

Rev. Latino-Am. Enfermagem
2014 Mar.-Apr.;22(2):197-203
DOI: 10.1590/0104-1169.3232.2402
www.eerp.usp.br/rlae

Original Article

Translation and cultural adaptation for Brazil of the Developing Nurses' Thinking model¹

Rodrigo Jensen²

Diná de Almeida Lopes Monteiro da Cruz³

Mary Gay Tesoro⁴

Maria Helena Baena de Moraes Lopes⁵

Objectives: to translate and culturally adapt to Brazilian Portuguese the Developing Nurses' Thinking model, used as a strategy for teaching clinical reasoning. **Method:** the translation and cultural adaptation were undertaken through initial translation, synthesis of the translations, back-translation, evaluation by a committee of specialists and a pre-test with 33 undergraduate nursing students. **Results:** the stages of initial translation, synthesis of the translations and back-translation were undertaken satisfactorily, small adjustments being needed. In the evaluation of the translated version by the committee of specialists, all the items obtained agreement over 80% in the first round of evaluation and in the pre-test with the students, so the model was shown to be fit for purpose. **Conclusion:** the use of the model as a complementary strategy in the teaching of diagnostic reasoning is recommended, with a view to the training of nurses who are more aware regarding the diagnostic task and the importance of patient safety.

Descriptors: Nursing Diagnosis; Cross-Cultural Comparison; Teaching.

¹ Paper extracted from doctoral dissertation "Evaluation of the Fuzzy Kitten software as a methodology for teaching diagnostic reasoning in nursing", presented to Faculdade de Ciências Médicas, Universidade Estadual de Campinas, Campinas, SP, Brazil. Supported by Fundo de Apoio ao Ensino, à Pesquisa e à Extensão (FAPEX) and by Fundação de Amparo à Pesquisa do Estado de São Paulo, process # 2010/10158-2.

² PhD, Assistant Professor, Departamento de Enfermagem, Faculdade de Medicina de Botucatu, Universidade Estadual Paulista Júlio de Mesquita Filho, Botucatu, SP, Brazil.

³ PhD, Full Professor, Escola de Enfermagem, Universidade de São Paulo, São Paulo, SP, Brazil.

⁴ PhD, Professor, Lehman College, City University of New York, New York, NY, USA.

⁵ PhD, Associate Professor, Faculdade de Enfermagem, Universidade Estadual de Campinas, Campinas, SP, Brazil.

Corresponding Author:

Maria Helena Baena de Moraes Lopes
Universidade Estadual de Campinas. Faculdade de Enfermagem
Rua Tessália Vieira de Camargo, 126
Cidade Universitária
CEP: 13083-887, Campinas, SP, Brasil
E-mail: mhbaena@fcm.unicamp.br

Copyright © 2014 Revista Latino-Americana de Enfermagem

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (CC BY-NC).

This license lets others distribute, remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms.

Introduction

Patient safety in health care has mobilized global efforts⁽¹⁾. In this scenario, nursing professionals have the potential for a great impact for the achieving of health care which is safe, high quality and efficient⁽²⁾.

The accurate interpretation of human responses, an activity for which the nurse is responsible, is a complex task and directly affects the quality of the health care given to the patient. If the nurse's interpretations of the human responses do not correspond to the patient's experiences, these interpretations, due to not being sufficiently accurate, will not guide the selection of appropriate interventions⁽³⁻⁴⁾.

In Brazil, resolution 358/2009⁽⁵⁾ of the Federal Council of Nursing regulates that the nursing process should be undertaken in all the environments in which nursing care takes place, leadership in carrying out and evaluating this process falling to the nurse. Emphasis is placed on the importance in the nurse's training regarding accuracy in the stages of the nursing process and their documentation⁽⁶⁾, given that valid and reliable documentation is an important element for safety and quality of health care.

