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Building a home for the science of nursing education: Developing the NLN web-based repository

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I IN RECENT YEARS, *teacher-scholars in nursing education have demonstrated a growing interest in basing their teaching practice on evidence (1-5). With evidenced-based teaching, a trend consistent with evidence-based medicine (6) and evidence-based nursing practice (7), practitioners make practice decisions based on the best available research evidence. As with evidence-based practice, research utilization is augmented through access to information available through various online databases.*

Nursing education trails behind medicine and clinical nursing in the development of online databases to support evidence-based teaching practice. Clinicians from medicine and nursing use databases such as those offered by the Agency for Healthcare Research and Quality (www.ahrq.gov), the Cochrane Collaboration (www.cochrane.org), and others listed by the Interagency Council on Information Resources for Nursing (www.nln.org/nlnjournal/nursingreferences.htm), to access synthesized research to support their practice. Teacher-scholars use CINAHL and PubMed, which are helpful but limited in their usefulness for accessing nursing education research. When using these databases, there is a need to determine appropriate terms for searching. In addition, the need to synthesize data from various nursing education studies slows the progress of research development and the utilization of research findings.

In 2003, the NLN Blue Ribbon Panel on Priorities for Research in Nursing Education identified the development of a nursing education database and the design and launching of an electronic repository as priorities (8). An electronic repository, like the repositories in medicine and clinical nursing practice, is an online storage place, or warehouse, of information. The purpose of

an NLN repository would be to support evidence-based teaching by providing teacher-scholars a user-friendly, easily accessible central database of general information as well as synthesized evidence to support the science of nursing education.

In 2004, the NLN Nursing Education Research Advisory Council (NERAC) formed the Task Group to Develop an Elec-

tronic Resource Repository for Nursing Education Research. This task group has worked to overcome common barriers to building and maintaining a repository, including such factors as funding, personnel for assisting in developing and sustaining a repository, software requirements, and legal issues such as intellectual property policies (9). The members of the group are making progress in overcoming all these barriers. What follows is a report on the first phase of the repository development and an account of how the NLN repository is unfolding and evolving.

Development of an NLN Repository

To begin constructing the NLN repository, NERAC identified necessary tasks: 1) the development of a thesaurus — or word list — to index nursing education research literature; 2) the development of a format for the parts of the literature the electronic repository would contain (e.g., literature citations and abstracts); 3) devising a methodology for scan-

Figure 1

The screenshot shows a web form titled "Literature Database". At the top, there are fields for "Task Group" and "Reviewer". Below these is a "Publication Title" field. A navigation bar includes links for "Citation", "Authors", "Keywords", "Topic/Theme", "Abstract And Comments", "Research Preliminaries", "Funding", "Research Design", and "Data Collection". A "Type of Publication" dropdown menu is set to "Journal Information", with a link to "If Other, Describe Here:". The form is divided into several sections:

- Journal Information:** Fields for Name, Volume, Number, Year [YYYY], and Pages (Ex. 100-150).
- Book Information:** Fields for Title, Edition, Volume, Pages (Ex. 100-150), Year, Publishing Company, City, State, and Country.
- ERIC Report:** Fields for Publication#, Release Date, Conference - Name, City, State, Country, Sponsor, and Presentation Date.
- Dissertation:** Fields for Dissertation Abstracts International (Vol, #, Year, Page), UMI Number, and School Name (City, St, Country).

 There are also fields for "Website Address", "Date Accessed", and "Website Sponsor".

ning the literature for new research in nursing education; and 4) developing methods for continually adding items to the electronic repository and refining the repository in ways that enhance its use (10).

The group took two approaches to understanding and facilitating the development of these tasks. First, they studied an NLN-specific database that had been established with Microsoft Access™. Second, they reviewed existing online repositories in both nursing education and higher education in general.

The Access database, known as the NLN Literature Search Database®, was originally developed by Dr. Lois Allen from Widener University and modified as a prototype by the NLN. This database provided a springboard for addressing some of the initial tasks. For example, its format permits entry into data fields of particular aspects of studies, such as the research topic/theme, the research design, and data collection techniques (see Figure 1). It also has functions that permit some quantitative synthesis of data entered into the data fields, such as the numbers of qualitative or quantitative studies on a research topic and the numbers of various research designs.

