Title:

Tactics for teaching evidence-based practice: Video as a support for learning international database-searching in nursing education

Short title:

Video as a support for learning international database-searching

Authors:

Hanna-Leena Melender, PhD, RM, Principal Lecturer

Department of Social and Health Care, VAMK University of Applied Sciences, Finland

Wolffintie 27-31, 65200 Vaasa, Finland

Email: hanna-leena.melender@vamk.fi

Virpi Maijala, PhD, RN, Senior Lecturer

Department of Social and Health Care, Seinäjoki University of Applied Sciences, Finland

P.O. Box 158, Keskuskatu 32, 60100 Seinäjoki, Finland

Email: virpi.maijala@seamk.fi

Corresponding author:

Hanna-Leena Melender, PhD, RM, Principal Lecturer

Department of Social and Health Care, VAMK University of Applied Sciences

Work address: Wolffintie 27-31, 65200 Vaasa, Finland

Email: hanna-leena.melender@vamk.fi

Tel. +358 40 482 6097

Fax. +358 6 326 3512

INTRODUCTION

Being able to search for external evidence is one of the evidence-based practice (EBP) competencies for practicing registered professional nurses (Melnyk, Gallagher-Ford, Fineout-Overholt, Long, 2014). It is the second step in the seven step Evidence-Based Practice (EBP) process (Melnyk et al., 2014). When teaching and learning EBP principles and processes in academic settings, the database-searching skills are essential (Fineout-Overholt, Stillwell, Williamson, Cox, Robbins, 2015). However, it has been shown that nursing students struggle with inadequate skills to search and evaluate appropriate and relevant information needed in nursing practice (Denison & Montgomery, 2012). Jacobsen and Andenaes (2011) report that nursing students have difficulties in selecting keywords and subject headings, combining search terms, and using limiters when they search for evidence.

In January 2015, the nursing departments of two Finnish universities of applied sciences collaborated on strategies for teaching and learning EBP. Based on the authors' experience, their students, who mostly speak Finnish and often find English terms difficult, need to develop their database-searching skills. Therefore, the focus was on the development and the enhancement of international database-searching skills of the students. Due to students' learning challenges and the evidence that a combination of self-directed learning and different learning tools has potential to promote EBP learning (Melender, Mattila & Häggman-Laitila, 2016), it was decided that a video should be produced, with Finnish-speaking actors searching in an international database. The strategy was using technology to make a video presenting an example of how to conduct a search in the CINAHL database to support nursing students' learning of database-searching. The strategy was developed to be used in an EBP course at the undergraduate level.

The learning outcomes of the EBP course include: formulate a clinical question, utilize searching strategies to find external evidence in databases, and present the evidence found.

STRATEGY

The strategy of using technology to make a video was based on the idea of visual learning which is defined as "the assimilation of information from visual formats" (Raiyn, 2016, pp. 115). Visual information can be presented in different formats, for example, as images, diagrams, flowcharts or videos. Visual learning formats can be used to display large amounts of information and help reveal relationships and patterns and to retain the information. It has been shown that visual learning tools increased high-order thinking skills in students. (Raiyn, 2016). In this teaching and learning strategy, database-searching process was the pattern to be learnt and retained.

As a visual learning method in learning EBP, Whalen and Zentz (2015) provided students a worksheet that included an outline of the information search process and reflective questions. The students involved reported their systematic search process as a research log. As a result, the use of systematic search worksheet and research log significantly improved students' abilities to carry out a systematic search and identify appropriate evidence. For this teaching and learning strategy, a video was produced to support students' self-directed learning. Videos are a valuable part of educational technology, as they enable a combination of sound, images and text with socio-cultural information, for example habits or procedures (Chen, 2011). In this teaching and learning strategy, the procedure to be learnt by the students was database-searching in an international database.

Learning how to search for external evidence in international databases of the nursing departments of the two universities starts with the in-class librarian lectures, which are then followed by the assignment and the use of the video in self-directed learning as a support, helping to recall the earlier knowledge and skills adopted. The steps of the search taught by the librarian are presented in Figure 1. The video includes presentation of the same steps, but it is not an alternative but a supplement to the librarian database-searching lectures. With regard to other later courses of the degree programs, the teachers are encouraged to remind the students about the video in case they need support for database-searching.

Steps of the search:
1. the main concepts in Finnish → the same main concepts in English
2. how to find the right subject headings
3. how to use the Boolean operator
4. how to limit the search
5. how to examine the matches
6. how to obtain full texts

Figure 1. Steps of the search for the Finnish-speaking students.