The relevancy of critical thinking in nursing has been emphasized in response to the rapid change of the health care environment. Nurses need to think critically in order to provide care which meets the patient's needs and which allows them to deal with the complexity of the health system⁽⁷⁾.

Critical thinking involves skills and attitudes which are necessary for the development of clinical reasoning, which is based on existing knowledge and the context in which the experiences of interpreting observable data occur. Clinical reasoning, in its turn, refers to the mental processes involved in health care, and is present in the nurse's actions and assistential decisions⁽⁸⁾.

The educational model Developing Nurses' Thinking (DNT)⁽⁹⁾, developed by a North-American researcher with a view to the training of nurses capable of making accurate interpretations in the various decisions involved in the nursing process, proposed to lead the student in the process of clinical reasoning. In the DNT model, four components (patient safety, domain knowledge, nursing-specific critical thinking processes and repeated practice) are integrated, to guide the student to organize thinking processes, interpret patient data, name the interpretation of data, and develop care plans. The model's theoretical basis is grounded in the triarchic theory of human intelligence⁽¹⁰⁻¹²⁾.

The DNT model's author, in a quasi-experimental study⁽⁹⁾, demonstrated that its use in teaching clinical reasoning can improve the accuracy of the interpretations made by the students when they elaborate nursing diagnoses.

Considering that the teaching of clinical reasoning is one of the factors associated with the accuracy with which the nurses establish nursing diagnoses⁽¹³⁾, having models and strategies for this teaching available is fundamental to the training of professionals who are capable of offering quality, person-centered care. This article is a report of the study in which the DNT model was translated and culturally adapted for Brazilian Portuguese.

Method

The aim of the cultural adaptation is to maintain the validity of the instrument's original content but adapted to different cultures⁽¹⁴⁾. The translation and cultural adaptation of the Developing Nurses' Thinking (DNT) model followed the guidelines of the American Academy of Orthopedic Surgeons (AAOS)⁽¹⁴⁾, the intention being to keep the integrity of the model's original content. The choice of the AAOS methodology was motivated by the rigor required to ensure that the validity of the material's content in the culture of origin would be maintained in the target culture.

The AAOS guidelines present a methodology for the translation and cultural adaptation of measuring instruments. This methodology was constructed and structured based on a systematic review study of the method and its refining by specialists⁽¹⁴⁾. Thus, the present study follows the stages of initial translation, synthesis of translations, back-translation, evaluation by a committee of specialists, and pre-testing, in line with the AAOS guidelines.

The three environments of the theory of triarchic intelligence⁽¹⁰⁻¹²⁾ are pre-suppositions of the DNT model; hence, it is considered that intelligence develops in: the internal environment, in which the domain of knowledge is attained and the processes of critical thinking occur; the external environment, in which a given context, such as that of patient safety, is considered; and the effect of the experience, which is achieved through repeated practice of using the processes of thinking with the domain of knowledge.

The DNT model is based on four components⁽⁹⁾: patient safety, domain knowledge, critical thinking and repeated practice. The component of patient

safety refers to the patient being free from accidental injury⁽¹⁵⁾. The component of domain knowledge consists of the knowledge which the nurse uses in interpreting the patient's data in order to resolve health problems. The domain of knowledge, which is used by student nurses, is derived from the sciences and the humanities and includes the physiopathology of diseases, patients' possible responses to the disease, nursing diagnoses from the NANDA International terminology⁽¹⁶⁾ and possible treatment options for efficient care plans. The component of critical thinking in nursing is characterized by the mental processes used by the nurses in order to resolve problems from the specific domain of nursing⁽¹⁷⁾. The component of repeated practice is considered to be the repetition of a process two or more times⁽¹⁸⁾. These components are presented to the students in the form of tables and diagrams, helping in the analysis of clinical cases.

The five stages covered in the process of the cultural adaptation of the DNT model are described below.