This existing database has certain limitations, including some of the barriers mentioned previously. For example, keeping a repository up to date is challenging due to the time, personnel, and technological expertise necessary to obtain and use software to support the repository. Despite these barriers, the task group is currently investigating converting the NLN Literature Search Database for use as an online resource for nurse educators that would permit ease of data entry and retrieval of useful information.

The review of existing online repositories in nursing education and higher education has helped the group understand additional possible and important content to include in the NLN repository — content that would presently enhance the NLN Literature Search Database and subsequently support evidence-based teaching. In a visionary

response to database development, the group learned that a more comprehensive repository could include the following:

- Directories of nurse educators conducting research in nursing education and their respective areas of research expertise
- Links to conferences in nursing education and in higher education
- Links to pertinent journals for nursing education
- Grey literature.

Grey literature is of particular interest to the task group, and its inclusion in the repository warrants further investigation. At the Fourth International Conference on Grey Literature, the term *grey literature* was defined as “that which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers” (11, pp. 4-5). This means that although research evidence is indeed the primary source of evidence to support the science of nursing education, the inclusion of nonresearch-oriented material such as conference proceedings, handbooks, brochures, newsletters, unpublished papers, and site-based initiatives that support evidence-based practice is also important.

As Weintraub related (12), readers of research often want other evidence to understand and consider research within a larger perspective. Furthermore, “robust” evidence-based practice includes the amalgamation of various venues of knowledge (13, p. 88). This is to say that the preeminence of research evidence cannot overshadow other important thought that originates from grey literature and that can contribute to the development of the science of nursing education.

Establishing Priorities: The Nursing Education Research Keyword Index

As the members of the task group continue their work, a central concern, regardless of the electronic format and contents of the repository, is how to index content. The task group defines any content (e.g., research

data, grey literature) that will be included in the repository as an item. To address how to index items, the task group conceptualized the Nursing Education Research Keyword Index (NERKI). NERKI will be developed by creating a list of keywords (i.e., search terms) that reflect the language of nursing education. In contrast to keywords used in biomedical or clinical specialty areas, these are the keywords that teacher-scholars assign to materials published in *Nursing Education Perspectives* and other nursing-education-focused publications (see Table).

Table. Keyword Listing Example of Items Categorized under “C”: Keywords from Nursing Education Perspectives

