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Innovative nursing education from the perspective of epistemologies of the South

Ensino inovador de enfermagem a partir da perspectiva das epistemologias do Sul

Enseñanza innovadora de enfermería desde la perspectiva de las epistemologías del Sur

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ABSTRACT

Objective: To reflect upon innovative nursing education based on the epistemology perspectives of the South of Boaventura de Souza Santos. **Methods:** This is a theoretical essay. We used the Southern epistemology by Boaventura de Souza Santos as a reference, highlighting the concepts of decolonization of knowledge, post-abyssal thinking, and ecology of knowledge. **Results:** The proposal to reflect on innovative nursing education from the perspective of Southern epistemologies is reflected in the understanding that de Souza Santos' approach can support the realization of the teaching-learning process, which is based on the recognition of the plurality of knowledge in sustainable interactions and the dynamics between them without compromising the autonomy of all. **Conclusion:** There is an emphasis on the fact that it is essential to understand that the technologies for teaching need to integrate a broader educational process resulting from the theoretical reflections and dialogical skills of the nurse as an educator.

Keywords: Education nursing; Innovation; Philosophy of nursing.

RESUMO

Objetivo: Refletir acerca do ensino inovador da enfermagem a partir do referencial das epistemologias do Sul, de Boaventura de Souza Santos. **Métodos:** Trata-se de um ensaio teórico. Foi utilizado o referencial das epistemologias do Sul segundo Boaventura de Souza Santos, com destaque para os conceitos: descolonização do saber; pensamento pós-abissal; e ecologia dos saberes. **Resultados:** A proposta de refletir acerca do ensino inovador da enfermagem sob a perspectiva das epistemologias do Sul traduz-se no entendimento de que a abordagem de Boaventura pode subsidiar a efetivação do processo de ensinar-aprender que tem por base o reconhecimento da pluralidade de conhecimentos em interações sustentáveis e dinâmicas entre eles sem comprometer a autonomia de todos. **Conclusão:** Realçou-se a essencialidade de se compreender que as tecnologias para o ensino devem integrar um processo pedagógico mais amplo, resultante de reflexões teóricas e de competências dialógicas do enfermeiro enquanto educador.

Palavras-chave: Educação em Enfermagem; Inovação; Filosofia em Enfermagem.

RESUMEN

Objetivo: Reflexionar sobre la enseñanza innovadora de enfermería desde el marco de las epistemologías del Sur, de Boaventura de Souza Santos. **Métodos:** Se trata de ensayo teórico. Se utilizó el marco de la epistemología del Sur por Boaventura, destacando los conceptos: la descolonización del conocimiento; el pensamiento postabismal; y la ecología del conocimiento. **Resultados:** La propuesta de reflexionar sobre la enseñanza innovadora de enfermería desde la perspectiva de las epistemologías del Sur se refleja en el entendimiento de que el enfoque de Boaventura puede apoyar la realización del proceso de enseñanza-aprendizaje que se basa en el reconocimiento de la pluralidad de conocimientos y interacciones sostenibles y dinámicas entre ellos sin comprometer la autonomía de todos. **Conclusión:** Se destacó que se debe entender que las tecnologías para la enseñanza deberían integrar un proceso educativo más amplio que resulta de las reflexiones teóricas y habilidades dialógicas del enfermero como educador.

Palabras clave: Educación en Enfermería; Innovación; Filosofía en Enfermería.

INTRODUCTION

The training of health professionals becomes dynamic and continuous through the influence of social, political, and economic contexts. It is currently argued that nursing education should be based on a comprehensive training consistent with the new demands of the market so as to overcome the traditionalist view of, and dichotomy between, educator and student.

Meanwhile, education involves creating possibilities for the production and construction of knowledge, not only integrating learning content, but also educating students in ethics. Thus, the teacher formulates the teaching-learning process from a perspective of partnership and complementarity with the student[1].

Thus, there is a broadening of the concept of education and the teaching-learning process. This process has historically been characterized in different ways, ranging from an emphasis on the role of the teacher as a transmitter of knowledge, to current concepts that capture the teaching and learning process as an integrated whole that highlights the role of the student[2].

It is noteworthy in this context that the incorporation of technologies in nursing education is an instrument to facilitate this process. Because these are considered different ways of learning, this allows for the encouragement of meaningful learning and the development of reflective and critical thinking of nurses in training.