In the stage of initial translation, two translations into Portuguese were made of the DNT model (T1 and T2). These were made independently, by Brazilian individuals, with extremely good English and who had lived in English-speaking countries. The first translator (T1) invited to participate was a specialist on the issue and the second (T2) was a professional translator with no specific knowledge in the area. In order to reconcile the two translations, two of the researchers involved independently analyzed the translations T1 and T2 compared with the original version and, following that, in an in-person meeting, defined the synthesis of the translations by mutual agreement (T12).

The back-translation, the translation of the model back into the language of origin, was undertaken by two translators born and educated in English-speaking countries, but who live in Brazil, who know the linguistic and cultural properties of Brazil but who were not familiar with the material to be translated.

The translators received the synthesized version of the translations (T12), in Portuguese, and translated the instrument to its original language (English), creating two versions (BT1 and BT2). The back-translation versions (BT1 and BT2) were sent to the author of the DNT model for evaluation, so that possible changes in the original content, arising from the translation process, could be identified.

In the next stage, the translated version (T12) was submitted for analysis by a committee made up of: a specialist in nursing diagnosis (professor and

researcher), a methodologist (researcher with scientific articles published on cultural adaptation), a person with a PhD in linguistics, two researchers from the study which monitored the translation process and one student from the undergraduate nursing course. The student was included in the committee as a representative of the target public of the DNT model.

The translated version (T12) and the instructions for individual evaluation were passed to the members of the committee, through a questionnaire with 22 items in the terms of which the DNT model was to be evaluated. For the translation and adaptation to be considered accepted, a minimum of 80% of the committee members had to judge each characteristic of the DNT model as adequate.

The committee of specialists judged the adequacy and clarity of the vocabulary and expressions used in the translated version of the DNT model and, for the equivalences: semantics, referring to the meaning of the word; idiomatic, referring to the use of expressions in the respective languages, in the case of colloquial expressions of the original language; cultural, referring to the terms, expressions and routine situations which may potentially differ between the countries' cultures; and conceptual, referring to the item's coherence in relation to the domain to which it belongs.

In the pre-test, the last stage of the process of cultural adaptation, the final version of the DNT model was applied to 33 undergraduate nursing students, this group being predominantly made up of female students (94%), with a mean age of 22 years old (SD±3.0) who were in the second year of the undergraduate nursing course (94%). The purpose of the model and the research were explained to the students, and they were informed that they were to express their opinion regarding their understanding of the meaning of the items and the items' clarity.

Initially, the students participated in an hour-long lecture in which the issue of clinical reasoning was discussed and the DNT model's theoretical frameworks, components and conceptual framework were presented. Following that, the students used the model – already implemented in educational software⁽¹⁹⁾ – to analyze a clinical case.

The research was approved by the institution's Research Ethics Committee (process 778/2010) and was undertaken in conformity with Resolution 196/96 of the National Health Council. All the participants signed the terms of Free and Informed Consent and the author of the DNT model granted authorization for the adaptation.

Results

The DNT model was translated to Brazilian Portuguese and integrated into the second version of an educational software⁽¹⁹⁾. The process of translation and cultural adaptation lasted six months and involved the support of the model's author.

The two versions of the initial translation of the DNT model (T1 and T2) arrived at similar results, few adjustments being necessary in the consensus meeting between the researchers for achieving the synthesis of the translations (T12). The two versions of the back-translation (BT1 and BT2) were sent to the model's author, who checked the validity for both versions, and indicated that they were highly similar to the original

content. From this result it was taken that the Portuguese version (T12) was appropriate for submitting to the committee of specialists for consideration. These judged the translation to be adequate according to the 22 items evaluated, with agreement over 80% in the first round of evaluation.

In the pre-test, the students had no difficulty in understanding the meaning and clarity of the model's items.

The instruments which make up the DNT model, translated and adapted to the Brazilian culture, are presented below. In the model's conceptual framework (Figure 1) the four components upon which it is based are integrated: patient safety, domain knowledge, critical thinking processes and repeated practice.

