EVALUATION OF AN INTERVENTION ON SCIENTIFIC INFORMATION SEARCHES FOR NURSING STUDENTS

Maria Dolores Guerra-Martín[1], Marta Lima-Serrano[2], Encarnación Maria Zambrano-Domínguez[3], Vicente Fernández-Rodríguez[4]

[1] M.Sc. in Nursing. Full Professor at the Faculty of Nursing, Physiotherapy and Podiatry at the University of Seville. Sevilla, Spain. E-mail: guema@us.es
[2] Ph.D. in Nursing. Assistant Professor. Faculty of Nursing, Physiotherapy and Podiatry at the University of Seville. Sevilla, Spain. E-mail: mlima@us.es
[3] M.Sc. in Nursing. Nurse, Hospital San Juan de Dios del Aljarafe in Seville. Sevilla, Spain. E-mail: enkarni.zbr_8288@hotmail.com
[4] M.Sc. in Nursing. Assistant Professor. Faculty of Nursing, Physiotherapy and Podiatry at the University of Seville. Nursing Director at Health Center in Lora del Río, Seville. Sevilla, Spain. E-mail: vfernandezr@us.es

ABTRACT: In this paper we show process and evaluation of an educational intervention on information seeking in nursing students as part of literacy program. The intervention was carried out with 158 students in 3rd-year-nursing enrolled on the subject of Nursing Services Administration. The average of correct answers is 11.8 (standard deviation=2.2) on knowledge evaluation; marks obtained in the search report of information was of 46.8% A grade, 22.4% B grade, 19.2% C grade, and 11.5% D grade; 79.5% of students believed that after training has enough knowledge to find scientific information and 78.6% was satisfied with learning according to learning-process-satisfaction questionnaires. We conclude that the educational intervention is appropriate for developing skills on information seeking in nursing students.

DESCRIPTORS: Information literacy. Students nursing. Learning.

EVALUACIÓN DE UNA INTERVENCIÓN SOBRE BÚSQUEDAS DE INFORMACIÓN CIENTÍFICA PARA ESTUDIANTES DE ENFERMERÍA

RESUMEN: En este trabajo presentamos el proceso y la evaluación de una intervención educativa para la capacitación en búsquedas de información científica, dentro del programa de alfabetización en información, que se llevó a cabo con 158 estudiantes de 3er año de Enfermería en la asignatura de Administración de Servicios de Enfermería. Respecto a los resultados de la evaluación de los conocimientos adquiridos, la media de aciertos es de 11,8 (desviación estándar=2,2); las calificaciones obtenidas en el informe de búsquedas de información fueron el 46,8% sobresaliente, 22,4% notable, 19,2% aprobado y 11,5% reprobaron; en cuanto a las opiniones y satisfacción con el proceso de aprendizaje, un 79,5% de los/as estudiantes opinaban que después del aprendizaje tienen conocimientos suficientes para buscar información científica y un 78,6% estaban satisfechos/as con el aprendizaje. Concluimos que la intervención educativa es adecuada para el desarrollo de competencias en búsquedas de información científica en los/as estudiantes de enfermería.

DESCRIPTORES: Alfabetización informacional. Estudiantes de enfermería. Aprendizaje.

AVALIAÇÃO DE UMA INTERVENÇÃO SOBRE BUSCAS DE INFORMAÇÃO CIENTÍFICA PARA ESTUDANTES DE ENFERMAGEM

RESUMO: O presente trabalho apresenta o desenvolvimento e avaliação de uma intervenção em buscas de informação científica, dentro de um programa de competência em informação. A intervenção foi realizada com 158 alunos do 3º ano do curso de enfermagem, na Administração de Serviços de Enfermagem. A respeito dos resultados da avaliação dos conhecimentos adquiridos, a média de respostas corretas foi de 11,8 (desvio padrão=2,2); as notas obtidas no relatório de pesquisa de informação foram: 46,8% excelente, 22,4% notável, 19,2% aprovado, e 11,5% fracasso; em relação as opiniões e satisfação dos alunos com o processo de aprendizagem, 79,5% dos estudantes acreditam que depois de aprender têm conhecimento suficiente para encontrar a informação científica, e 78,6% estão satisfeitos com a aprendizagem. Concluímos que a intervenção educativa é apropriada para o desenvolvimento de competências em buscas de informação para estudantes de enfermagem.