Production of the video occurred in three phases, according to the guidelines presented by Fleming, Reynolds and Wallace (2009). The video, which was designed to be used in self-directed learning, presents a 'play' about a face to face consultation session, where a Finnish-speaking nursing student searches for evidence in the CINAHL database and a teacher supports student's learning by presenting questions to help her to recall what she had learned during in-class librarian lectures. The video starts with a clinical question presented by the student: *'What*

is the impact of pacifier use on breastfeeding?' In the PICO-format, that would be as follows: P = the newborns, I = pacifier use, C = no pacifier use, O = affect breastfeeding. The teacher encourages the student to search for evidence in the CINAHL database. As the student conducts the search, a face to face discussion ensues between the student and the teacher about how to conduct the search step by step (Figure 1). The teacher asks questions and the student justifies her choices. All the steps of the search are discussed and the important concepts regarding all steps are spoken out loud. An effort was made to transmit a positive atmosphere around the database searching throughout the video, both verbally and non-verbally. The length of the video is nine minutes, as 10-minute clips are recommended (Fleming et al., 2009).

EVALUATION OF THE TEACHING AND LEARNING STRATEGY

During the EBP course, the students' learning outcomes were evaluated by means of a given assignment in which students formulated a clinical question, searched for external evidence in databases, presented their search strategies, presented the evidence found, and discussed the application of the evidence in practice. The assignments were evaluated by using an evaluation rubric that covered these topics.

After the video had been introduced to the students, it was noticed that their skills regarding the formulation of a clinical question were better in that the clinical questions formulated by them were more focused than before. There was a remarkable improvement in reaching the learning outcome related to searching for external evidence in databases to answer the clinical question. The search strategies used by the students were more often correct which was noticed as the right use of subject headings, Boolean operators and limit operators. The students also presented their

search strategies more often correctly than before. No remarkable progress in reaching the learning outcome related to presenting the evidence and discussing the application of the evidence in practice was noticed. However, this had not been a problem for the students earlier. Moreover, this part was not dealt with on the video, so the reaching of this last outcome cannot be connected with the video use. On average, the student grades slightly improved after the video had been taken into use. A survey revealed that the video was well received by the students. Most of them reported that the use of the video had supported their learning. One of the students wrote: 'The video was really helpful. It included clear instructions for searching in the database. And I can always come back to the video later, if I forget how to do the search.'

LINKING EVIDENCE TO ACTION

- Developing clinical questions and searching for the evidence in a systematic way can help student nurses find the relevant evidence that will inform their practice.

- Provision of visual learning opportunities through the use of videos may reduce the barriers to learning and support the learning of database-searching skills in nursing education at undergraduate and graduate levels.

- The use of the technology offers opportunities for self-directed learning. Use of videos to support learning in education and clinical practice is recommended.

REFERENCES

Chen, H. J. H. (2011). Developing and evaluating SynctoLearn, a fully automatic video and transcript synchronisation tool for EFL learners. *Computer Assisted Language Learning, 24*(2), 117-130. doi http://dx.doi.org/10.1080/09588221.2010.526947

Denison, D. R., & Montgomery, D. (2012). Annoyance or delight? College students' perspectives on looking for information. *The Journal of Academic Librarianship, 38*(6), 380-390. doi https://doi.org/10.1016/j.acalib.2012.08.007

Fineout-Overholt, E., Stillwell, S.B., Williamson, K.M., Cox, J.F., & Robbins, B.W. (2015). Teaching evidence-based practice in academic settings. In B.M. Melnyk & E. Fineout-Overholt (Eds.) *Evidence-based practice in nursing & healthcare. A guide to best practice.* (3rd ed.; pp. 330-362). Philadelphia: Wolters Kluwer.

Fleming, S. E., Reynolds, J., & Wallace, B. (2009). Lights… Camera… Action! A Guide for Creating a DVD/Video. *Nurse Educator, 34*(3), 118-121. doi 10.1097/NNE.0b013e3181a0270e

Jacobsen, H.E., & Andenaes, R. (2011). Third year nursing students' understanding of how to find and evaluate information from bibliographic databases and Internet sites. *Nurse Education Today, 31*(8), 898-903. doi 10.1016/j.nedt.2011.01.003

Melender, H-L., Mattila, L-R., & Häggman-Laitila, A. (2016). A systematic review on educational interventions for learning and implementing evidence-based practice in nursing education: The state of evidence. *Nordic Journal of Nursing Research, 36*(1), 3-12. doi 10.1177/0107408315595161

Melnyk, B.M., Gallagher-Ford, L., Fineout-Overholt, E., & Long, L.E. (2014). The establishment of evidence-based practice competencies for practicing registered nurses and advanced practice nurses in real-world clinical settings: Proficiencies to improve healthcare quality, reliability, patient outcomes, and costs. *Worldviews on Evidence-Based Nursing, 11*(1), 5-15. doi 10.1111/wvn.12021

Raiyn, J. (2016) The role of visual learning in improving students' high-order thinking skills. *Journal of Education and Practice, 7*(24), 115-121. https://files.eric.ed.gov/fulltext/EJ1112894.pdf

Whalen, K.J., & Zentz, S.E. (2015). Teaching systematic searching in a baccalaureate nursing research course. *Worldviews on Evidence-Based Nursing, 12*(4), 246-248. doi 10.1111/wvn.12090