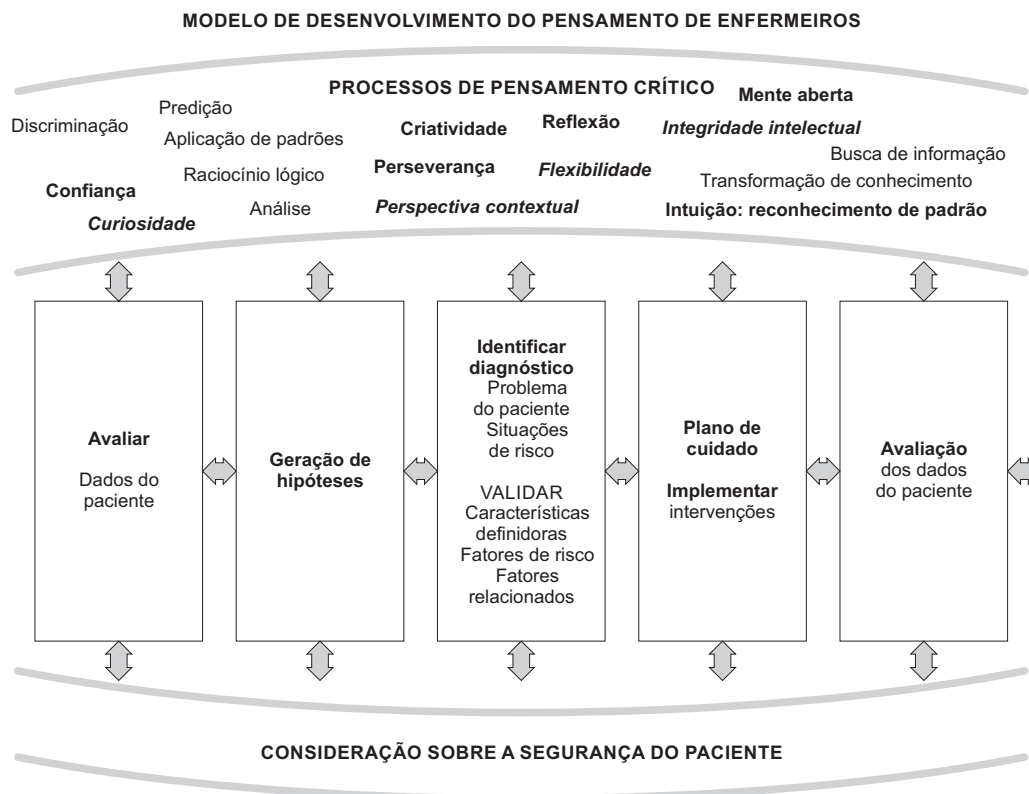


Figure 1 - Conceptual framework of the Developing Nurses' Thinking model, culturally adapted for Brazil

The seven skills of critical thinking and the ten habits of the mind⁽¹⁰⁻¹²⁾ are broken down and presented in the form of a table (Figure 2), with the aim of being a strategy for helping the student in the analysis of clinical cases. The field "patient data and results of the evaluation" is designated for the description of the clinical case to be analyzed by the student. The component "patient safety" is set out in the lower part of the table, reminding

the student that this underlies the entire process of care.

A form for problems (Figure 3) is presented to the student with fields for the student to describe the problems she finds in the analysis of the clinical case, to validate the information, to reconsider the component "patient safety", to plan the results she wishes to achieve, and the interventions, and to undertake the final evaluation of the process.