DESCRITORES: Competência em informação. Estudantes de enfermagem. Aprendizagem.

INTRODUCTION

The skills to develop a practice based on scientific evidence and for learning throughout life (life-long learning), are essential in a competent nurse. The information available for nurses and relevant to their practice is estimated to be doubling every five years. Although many of the nursing students are instructed in the use of library resources and databases, there is evidence that they have insufficient knowledge to locate and evaluate relevant information after finishing their studies.[1-2] In the literature review, few Spanish studies were identified that added depth to this subject. This study also has international implications, and can serve as a reference for other research.

Information literacy can be understood as the ability to access, evaluate and use technology information and comunication.[3] To achieve information literate citizens is an important objective for many countries, as it forms the basis for learning throughout life and is common to all disciplines, learning environments and at all levels of education. To do this they must be able to determine the extent of the information they need, to enter the required information effectively and efficiently, to evaluate information and resources critically, to incorporate selected information into a knowledge base, using information effectively to accomplish a specific purpose, and understand the economic, legal and social issues related to the use and access to information. The scope of the proposed program for health professionals is part of the recognition of the importance of information, knowledge of the main sources and resources, making informed decisions and to identify gaps in knowledge for proposed research and overcoming actions. In that sense, literate people are those who have learned how to learn.[4]

Developing information literacy skills is the foundation of critical thinking in nursing.[5] However, previous studies show minimal use of the internet and databases by nurses, despite its relative accesibility.[6] In another study, 16% of the nurses surveyed had access to information through the Internet, at home, and only 5% at work.[7] On the other hand, other authors revealed how most students of health sciences, in the USA, were not seeking information in a satisfactory way.[8] Similar findings were reported by other researchers about nursing students in England,[9] and by other authors in their research in New Zealand.[10] Moreover, another study showed that about 50% of the nursing students had difficulties with searching for and evaluating the quality of the obtained information.[11]

The third-year students of the nursing degree at the University of Seville had not had any subject where such knowledge was imparted, and approximately 80% did not have enough knowledge to find scientific information.[12] That is why, during the term of 2010/2011, the teachers of the subject of nursing service administration of the nursing degree at the University of Seville, devised an educational intervention in order to train and improve the skills of scientific information searching as part of information literacy, focused on improving the skill in recognizing the importance of information, knowledge of the main sources and national and international resources, in locating journals in the use of RefWorks bibliographic references, and in the management of technical English to optimize the search for scientific information. This learning promotes the ability to deal with reality and to adapt to the ongoing transformation of new settings.[13]

The whole learning process was focused on the autonomous effort and asset of the students, to allow them to develop skills in organizing their own learning.[14] This paper presents the experience and evaluates the educational intervention to determine its effectiveness on improving knowledge of the students in search of scientific information, and their views and satisfaction with the learning process, in order to make improvements in the coming academic years.

METHODOLOGY

Development of educational intervention

The University of Seville (Spain), during the academic year 2010/2011, offered the nursing degree with a duration of three academic years, with a total of 450 students. In the educational intervention, the 173 students enrolled in the subject of nursing service administration of the third year were invited to participate. Ultimately, we had a sample of 158 students, which was 91.33% of the total.

The educational intervention was developed for 20 hours, from February to June 2011. Twelve hours were divided into three tutored sessions (four hours each), the first two sessions were held in the computer classroom in small groups (about ten students) and the third session was conducted individually (Table 1).

