adolescents.
They expand knowledge in health, facilitate individual learning through interactivity with the collective.
Effective instruments for health promotion and education enabling the empowerment of subjects for social transformation and improvement of their quality of life, awakening in adolescents their creativity, criticality, autonomy, thinking and curiosity.

Source: Prepared by the authors.

Table 3. Exposition of the Antecedents, Attributes and Consequences of the concept of "Educational Technology in Youth Health". Fortaleza (CE), Brazil, 2020.

BACKGROUND	ATTRIBUTES (characteristics)	CONSEQUENTS
<ul style="list-style-type: none"> - Disintegrated and disconnected content from the reality of adolescents. - Deficient public policies. - Vertical relationships in the health area. - Traditional teaching methodology. - Difficulties in developing activities that arouse the attention of this public, both in the Family Health Strategy and in the actions of the School Health Program. - Health education practices for adolescents are ineffective, as they do not focus on the vulnerabilities presented by them. - Curative and biological model of thinking and doing health. - Incipient, unsystematic actions devoid of local policies. - Heterosexist and normative view of young people. 	<ul style="list-style-type: none"> - Information, participation, communication, themes, technological tools, social inclusion. - Interactivity, scenario, dialogue and content. - Multimedia, expression, reflection, themes. - Internet, blog, virtual interaction, educational practice, pedagogical resources, language, school, students, participatory methodologies. - Dynamism, innovation, sharing, curiosity, pleasant learning, dialogue, group work. - Games, educational materials, creative process, innovation. - Health promotion and disease prevention. 	<ul style="list-style-type: none"> - Use of the internet by young people, promoting access and apprehension of information. - School and teachers evolved in the technological perspective. - Optimization of the students' teaching-learning process. - Shared construction of knowledge. - The use of blogs among teenagers, becoming a health education tool. - Development, validation and use of educational games for teenagers. - The use of facebook in health education practice, breaking with the borders of the health service. - Digital Booklets, to help in the adoption of preventive behaviors. - Overcoming the traditional teaching model. - Self-reflection and autonomy on sexual issues among young people and stimulation of reasoning and ability to analyze information.

Source: Prepared by the authors.

ng people in her community and looks for the school to seek support, offering to teach topics related to sexuality, sexual behavior and STIs. The school readily accepts the partnership and the scheduling of the activity is proposed. The nurse takes her data show to share her lecture, without promoting and stimulating debate with the students, bringing her religious conceptions, approaching sex before marriage as a sin and diseases as a punishment from God.

DISCUSSION

The definitions found for the concept in question were associated with available resources that provide communication, learning and reflection among subjects, resulting in individual knowledge in interaction with the collective, from the perspective of health promotion with the possibility of social transforma-

tion and empowerment.

In this sense, Mota et al., portray that technological expansion in recent decades has been promoting sociocultural and behavioral changes among individuals, resulting in educational transformations with the inclusion of ICT, expanding the possibilities of expression and interaction between subjects.⁴

Martins et al., consider that educational practices require the use of technologies as facilitators of the knowledge construction process in a creative perspective, transforming and critical, favoring the participation of the subjects in the educational process and contributing to the construction of citizenship and the increase of the autonomy of those involved.²⁶

Thus, it is essential to emphasize that the introduction of educational technologies in the health of youths, in this analysis of the concept, allowed a better

understanding of the playful and participatory character regarding the health of this segment, providing open debates on topics of youth interest.

CONCLUSION

The study made it possible to delimit the aspects and formation of the concept of "Educational technology in youth health". Thus, this method was considered adequate to reach the proposed objective. As gaps, it is necessary to mention the possibility of deepening the concept with the execution of steps three and eight (identification of the uses of the concept in the literature and definition of empirical references of the studied concept, respectively), including the expansion of research in other languages to have a more global parameter for the use of the concept.

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