It is important to mention that this pedagogical approach requires a suitable theoretical-philosophical foundation on the part of the teacher, the mediator of the process. Also important is the essentiality of incorporating technological tools into nursing education with a consideration for philosophical approaches and thus pedagogical theories to ensure the maximization of the potential benefits of teaching strategies[3].

From the observation that technological tools are able to qualify teaching practices through co-participation between teacher and student, mediated by interactivity and creativity, innovative nursing education nowadays is a reality and an emerging need, and methodological concepts, even if innovative, lack pedagogical approaches guided by theoretical frameworks. Therefore it is necessary to reflect on the following question: How can the epistemology perspectives of the South contribute to the understanding/realization of innovative nursing education?

This theoretical essay aims to reflect on innovative nursing education from the perspective of the Southern epistemologies of Boaventura de Souza Santos.

THEORETICAL BACKGROUND

Boaventura de Souza Santos is a Portuguese sociologist and professor in the Faculty of Economics, University of Coimbra, Portugal. Currently he is known as one of the main, if not the main, intellectual in the social sciences in Portuguese.

In his book *Epistemologies of the South*, de Souza Santos brings forth reflections on the epistemologies that have become dominant and that eliminated the epistemological reflections in a cultural and political context of knowledge production. This thought, which the author calls "colonial or abyssal thinking," subjects the world and educational contexts to a domination and imposition of knowledge - in other words, a one-sided view of social policies[4].

De Souza Santos meant that Southern epistemologies are "an invitation to a wide recognition of the experiences of knowledge in the world [...] thereby opening up unsuspected bridges of intercommunication, new avenues of dialogue"[4:26].

The proposal to understand innovative nursing education from the perspective of Southern epistemologies is reflected in the understanding that the de Souza Santos approach can support the realization of the teaching-learning process in question, and that this framework is based on recognition of the plurality of knowledge in sustainable and dynamic interactions between them without compromising the autonomy of any of them[4].

Meanwhile, among the many concepts of epistemology perspectives of the South, those which serve as the basis for this study are: decolonization of knowledge; post-abyssal thinking; and ecology of knowledge (Box 1).

INNOVATIVE TEACHING AND THE DECOLONIZATION OF KNOWLEDGE

Southern epistemologies form a proposal that denounces the logic that supported the epistemic sovereignty of a modern science that developed with the exclusion and silencing of peoples and cultures that were dominated by capitalism and colonialism throughout history[4].

This is a theoretical concept that seeks to understand the intrinsic relation between the historical-social context and epistemological world.

From this perspective, the Southern epistemologies are based on the need to overcome a problem, that of the theory of knowledge. Epistemology became one theory of scientific knowledge-the North Epistemologies - which always had the objective of identifying a particular form of superior and unique knowledge[4].

It is this context that highlights the idea of producing colonized knowledge. This colonization is therefore understood as an epistemological domination, an extremely unequal relationship with knowledge that led to the cancellation of many ways of knowing themselves, relegating much other knowledge to a subaltern space[4].

To study this phenomenon, de Souza Santos used ideas based on epistemicide, the epistemological strabismus, abyssal thinking, and the symbolic production of an inferiority of knowledge. As a way of overcoming these, he defends the decolonization of knowledge from the understanding of the global South, that is, the plurality and epistemological diversity of the world[4].

Given this perspective, it is evident that traditional pedagogical models are a consequence of the dominant world-that is, capitalism and all its implications for current reality[5]. The products

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Box 1. Concepts of epistemologies of the South that will be used in the test

Concept	Approach
Decolonization of Knowledge	Recovery of knowledge and practices of social groups that were historically and sociologically placed in the position of being due to capitalism and colonial processes, just as the objects or raw materials of the dominant knowledge group (epistemology of the North) were considered for many centuries to be the only valid ones.
Post-abyssal Thinking	Affirmation of knowledge diversity in the world. Recognition of plural forms of knowledge beyond scientific knowledge.
Ecologies of Knowledge	A kind of counter-epistemology that denies the existence of a general epistemology and is based on recognition of the plurality of heterogeneous knowledge.

Source: Adapted from Santos and Meneses[4]

are therefore based on Northern epistemologies, which understand the knowledge of the student as a colonized knowledge that should be devalued.