Table 1 - Contents of the educational intervention sessions. Seville, Spain, 2011

Sessions	Contents
Session 1	Designing a search strategy. Practices with database CSIC IME. Format presentation (APA, Vancouver) using RefWorks. Practice locating journals in the library catalog of the University of Seville and electronic resources. Management of interlibrary loan requests.
Session 2	Practice on the use of the Mesh *Database* to guide the search in PubMed. Practice in the Pubmed database. Scopus Practice for analyzing journal citations and authors. Practice in the Web of Knowledge (WOK) and Journal Citation Report for the impact factor and quartiles of the journals. Practice in English translations of the abstracts.
Session 3	Learning about filing and reporting requirements of the work process of information literacy program. Topic selection of literature search. Presentation of the evaluation criteria report of the information searches.

The sessions 4 and 5 were allocated to tutoring on demand, of individuals or in pairs, with the aim of promoting independent work of the students, and served to monitor the work process of the information searches, and it culminated with the presentation of a report. These tutorials could be conducted through direct contact or through the use synchronous e-learning and online tools.

The work process was to apply the acquired knowledge, and the student developed it in the following phases: 1) Identify an information need and choose the theme for the search; 2) Searches on the chosen topic in databases IME (Spanish Medical Institute) of the CSIC (Spanish National Research Council)[15] and Pubmed (through the use of the Mesh Database); 3) Translate to Spanish the "abstracts" of searches performed in PubMed; 4) Select the most appropriated record or search for the topic chosen in each of the databases; 5) Use the Refworks bibliographic reference manager for a list of references to this register using the Vancouver style and APA; 6) Select one of the items of the selected records for its suitability to the chosen theme of the search; 7) Analyze the selected journal citations and authors in Scopus; 8) Determine the impact factor and the quartile of the selected journal in the Journal Citation Report database, and; 9) Locate a journal article consistent with the theme selected for information searches using the FAMA catalog[16] (contains a complete catalog of books, journals, electronic resources, digital background and scientific production).

To complement classroom teaching, the students were provided with the possibility to access content from the virtual learning platform of the course, where they have tutorials, self-assessments of learning, and library resources from the University of Seville. In addition, this virtual platform helps teachers to know the resources that the students have already used and to account for the time required for their information searches.

For the design and implementation of this program we counted on the support and advice from the staff of the Library and Computing Service, University of Seville, who were available for professors and students throughout the term.

Evaluation of the educational intervention

The evaluation of the intervention was performed using knowledge evaluation by rating the reports, and the opinions and satisfaction of the students, in the teaching-learning process.

We performed a cross-sectional descriptive study, post-intervention. The inclusion criterion was being enrolled in the subject and the exclusion criterion was that the student was repeating the course. In this way we avoided the bias that the student had previously participated in the educational intervention.

Between May and June 2011 we conducted a survey of all students enrolled in the course. We used a self-administered questionnaire of 20 multiple choice questions about the content addressed in the sessions. In addition to the views of the students in the teaching-learning process, a self-administered questionnaire was used that, in addition to the sex/gender and age, collected fourteen questions; thirteen were closed formulation, answered by a Likert scale (1 - totally agree, 2 - agree, 3 - indifferent, 4 – disagree, and 5 - strongly disagree) and one open-ended question in which they were allowed to make suggestions to improve learning. In this questionnaire they were asked if they had prior knowledge of the topic, to control potential bias in the study in question.

The study was approved by the Research and Ethics Committee of the University of Seville (Spain), having requested the informed consent of the students, and with the questionnaires remaining as anonymous and voluntary.

We performed a univariate descriptive analysis for quantitative data analysis, using percentages, means and standard deviations, and compared the mean of correct answers in the gender questionnaire using SPSS version 18.0. We performed a qualitative and categorical textual data analysis, using the software Atlas. ti, version 6.3. The results were compared with results of previous studies conducted on the same subject.

For the evaluation of the report by the students during independent work, we followed the qualifying criteria set out in table 2, using values based on the following ranges: less than 0.7 points was considered failing; 0.8 to 1.0 was regarded as approved; 1.1 to 1.3 was considered remarkable; and 1.4 to 1.6 was considered to be outstanding.