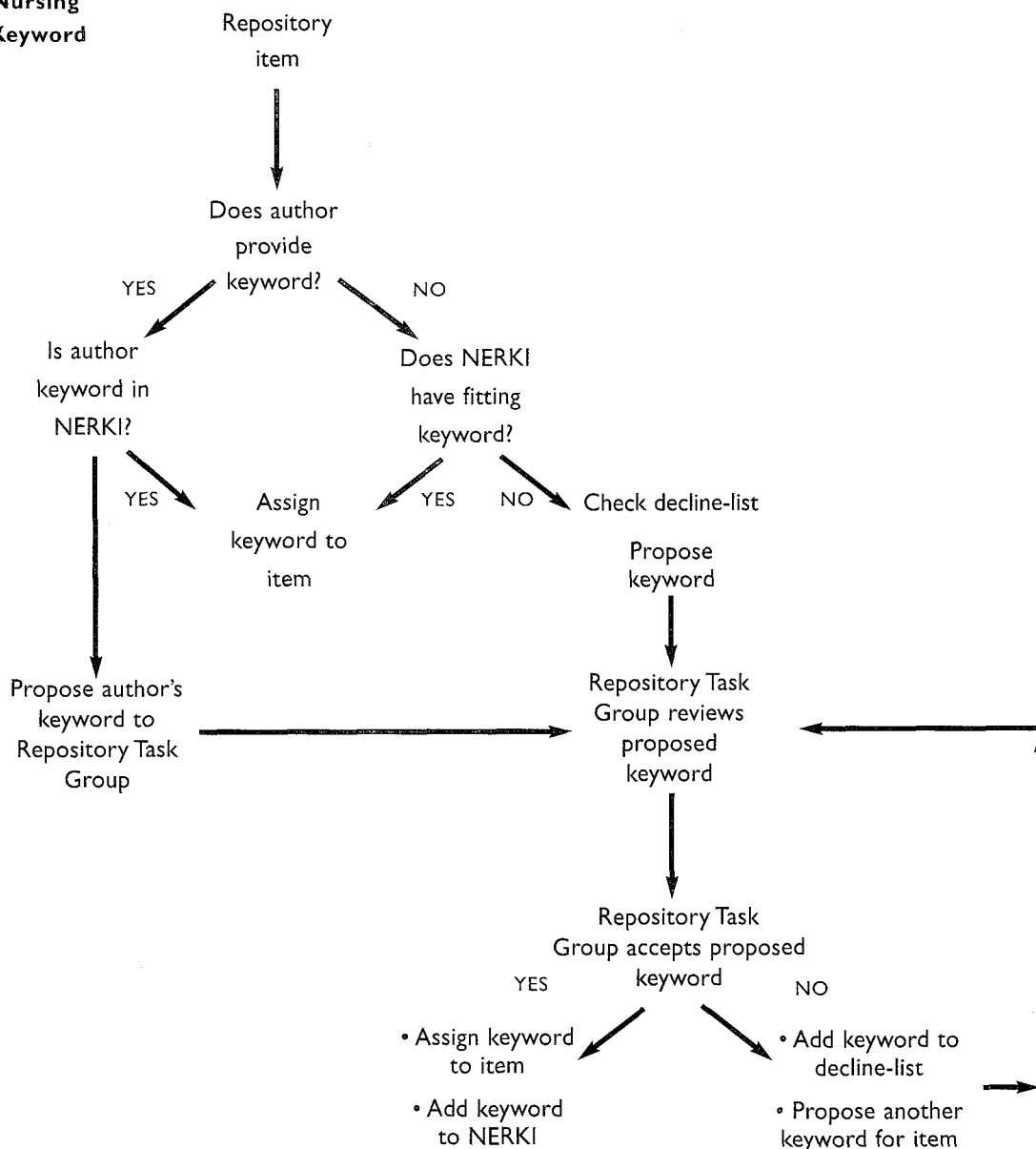
- collaborative teaching methods
- community-based curriculum
- competency-based curriculum
- concept maps
- critical thinking
- curriculum revision

To facilitate the functioning of NERKI, the task group proposes that members of the nursing education community submit items directly into the repository. The individual submitting the item will assign the item’s keywords. Members of the task group will consider the keywords and, if they do not already exist within NERKI, will use a decision tree for assigning these keywords to the repository item (see Figure 2). If the submitter’s selected keywords are concise, have meaning (i.e., relevance to the item submitted), and reflect the language of nursing education, the task group will add these keywords to the index. The task group anticipates that NERKI will take on a complex structure — a structure that is necessary for the search and retrieval of information critical to the work of teacher-scholars, but currently not readily accessible.

Expanding the Vision: Hopes for the Future At the NLN Education Summit 2005, the task group unveiled its purpose and

Quick Reads

Figure 2. Process of Assigning Keywords Using the Nursing Education Research Keyword Index (NERKI)




its new tasks. The purpose is to develop a web-based resource repository for nursing education literature including grey literature (i.e., fugitive literature) (14, p. 40). The new tasks constitute the next phases of the repository development. They include:

1. Finalizing the selection of software to expand the NLN Literature Search Database.
2. Developing a method for integrating items

into the repository.

3. Developing criteria for the inclusion of appropriate items.
4. Developing filters (search term strings that filter and retrieve items in the repository, such as critical thinking and curriculum development) for the repository search engine.
5. Developing a tutorial and glossary for repository users.

When these tasks are accomplished, the task group will continue to refine the repository as a useful resource for developing and enacting the science of nursing education. Clearly, with available technology coupled with the need for research in nursing education, this repository project is not only possible, but essential for achieving the research priorities established by the NLN (8). 

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