Historically, the training of health professionals has been based on the use of conservative methodologies, under the strong influence of mechanism and fragmentation of knowledge and learning. Thus, the teaching-learning process also becomes a reproduction of knowledge, with the student in a passive position before their learning process[6], and therefore in a position of colonized knowledge.

However, the relevance of "(un)thinking about colonial pedagogies"[5] emerges today due to a new concept of education as well as an expanded health concept that requires health professionals to be oriented to training for the health needs of the population and an education foundation guided by the basic principles of care: universal access; completeness of knowledge; and equity of care.

Within this framework, the curricular changes in healthcare training courses become mandatory, an aspect that is based on the decolonization of knowledge proposed by de Souza Santos.

The challenge of changing the basis of curriculum is therefore to focus the training process on the adequacy of the new professional profile and the adoption of innovative didactic and pedagogical strategies; encompassing the student in the teaching-learning process with practical field perspectives; striving for full training; and focused on the basic principles of universal, comprehensive, and equal care for the purpose of decolonized knowledge.

In this sense, the teaching and learning process should be viewed more broadly and as a two-way street where both the teacher and the student participate. Thus, students experience a more critical awareness of their actions.

In this way, one should make use of educational methodologies involving the student that stimulate learning, in order to develop critical thinking and to realize the importance of what they have experienced. With this, the educator empowers the students as active participants in the process of teaching and learning, which can facilitate interaction and integration in this process[7].

The academic restructuring process of training nursing professionals therefore involves a recognition of the multidisciplinary nature of professional practice, stimulating clinical reasoning, appreciation of theory, and practical articulation, the use of active methods of teaching/learning, and curricular flexibility.

In this context, we can perceive changes in the training of nursing professionals associated with a broad overview of innovations that are mostly intellectual capital, based on the value of creative and critical knowledge and mediated by technological tools that translate into advances and challenges for nursing education[3,8].

To be effective, an innovative nursing education must have the use of technological tools as mediators of the teaching/learning process as its base. Some challenges occur: the transformation of the conception of teacher-student interaction; adequate preparation of teachers; understanding that only the teacher in personal contact is able to reflexively work with the student, even in education mediated by virtual learning environments; and structural changes in educational institutions, both in the organizational field and in the education and research[9,10].

At this juncture, the important thing in the use of interactive technologies is the pedagogical approach that the teacher utilizes and not the technology itself, understanding that technological tools are able to qualify teaching practices, to encourage the production of decolonized knowledge, and to be developed and shared by everyone involved in the process of teaching and learning in an egalitarian perspective.

POST-ABYSSAL THINKING AS OVERCOMING THE TRADITIONAL APPROACH

The Southern epistemologies are based on an intention to overcome the characteristic model of modern Western thinking, namely abyssal thinking. This is a way of thinking along imaginary lines, dividing and polarizing the world (North and South). In the field of knowledge, abyssal thinking consists of granting a monopoly on the universal distinction between true and false to modern science[4].

Recognizing the epistemological diversity of the world, post-abyssal thinking must take the form of an ecology of knowledge. This means a total renunciation of any general epistemology. In this respect, the main difference in the abyssal epistemic model is the recognition of a plurality of forms of knowledge beyond scientific knowledge[4].

Standing out and in part defended by post-abyssal thinking are the following: the epistemological diversity of the world; the lack of knowledge of one unit; the quest for inter-subjectivity; and not conceiving of knowledge in the abstract, but as knowledge practices that enable or impede interventions in the real world[4].

To reflect on innovative nursing education from the perspective of Southern epistemologies, there is a need to rethink abyssal pedagogy from the post-abyssal perspective, meaning to democratize the process of teaching and learning, which involves an emancipatory conception of education (Box 2)[5].

Innovation in education becomes a prerequisite, especially in modern times, characterized by constant technological evolution, understood in an expanded concept of not just machines and equipment but of knowledge and human interactions that also evolve, bringing new demands and requirements for research. Thus, in addition to utilizing new technologies, it is believed that nursing should create/generate innovations that stimulate testing and are systematized by scientific research[11].