Table 2 - Scoring criteria for the information search reports. Seville, Spain, 2011

Scoring criteria	Maximum score
- Presentation and adequacy of search histories and records with abstracts of articles more appropriate to the topic history, of the EMI and Pubmed search	0.6
- Translations into Spanish of abstracts from Pubmed	0.2
- Presentation and adequacy of procedures for searches of Scopus database, and journal citations and author	0.3
- Presentation of the literature as Vancouver or APA style, using RefWorks	0.1
- Presentation of the ISI Impact Factor and quartile of the selected journal	0.2
- Submission of an article consistent with the selected theme searched	0.2

RESULTS

In the analyzed sample composed of 158 students, their age ranged between 20 and 58 years, with a mean of 23.7 (SD=6.2); 95% were between 22.7 to 24.8 years. The majority (77.6%) of the students were women. The mean age of the men and women was the same, with the p-value=0.13> 0.05.

Questionnaire on the evaluation of knowledge acquired

Of all students in the sample, 143 (90.50%) students responded to the knowledge questionnaire. The mean of the correct answers of the administered questionnaire was 11.8 (SD=2.2), 95% (11.5 to 12.2) were correct answers, with a range of three being the lowest number of correct

answers in one of the questionnaires and 17 the highest number of correct answers. The mean of the total of correct answers between men and women was the same, with the p-value = 0.52> 0.05. The mean errors of the administered questionnaire oscillated between 1 and 14 errors, with a mean of 7.19 (SD=2.2), 95% (6.8-7.6). Table 3 presents the percentages of correct answers for each of the items in the administered questionnaire. The total mean of errors between genders was the same, p=0.79>0.05.

Table 3 - Percentages of correct items on the knowledge questionnaire. Seville, Spain, 2011

Items	% Correct answers (n)
1. Procedure of how to query an electronic journal from outside of the University	95.1(135)
2. Identify the main topic discussed in an example of searching for information	90.2(123)
3. Symbol used in CSIC databases to include the derived terms	90(128)
4. Locate journal articles in the library	83.2(119)
5. Proper use of Boolean search terms for synonyms or several terms interchangeably	80 (115)
6. Choosing the most appropriate tool to perform a search in PubMed database	74.1(106)
7. Identification of the volume and number of a bibliographic reference	73.5(105)
8. Identification of the ISI impact factor according to the year of publication of the journal	69.2(99)
9. Location in the library of items found in the IME database	61.5(88)
10. Adaptation of the search terms of articles in the Mesh Database	61(87)
11. Databases to use for citations of authors and journals	59.4(85)
12. Recognition of the application procedure for a journal through interlibrary loan	56(80)
13. Procedure to know the ISI impact factor of a journal	51(73)
14. Choosing the most appropriate strategy to find a specific topic in the CSIC databases	44.8(64)
15. Properly locating “history” in the PubMed database	43(62)
16. Procedure to use to find Spanish-language articles in the PubMed database	42.7(61)
17. Recognition of whether or not a journal has an ISI impact factor	41.2(59)
18. Recognition of the referenced last year in the Journal Citation Report	40(57)
19. Location of the citations of the journals in the Scopus database	21(30)
20. Location of the graphical comparisons of journals in the Scopus database	19(27)

Scores obtained in the report on the information searches

Of the 158 students who participated in the study, 156 (98.7%) presented the final report; the remaining two (1.3%) students did not present it. Most students (46.8%) obtained a score ranging from 1.4 to 1.6 points, which corresponded to a rating of outstanding (Figure 1).