Habilidades de pensamento crítico	Dados do paciente e resultados da avaliação	Hábitos da mente
Análise - Divida a apresentação/questão em partes (pistas) para determinar o significado (ou seja, normal vs anormal) Identifique pistas - Agrupe as pistas para determinar o significado - Gere hipóteses		Confiança Você está confiante em suas habilidades de raciocínio?
Aplicação de padrões - Use padrões/regras baseados em pesquisa para incluir ou descartar hipóteses - Características definidoras de Diagnósticos de Enfermagem, fatores relacionados e situações de risco; fisiopatologia - Faça um julgamento que “se encaixe”		Perspectiva contextual Você considerou todo o contexto deste problema? Idade, comorbidades, medicações etc.
Discriminação - Procure por diferenças e semelhanças - Isso ajuda a confirmar ou desconfirmar hipóteses?		Criatividade Você foi criativo ao gerar ou reestruturar ideias? Você pensou em alternativas?
Busca de informação - Você precisa de mais informação para resolver este problema? Informação do paciente/ subjetiva ou objetiva? Dados laboratoriais? Avaliação física adicional?		Flexibilidade Você considerou múltiplas possibilidades? Você ficou restrito a uma linha de pensamento?
Raciocínio lógico - Tire conclusões - Se isso, então provavelmente aquilo - Confirme ou desconfirmar o diagnóstico		Curiosidade Você estava ansioso para interpretar corretamente a situação/ problema e usou observação e questionamento reflexivo para explorar possibilidades?
Predição - Prediga os problemas potenciais do paciente e visualize um plano & resultados desejados - Como esse problema/plano afetará a segurança do paciente? Se eu fizer isso então...		Integridade intelectual - Você usou processos baseados em pesquisa e critérios baseados em pesquisa para interpretar a situação/problema? - “Chutar” sem uma base da qual extrair significado não conta
Transformação do conhecimento - Como você reconhecerá esse mesmo conceito/problema em outras situações?	Intuição: reconhecimento de padrão Você reconheceu qualquer coisa que lhe pareceu familiar a partir de experiências anteriores?	
Segurança do paciente		
		Mente aberta Você estava aberto a outras possíveis interpretações da situação/dados?
		Perseverança Você estava determinado a interpretar acuradamente a situação/problema?
		Reflexão Você refletiu constantemente sobre o seu pensamento, pressupostos e decisões para assegurar uma interpretação acurada dos dados?

Figure 2 - The Developing Nurses’ Thinking model, adapted culturally for Brazil

Formulário de problemas: esses podem ser diagnósticos de enfermagem, possíveis problemas médicos ou a descrição do problema					
Problema	Confirmação Características definidoras Achados da avaliação que apoiam a identificação do problema (isso inclui fatores relacionados & aqueles que colocam o paciente em risco para problemas)	Desconfirmação Características Achados da avaliação que NÃO apoiam a escolha desse problema	Este problema afeta a segurança do paciente? Se sim, como?	Resultados esperados	Intervenções/ avaliação
1.					
2.					

Figure 3 - Form for problems of the Developing Nurses’ Thinking Model, culturally adapted for Brazil

Discussion

The use of the DNT model in teaching aims to lead the student to develop habits of thinking and to improve her diagnostic accuracy, questions which impact directly on the patient’s results and on the safety of the health care. This strategy can be used in the analysis of clinical cases, a stage in which the DNT model was used in the second version of an educational software⁽¹⁹⁾, a teaching tool which evaluates diagnostic accuracy.

The DNT model’s conceptual framework (Figure 1) offers the student understanding in relation to the

stages of the nursing process, which are permeated by the skills of critical thinking and the habits of the mind, related to the context of the patient’s safety. In this strategy, the student is caused to reflect on each stage of the nursing process; to consider which skills of critical thinking and/or habits of the mind are used in each stage of the process; and to evaluate whether the patient’s safety was taken into account. This approach seeks to stimulate the student’s metacognition, guiding her reflection on decision-making in the nursing process in the internal environment (processes of thought).

It is proposed that the student makes use of the model (Figure 2) in the analysis of clinical cases, which favors the use of the skills of critical thinking and of the habits of the mind. The route presented in the DNT model guides the student to the understanding of the aspects which must be considered in the analysis of a clinical case, raising her chances of achieving an accurate diagnosis. The nursing student with little clinical experience can use the model to understand how nurses think. As she becomes more experienced in the diagnostic task, the student develops and strengthens the skills of critical thinking and the habits of the mind in her clinical practice.