The technologies for teaching are already globally recognized as beneficial to the innovative and differentiated process that currently requires learning environments to contribute to critical thinking, complex decisions, practical skills, teamwork, motivation, interaction, problem solving and hypothesis generation, because it is guided by the active participation of students, encouraging their autonomy and criticality[3,7,12].

In the nursing context, we highlight challenges that make the learning environment even more complex, requiring post-abyssal thinking. We evolve toward an environment of practices that establish high levels of nursing skills. This requires the formation of critical and reflective nurses, with cognitive development as a matter of inherent evidence-based practice, and the educator is inserted into a context of dialogic change highlighted by students with different learning styles and needs, and which should be known by educators in order to use effective teaching methods[8].

In addition, it is known that the nurse, as an educator, is part of multiple aspects of education - with students (academic), with their fellow professionals (continuing education), and with patients (health education)[13].

In this context, the nursing educator must be consistent in incorporating technology in response to current demands, aspects which should in a fundamental way join in the action of a pedagogical approach that guides the incorporation of technology in educational settings.

THE ECOLOGY OF KNOWLEDGE AND TECHNOLOGICAL RESOURCES TO EDUCATION

The ecology of this is guided by the idea of a poetic relationship, which comprises the other as an inference, as an implicit presence of actions. A conception of identity relationship is the poetic assumption of a relationship that implies an encounter with another without danger of dilution[4].

Therefore, apprehending the ecology of knowledge is a strategy to consolidate post-abyssal thinking once it is built on the idea of sharing and support for multiple forms of knowledge.

Under innovative nursing education, it is noted that the ecology of knowledge changes even the logic of learning; it argues that it is essential that those involved in the process of teaching and learning are always alert to the comparison between the knowledge that is being learned and that which, in some cases, may be being unlearned and forgotten.

This approach is guided by the concept of "prudent knowledge," which is based on the idea that "ignorance is only a disqualified form of being and doing when what you learn is worth more than what is forgotten"[4:26]. A pedagogical concept takes this idea as the appreciation of learning from mistakes, from design evaluation and continuous learning and training.

Thus, unlike the models that compete for the student to become dependent on the teacher in the acquisition of knowledge, maintaining a passive attitude, the ecology of knowledge contributes to innovative teaching to defend stimulus in the construction and empowerment of knowledge. This becomes paramount, so that students are aware that they share responsibility for their learning, and the teacher is a facilitator of knowledge[1].

The use of active methods to practice a liberating education is essential in this process to train an active professional and enable them to learn how to learn. Learning how to learn and the training of health professionals should be based on: learning how to do; learning how to be; learning how to know; and learning how to live together[6].

Therefore, the technological incorporations into education through active methodologies to be used as a teaching and learning strategy motivate the student faced with a problem. Thus they hold, analyze, examine, reflect, and relate to their experiences and their learning, leading to a construction of knowledge, in order to resolve the issue initially proposed[6,7].

Box 2. Conceptions of Abyssal and Post-Abyssal Pedagogy

Abyssal Pedagogy	Post-Abyssal Pedagogy
True monopoly of the dominant culture Classroom relationships grounded in power and colonialism Regulation of the emancipation of the student Symbolic violence of paradigm enforcement	Acceptance of inclusion and cultural diversity Emancipatory knowledge production Valuing diversity of knowledge, ways of thinking about and seeing the world

Source: Adapted from Tavares[5]

Adding to the motivation for innovative nursing education is the ability to secure multisensory and dynamic teaching from the use of different resources and pedagogical approaches. It is noteworthy that among the determinants of the process of learning, learning styles preferred by students are a key diagnostic evaluation[13].

The nursing educator in this context has two significant responsibilities: to accept the diversity of learning styles in order to create an atmosphere for learning that offers encouraging experiences for each individual so that they may reach their full potential, and to combine different approaches from critical analysis of fundamentals, as a nursing curriculum based on just one approach can restrict the educational development of students[13].

Thus, the possibility of motivational, reflective, multi-sensory, dynamic, flexible, and collaborative teaching to promote the socialization of knowledge highlights the benefits of teaching nursing education in its various learning environments. Moreover, it is a means of affirming the concepts backed by the Southern epistemologies, in that it is guided in the diversity of knowledge and the poetic relationship between teacher and students.