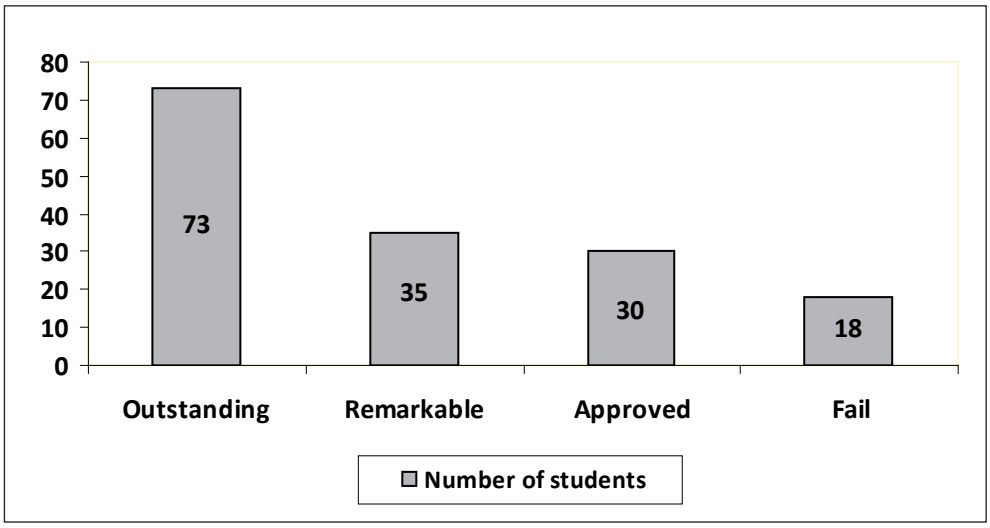

Figure 1 - Ratings reports of students. Seville, Spain, 2011

Reviews and satisfaction of the students with the learning process

From the sample of students (158) who participated in the study, 126 (79.74%) students responded to the questionnaire of opinion and satisfaction with learning in the educational intervention. Table 4 presents the results in percentages of the responses to each of the items.

Table 4 - Percentage of responses from the questionnaire of opinion and satisfaction. Seville, Spain, 2011

Items	1 % (n)	2 % (n)	3 % (n)	4 % (n)	5 % (n)
1. Before this learning, I had enough knowledge to find scientific information in databases and journals	3.2(4)	11.9(15)	10.3(13)	43.7(55)	30.9(39)
2. After this learning, I have scientific knowledge to find information in databases and journals	34.2(43)	45.3(57)	0.8(9)	7.9(10)	5.5(7)
3. I think learning to use English is necessary in scientific information searches	5.7(45)	38.1(48)	11.9(15)	6.4(8)	7.9(10)
4. Learning in small groups seems appropriate	53.2(67)	31.7(40)	2.4(3)	1.6(2)	11.1(14)
5. The duration of each session was adequate	11.9(15)	48.4(61)	15.1(19)	19.8(25)	4.7(6)
6. The schedule to attend learning sessions was adequate	4.3(18)	40.5(51)	23%(29)	17.5(22)	4.7(6)
7. The equipment (space, furniture and computers) was adequate	7.7(35)	41.3(52)	9.5(12)	14.3(18)	7.1(9)
8. I have learned to request items for e-resources or interlibrary loan	2.5(41)	44.4(56)	7.1(9)	11.1(14)	4.8(6)
9. I have learned to look for scientific information in the Pubmed database	7.6(60)	34.9(44)	3.2(4)	6.3(8)	7.9(10)
10. I have learned to search for scientific information in the *Scopus* database	41.3(52)	39.7(50)	4.8(6)	7.1(9)	7.1(9)

Items	1 % (n)	2 % (n)	3 % (n)	4 % (n)	5 % (n)
11. I have learned to find the citations of authors and scientific journals in the *Scopus* database	0.5(51)	41.3(52)	3.9(5)	6.3(8)	7.9(10)
12. I have learned to look for the impact factor of scientific journals of scientific journals (ISI WOK)	9.7(50)	38.8(49)	6.3(8)	7.9(10)	7.1(9)
13. I am satisfied with learning in information management and management of English as a language of science	2.5(41)	46.1(58)	8.7(11)	7.1(9)	5.5(7)

Note: 1 - strongly agree, 2 - agree, 3 - indifferent, 4 - disagree, and 5 - strongly disagree.