Making use of the form for problems (Figure 3) the student is guided to list the problems raised in the clinical case analyzed. Once these problems have been identified, the student describes the findings which support the problem raised, that is, the defining characteristics, risk factors and related factors. In the item "disconfirmation" the student is invited to rethink regarding the clinical case and to identify the presence of possible cues which do not support the choice of the problem raised. Following that, the student is directed to reflect on the possible impact of the problem identified for the patient's safety, and the possible consequences if it is not treated. The results expected, and the nursing interventions, are also listed in the table, as well as the evaluation of the process. By presenting the patient's safety in the first instance of consideration, the DNT model helps the student to prioritize it.

Given that one of the predictive factors of nurses' diagnostic accuracy is the teaching of theoretical and practical content on nursing diagnoses in the undergraduate course⁽¹³⁾, the use of the DNT model in teaching is a strategy for training nurses who are aware regarding the diagnostic task and the nursing process in clinical practice.

The DNT model satisfies the needs indicated in the literature regarding the development of innovations to improve the preparation of nursing students for clinical practice⁽²⁰⁾, as well as of tools which support the student in the improvement of clinical reasoning skills and reflection on practice⁽²¹⁾.

The study's limitations include: (a) it was not possible to include the translators who participated in the processes of translation and back-translation in the committee of specialists; (b) the form for problems (Figure 3) was not evaluated in the pre-test stage, because of not having been implemented in the software used by the students.

The use of the DNT model is recommended as a strategy of support for the teaching of diagnostic reasoning, with a view to the training of nurses who are more aware regarding the diagnostic task and who are capable of prioritizing the aspect of the safety of the care.

One of this study's implications for research is that the effectiveness of the DNT model for elaborating accurate diagnoses must be tested through comparing it with the usual practices of the teaching of clinical reasoning. In the ambit of the care, the model can be tested in continuous education programs and also for the analysis of especially complex situations in usual clinical practice.

Conclusion

The undertaking of this study allowed the Developing Nurses' Thinking model, its conceptual framework and form for problems – used by the student in analyzing clinical cases – to become available for use in Brazil.

It is considered that the methodology used in this study, the guidelines of the American Academy of Orthopedic Surgeons, was sufficiently and methodologically rigorous to achieve the translation and cultural adaptation of the DNT model. There were no difficulties during the study in relation to the methodology adopted.

The DNT model, adapted for use in Brazil, is a feasible strategy for teaching clinical reasoning, which allows one to integrate the perspective of patient safety with the skills of thinking and the habits of the mind.

Acknowledgments

The authors wish to thank the students and professors who supported this study, in particular the professors Dr. Margaret Lunney, Dr Ianê Nogueira do Vale and Dr Edinêis de Brito Guirardello.

References

1. World Health Organization. World alliance for patient safety. Forward programme 2008-2009. Geneva: World Health Organization; 2008.
2. American Association of Colleges of Nursing. Essentials of baccalaureate education for professional nursing practice. Washington: American Association of Colleges of Nursing; 2008.
3. Cruz DALM, Pimenta CAM. Evidence-based practice applied to diagnostic reasoning. *Rev. Latino-Am. Enfermagem*. 2005;13(3):415-22.