IMPLICATIONS FOR NURSING

In relation to teaching practices present in nursing education in Brazil, which in turn determine the educational practices related to teaching in this area, it should be noted that historically academic nursing education is directed at the technical issues necessary for the profession, based on the transfer and transmission of content to the student[14].

With regard to the possibilities of innovations in nursing education, documentary research that is aimed to characterize the technologies for teaching used or developed in Brazilian dissertations and theses showed that only 15% referred to the use or development of technologies for teaching in the resulting master's and doctoral research defended between 2003 and 2013. This research was composed of the following categories: use of a conceptual map; use of games; development of a virtual learning environment (VLE); development of educational materials; development of a course of distance education; and device development[15].

Thus, examples of innovations in nursing education that can contribute to the effectiveness of an educational practice based on the ecology of knowledge can be observed. Box 3 highlights the benefits and limitations of the use of technology for teaching, which were revealed by investigations analyzed in said search[15].

Under innovative nursing education, three substantial elements for rapid change in the healthcare landscape through teaching are therefore proposed. The first consideration is the promotion of a more responsible education system, the second is the use of technology to deliver care and engage "consumers," and the third is the move toward interprofessional teams to meet current healthcare needs and future populations[16].

In this context, some teaching models are discussed in order to support teaching and learning that approaches the ecology of knowledge. The standard competency education model that is based on a global concept of education starts to approach the concepts of Boaventura de Souza Santos in integrating the knowledge and the stimulus toward capacity development and perfecting quality. This teaching method is used to determine the core competency needs of nursing students, the creation of new methods to modify the previous standard methods, and to comprehensively assess the particular scientific results to effectively reform and improve the quality of education[17].

For this model to be successful, teachers must play a leadership role, not only in having a high level of knowledge, professional skills, humanistic knowledge, and rich inter-disciplinary clinical knowledge, but they should also deeply understand new teaching concepts. This model considers the student as the main body and uses the teacher as a mediator, combining theoretical knowledge with teaching practice. As in post-abyssal thinking, it combines a variety of advanced teaching methods, such as problem-based practice, simulation of realistic situations, case analysis, and cooperative learning. The method encourages students to study actively, exploring solutions to problems in clinical nursing, using active learning across multiple channels to lay the foundation for learning throughout life[17].

Regarding the use of advanced educational technology, the simulations are especially necessary tools to prepare students for complex and dynamic work environments. The use of these tools provides a safe learning environment for students with a variety of opportunities that allows for a practical approach to the concepts and skills acquired in the course of nursing. Moreover, this learning environment facilitates clinical trials exploring the consequences to patients without the danger of affecting actual human lives. Ultimately, the exchange of successful knowledge during simulation is based on the willingness of educators to venture into the unknown and invest the time needed to carefully plan the learning experience[18].

Thus, nursing educators have a professional and ethical role in developing an environment conducive to learning in order to encourage students to think and to be discerning, which requires strategic planning. Educators should show consideration for the time spent by students, their efforts and contributions, as well as respect, accessibility, flexibility, and help to build a teaching-learning relationship that promotes trust and encourages participation. An environment of learning will be present in which students are genuinely valued and encouraged to build critical thinking skills[19].

These skills should be included in clinical reasoning, in the context to which the student belongs, and in the society they will be entering, with a view to promote training nurses with expertise and skills that enable effective and quality care.

Box 3. Benefits and limitations of the use of technology for education

Benefits	Limitations
Stimulus to motivation, reflection, and commitment of students Dynamic teaching through active participation of students Multisensory learning from the use of different media Flexibility in the pace of students' learning style Familiarity of students with technological resources Evaluation at different moments and in different dimensions Creating space for sharing experiences and information (forums, chats, etc.)	Time required for the development of innovations Need to assess the impact of technological incorporations in education The existence of students with limited ability Learning environments with poor structures Need for validation of the innovations in teaching that require qualified experts

CONCLUSION

This paper reflected on innovative nursing education from the perspective of Southern epistemologies. Based on the discussions of post-abyssal thinking, and tendencies to decolonize knowledge and to make the need for inter-knowledge understood, it is concluded that for the ongoing construction of complex knowledge mediated by prior knowledge and the skills and abilities inherent to the nurse, this framework can support an innovative school that provides meaningful learning.