Of the 126 students who answered the questionnaire, 47 (37.3%) made some contribution to the open question on how to improve the learning of educational intervention, of which: 19 students made comments showing their satisfaction with the learning, 17 students requested more and shorter sessions, 15 students asked to increase the number of sessions, five students commented that learning should start from the first year of the program, three students reported having had problems with the management of English, three students said the start time of the session should change (beginning at 16 hours), three students said that an explanatory manual should be provided, one student commented that there should be fewer students in each group, another student said that tutoring should be mandatory, and finally, another student suggested that they should share what each student had learned.

DISCUSSION

There are many advantages for scientific information searches for nursing students, in addition to it being essential for an effective teaching-learning process,[4] presenting virtual education as an innovation in the teaching process, thanks to breakthroughs in new technologies.[17]

In the posttest knowledge assessment made of the nursing students after the completion of the intervention, we obtained a significant increase in knowledge in the students in the use of resources and the FAMA catalog offered by the library at the University of Seville. Similar results were reflected in other research, which evaluated these measures to improve literacy skills information.[18-20]

After the assessment of knowledge, it appeared that more than half of the nursing students knew the procedure to follow to search an electronic journal from outside the university, correctly identified the main topic discussed in an example search, chose the appropriate symbol to search for a term derived from the data base of CSIC, located articles published in journals, correctly identified the volume and number of a bibliographic reference, located items found in the database IME in the library, recognized the procedure of applying for a journal through interlibrary loan, and knew the procedure to follow to find Spanish-language articles in the PubMed database. Compared with other research, we obtained similar results in these items.[19-20] Our study showed that less than half of the students did not know how to choose the best strategy to find a specific topic in the CSIC databases, which coincided with another research study.[19]

More than half of the students had a good understanding of the use of Boolean operators to apply to search synonymous terms or more interchangeable terms, as well as on the use of search terms in the MeSH Database, results which were similar to those obtained in other studies.[19-20] However, these results were consistent with those reported by other authors in an investigation, where it is stated that less than half of the students knew how to use the Boolean operators and *MeSH Database*.[1]

Almost half of the nursing students of the sample obtained a rating of outstanding in the final report of information searches, coinciding with other studies.[12, 21] These results were not consistent when compared to previous courses which, in 2005/2006, received a 15.00%,[19] in 2006/2007, a 31.57%,[20] in 2008/2009 a 57.14%,[21] and in 2009/2010, a 14.63% rate of outstanding.[22]

According to the opinions of the nursing students before the educational intervention, 74.6% of them recognized that they did not have enough scientific knowledge to conduct scientific information searches in databases, obtaining similar results in other studies, which showed that between approximately 50% and

80% of the nursing students showed difficulties in finding and evaluating the scientific information.[8-10,18-19, 23]

In contrast to these results, we found in the literature search a study conducted by Jacobsen and Andanaes, which stated that the nursing students were considered to be quite competent in the search of bibliographic information in databases.[1] It must also be considered that 15.1% of the alumni had prior knowledge of scientific information searches, which could be related to these students having completed a course on this topic individually.

At the end of the intervention, a high percentage (79.5%) of the nursing students felt they had enough knowledge to find scientific information in databases and in journals, similar data were reflected in other studies where there were significant increases in the knowledge of nursing students after completion of a learning program of text processing skills, scientific databases, search engine databases and the use of email.[17,19-20] In this sense, the results of this study can be used in future research on the development and evaluation of educational interventions for training in scientific information searches in nursing students.

With respect to the methodology used for learning in small groups in this intervention, most of the nursing students totally agreed with this question, agreeing with the data collected in another study,[12] although in the open question on how to improve learning, *we found a discordant comment: reduce some class groups* (student 123).