4. Lunney M. Critical thinking & nursing diagnosis: case studies and analyses. Philadelphia: North American Nursing Diagnosis Association; 2001.
5. Conselho Federal de Enfermagem (COFEN) (BR). Resolução COFEN nº 358/2009. Dispõe sobre a Sistematização da Assistência de Enfermagem e a implementação do Processo de Enfermagem em ambientes, públicos ou privados, em que ocorre o cuidado profissional de enfermagem, e dá outras providências. [Internet]. [acesso 1 mai 2012]. Disponível em: http://novo.portalcofen.gov.br/resolucofen-3582009_4384.html
6. Paans W, Nieweg RMB, Schans CP, Sermeus W. What factors influence the prevalence and accuracy of nursing diagnoses documentation in clinical practice? A systematic literature review. *J Clin Nurs*. 2011;20(17-18):2386-403.
7. Simpson E, Courtney M. Critical thinking in nursing education: literature review. *Int J Nurs Pract*. 2002;8(2):89-98.
8. Cerullo JASB, Cruz DALM. Clinical reasoning and critical thinking. *Rev. Latino-Am. Enfermagem*. 2010;18(1):124-9.
9. Tesoro MG. Effects of using the developing nurses' thinking model on nursing students' diagnostic accuracy. *J Nurs Educ*. 2012;51(8):436-43.
10. Sternberg RJ. *Beyond IQ: a triarchic theory of human intelligence*. New York: Cambridge University Press; 1985.
11. Sternberg RJ. *The triarchic mind: a new theory of human intelligence*. New York: Penguin; 1988.
12. Sternberg RJ. *Successful intelligence: how practical and creative intelligence determine success in life*. New York: Penguin; 1997.
13. Matos FGOA. Fatores preditores da acurácia dos diagnósticos de enfermagem [tese de doutorado]. São Paulo: Escola de Enfermagem da Universidade de São Paulo; 2010. 113 p.
14. Beaton D, Bombardier C, Guillemin F, Ferraz MB. Recommendations for the cross-cultural adaptation of health status measures. *American Academy of Orthopaedic Surgeons and Institute for Work & Health* [Internet]. [acesso 2 jun 2012]. Disponível em: <http://www.dash.iwh.on.ca>.
15. Institute of Medicine. *To err is human: building a safer health system*. Washington: National Academy Press; 2000.
16. Herdman TH, editor. *NANDA International nursing diagnoses: definitions and classification, 2012-2014*. Oxford: Wiley-Blackwell; 2012.
17. Scheffer BK, Rubenfeld MG. A consensus statement on critical thinking. *J Nurs Educ*. 2000;39(8):352-9.
18. Willingham DT. Critical thinking: why is it so hard to teach? *Arts Educ Policy Rev*. 2008;109(4):21-32.
19. Jensen R, Lopes MHBM, Silveira PSP, Ortega NRS. The development and evaluation of software to verify diagnostic accuracy. *Rev Esc Enferm USP*. 2012;46(1):178-85.
20. Ironside PM, McNelis AM. Transforming clinical education. *J Nurs Educ*. 2011;50(3):123-4.
21. Russell BH, Geist MJ, Maffett JH. Safety: an integrated clinical reasoning and reflection framework for undergraduate nursing students. *J Nurs Educ*. 2013;52(1):59-62.

Received: Apr. 20th 2013Accepted: Oct. 30th 2013

Erratum

Issue v22n2, page 197

For

Translation and cultural adaptation for Brazil of the Developing Nurses' Thinking model¹

¹ Paper extracted from doctoral dissertation "Evaluation of the Fuzzy Kitten software as a methodology for teaching diagnostic reasoning in nursing", presented to Faculdade de Ciências Médicas, Universidade Estadual de Campinas, Campinas, SP, Brazil. Supported by Fundo de Apoio ao Ensino, à Pesquisa e à Extensão (FAEPEX).

Read

Translation and cultural adaptation for Brazil of the Developing Nurses' Thinking model¹

¹ Paper extracted from doctoral dissertation "Evaluation of the Fuzzy Kitten software as a methodology for teaching diagnostic reasoning in nursing", presented to Faculdade de Ciências Médicas, Universidade Estadual de Campinas, Campinas, SP, Brazil. Supported by Fundo de Apoio ao Ensino, à Pesquisa e à Extensão (FAEPEX) and by Fundação de Amparo à Pesquisa do Estado de São Paulo, process # 2010/10158-2.