Therefore, we stress that it is essential to understand that the technologies for teaching should integrate a broader educational process resulting from the theoretical reflections and dialogical skills of the nurse as an educator, and mainly use the proposed innovations in education to promote nursing student development in areas of critical thinking, so that the nurse is thus able to act in different situations.

In this manner, abyssal thinking is reflected in a theoretical framework that can support innovative nursing education, in line with an understanding of the epistemological diversity needed for education that comprises joint participation between those involved in the teaching-learning process and the recognition of knowledge diversity as an enriching aspect of teaching.

REFERENCES

1. Freire P. Pedagogia da autonomia: saberes necessários à prática educativa. 41 ed. São Paulo: Paz e Terra; 2010.

2. Ribeiro SL. Processo Ensino-Aprendizagem: do Conceito à Análise do Atual Processo. São Paulo: Paz e Terra; 2010.

3. Parker BC, Myrick F. A critical examination of high-fidelity human patient simulation within the context of nursing pedagogy. Nurse Education Today. 2009 apr;29:322-9.

4. Santos BS, Meneses MP. Epistemologias do Sul. São Paulo: Cortez; 2010.

5. Tavares M. Despensar as pedagogias coloniais e os seus pressupostos epistemológicos. VIII Colóquio de Pesquisa Sobre Instituições Escolares - Pedagogias Alternativas. Lisboa: Universidade Lusófona de Humanidades e Tecnologias (ULHT); 2011.

6. Gomes MPC, Ribeiro VMB, Monteiro DM, Leher EMT, Louzada RCR. O uso de metodologias ativas no ensino de graduação nas ciências sociais e da saúde - avaliação dos estudantes. Ciência e Educação. 2010 jan;16(1):181-98.

7. Sánchez-García AB, López-Montesinos MJ. Wireless devices in nursing education. Invest Educ Enferm. 2013 jan;31(1):95-106.

8. Onda EL. Situated cognition: its relationship to simulation in nursing education. Clinical Simulation in Nursing. 2012 may; 8:273-80.

9. Oliveira VG, Porrozzi R. Possibilidades e limitações da informática na educação. Revista Práxis. 2009 jan;1(1):51-4.

10. Costa PB, Prado C, Oliveira LFT, Peres HHC, Massarollo MCKB, Fernandes MFP, et al. Fluência digital e uso de ambientes virtuais: caracterização de alunos de enfermagem. Rev Esc Enferm USP. 2011 dec;45:1589-94.

11. Koerich MHAL, Vieira RHG, Silva DE, Erdmann AL, Meirelles BHS. Produção tecnológica brasileira na área de enfermagem: avanços e desafios. Rev Gaúch Enferm. 2011 dec;32(4):736-43.

12. Boctor L. Active-learning strategies: the use of a game to reinforce learning in nursing education. A case study. Nurse education in practice. 2013 mar;13:96-100.

13. Bastable SB. O enfermeiro como educador. 3 ed. São Paulo: Artmed; 2010.

14. Prado ML, Velho MB, Espíndola DS, Hilda Sobrinho S, Backes VMS. Arco de Charles Maguerez: refletindo estratégias de metodologia ativa na formação de profissionais de saúde. Esc Anna Nery. 2012 jan-mar;16(1):172-7.

15. Salvador PTCO, Martins CCF, Lima KYN, Alves KYA, Santos VEP. Uso e desenvolvimento de tecnologias para o ensino: caracterização das pesquisas de enfermagem. XIV Seminário Nacional de Diretrizes para a Educação em Enfermagem. Maceió: Associação Brasileira de Enfermagem; 2014.

16. Gerard SO, Kazer MW, Babington L, Quell TT. Past, present and future trends of Education Master of Nursing. Journal of Nursing Professional. 2014 jul-aug;30:326-32.

17. Qin FW, Wang Y, Wu Y, Guo M. Application of nursing core competency standard education in the training of nursing undergraduates. International Journal of Nursing Sciences. 2014 dec;1(4):367-70.

18. Robinson BK, Dearmon V. Evidence-Based Nursing Education: Efficient Use of Instructional Design and simulated learning environments to improve the transfer of knowledge in undergraduate students in Nursing. Journal of Nursing Professional. 2013 jul-aug;29:203-9.

19. Burrell LA. Integrating critical thinking strategies into nursing curricula. Teaching and Learning in Nursing. 2014 apr;9:53-8.