In the survey of opinions and satisfaction with the educational intervention in general, the results obtained showed that nursing students were very satisfied with the training for learning in information management and management of English as scientific language, confirming the contributions they made in the open question on how to improve learning: *in my point of view, I think there would be no need to improve learning, since such learning has been pretty good, and I have acquired good and necessary knowledge for the management of information and searching in different databases* (student 7); *I think it is all very good, and we've all learned a lot* (student 40); *honestly I found the Information Competency learning quite interesting* (student 57); *in my opinion, I have to say I've agreed with the learning and I finished so glad that I learned to be able to search for items* (student 95). In general, students in our sample considered developing educational interventions for scientific information searches useful; similar results were reflected in other investigations.[19-20]

The comments that students exposed in the open question on how to improve learning were related to increased learning sessions, decreasing time in each of them; some of the comments included: *more sessions that last less time because many new skills are easily forgotten* (student 11); *in my opinion, I think there should be more sessions with less time, as it is knowledge we are interested in, and it is complex, so it took some time to assimilate* (student 37); *it could be more days but with less hours, and not receiving so much information at once, allowing time to assimilate* (student 54); *I think it would be better if there were a higher number of sessions and that these had a shorter duration* (student 109). These results were consistent with other investigations of previous courses where students appreciated that the length of the information learning sessions related to searching were adequate.[12,19-20] In this regard, these comments were taken into account for the term 2011/2012, which had seven learning sessions lasting two hours each.

One of the limitations detected in this research was that the data of the knowledge of the nursing students was collected at the end of the intervention, and it could influence the memory of students on the skills acquired from the beginning of the program. In addition, the students may have an inappropriate estimate of their skills in any of those skills assessed in the educational intervention.[24] Another limitation related to the learning process was that we could not teach other database management in the nursing context, such as Cuiden or Cinahl, because we did not have more time.

CONCLUSIONS

The development and evaluation of this educational intervention was found to be adequate and effective for training on searching for scientific information among the nursing students, related in particular to properly searching for scientific papers, then locating these resources within electronic catalogs, evaluating their use and citing them properly.

These are fundamental skills that a nursing student should acquire to access and use in the research process, to perform their duties properly and to provide quality care in their future career.

It is important to note that the nursing students claimed an increase in their knowledge on this topic, and successfully rated this type of learning.

REFERENCES

1. Jacobsen HE, Andanaes R. Third year nursing students' understanding of how to find and evaluate information from bibliographic databases and internet sites. Nurse Educ Today. 2011 Nov; 31(8):898-903.
2. Tarrant M, Dodgson JE, Law BVKK. A curricular approach to improve the information literacy and academic writing skills of part-time post-registration nursing students in Hong Kong. Nurse Educ Today. 2008 May; 28(4):458-68.
3. Bruce C, Chesterton P, Grimison C. Constituting collective consciousness: information literacy in university curricula. Int J for Academic Dev. 2002 May; 7(1):31-40
4. Duquesne A. La alfabetización en información en los Policlínicos Universitarios. Educ Med Super. 2011 Apr-Jun; 25(2):157-63.
5. Barnard A, Nash R, O´Brien M. Information literacy: developing lifelong skills thought Nursing Education. J Nurs Educ. 2005 Nov; 44(11):505-10.
6. Thompson C, McCaughan D, Cullum N, Sheldon T, Mulhall A, Thompson DR. The accessibility of researchbased knowledge for nurses in United Kingdom acute care settings? J Adv Nurs. 2001 Oct; 36(1):11-22.
7. Estabrooks CA, O'Leary KA, Ricker KL, Humphrey CK. The internet and access to evidence: how are nurses positioned? J Adv Nurs. 2003 Apr; 42(1):73-81.
8. Ivanitskaya L, O'Boyle I, Casey AM. Health information literacy and competencies of information age students: results from the interactive Online Research Readiness self-assessment (RRSA). J Med Internet Res [serial on the Internet]. 2006 Apr 21 [cited 2011 Dic 28]; 8(2). Available from: http://www.jmir.org/2006/2/e6/
9. Franks F, McAlonan, C. Establishing library "key skill" confidence levels amongst a cohort of nursing students at an English university. Nurse Educ Prac. 2007 Jul; 7(4):258-65.
10. Scott SD, Gilmour J, Fielden J. Nursing students and internet health information. Nurse Educ Today. 2008 Nov; 28(8):993-1001.
11. Brown C, Kim SC, Stichler J, Fields W. Predictors of knowledge, attitudes, useand future use of evidence-based practice among baccalaureate nursing students at two universities. Nurse Educ Today. 2010 Aug; 30(6):521-7.
12. Guerra MD. Adquisición de competencias en búsquedas de información en alumnos y alumnas de la Diplomatura de Enfermería mediante la estrategia de la tutorización. Evidentia. 2010 Oct-Dec [cited 2011 Nov 30]; 7(32). Available from: www.indexf.com/evidentia/n32/ev7330.php
13. Tanaka S, Chiesa AM. Innovación en el proceso de aprendizaje de enfermería en salud colectiva. Texto Contexto Enferm. 2010 Jan-Mar; 19(1):120-8.
14. Alvim NAT, Ferreira MA. Perspectiva problematizadora da educação popular em saúde e a enfermagem. Texto Contexto Enferm. 2007 Abr-Jun; 16(2):315-9.
15. Consejo Superior de Investigaciones Científicas. Bases de datos del CSIC [internet]. Madrid: Consejo Superior de Investigaciones Científica [cited 2012 Dic 20]. Available from: http://www.cindoc.csic.es/servicios/dbinfo.htm
16. Universidad de Sevilla. Catálogo FAMA [internet]. Sevilla: Universidad de Sevilla [cited 2012 Dic 20]. Available from: http://fama.us.es/
17. Adams A, Timmins F. Students views of integrating web-based learning technology into the nursing curriculum – a descriptive survey. Nurse Educ Pract. 2006 Jun; 6(1):12-21.
18. Wallace MC, Shorten A, Crookes PA. Teaching information literacy skills: an evaluation. Nurse Educ Today 2000; 20(6):485-89.
19. Guerra MD, García C. Desarrollo de habilidades para la utilización autónoma de las Bases de Datos de interés para la disciplina enfermera. En: Mesa JM, Castañeda R, Villar LM. Experiencia de Innovación Universitaria (I) 2005/2006. Sevilla (ES): Instituto de Ciencias de la Educación. Vicerrectorado de Docencia. Universidad de Sevilla; 2008. p. 291-306.
20. Guerra MD. Estrategias de formación para conseguir que los alumnos sean competentes en la gestión de la información. En: Mesa JM, Castañeda R, Villar LM. Experiencia de Innovación Universitaria (I) 2006/2007. Sevilla (ES): Instituto de Ciencias de la Educación. Vicerrectorado de Docencia. Universidad de Sevilla; 2009. p.221-36.
21. Guerra MD, Lima M. Estrategia para capacitar al alumnado de tercer curso de la Diplomatura en Enfermería en la gestión de la información. En: Actas del XIV Encuentro Internacional de investigación en Enfermería. 2010 Nov 9-12; Burgos, España. Madrid (ES): Instituto de Salud Carlos III, Unidad de coordinación y desarrollo de la Investigación en Enfermería, 2010. 173-4.
22. Guerra MD, Lima M. Tutorización como estrategia para mejorar el proceso de aprendizaje en

competencias informacionales. En: Actas de las VIII Jornadas Internacionales de Innovación Universitaria [Internet] 2011 Jul 11-12 [acess 2011 Dic 26]. Available from: http://www.uem.es/myfiles/pageposts/jiu/jiu2011/index.html

23. Gross M, Latham D. Undergraduate perceptions of information literacy: defining, attaining, and self-assessing skills. College and Research Libraries. 2009 Jul; 70(4): 336-50.
24. Seago BL, Schlesinger JB, Hampton CL. Using a decade of data on medical student computer literacy for strategic planning. J Med Librar Assoc. 2002 Apr; 90(2):202-9.

Correspondence: Maria Dolores Guerra-Martín
C/ Mariano Benlliure nº 6, portal 6, 2º-A.
Sevilla-41005. España.
E-mail: guema@us.es

Received: February 14, 2012
Approved: December 20, 2012