A NEAT Approach: Development, Use, and Evaluation of Communal Learning Objects

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The Nursing Education And Technology (NEAT) project (www.neatproject.org), funded by the US Department of Education’s Funding for the Improvement of Postsecondary Education (FIPSE), is a collaborative effort involving 10 schools of nursing across the country to create reusable LOs for teaching health disparities and patient safety. The partners included the School of Nursing at the lead institution, University of Wisconsin-Madison, and the nursing schools at Arkansas State University, Colorado State University-Pueblo, George Washington University, Indiana University, Montana State University, University of Detroit-Mercy, University of Kansas, University of North Dakota, and University of Northern Colorado.

Collaborative Process

Collaborative Administrative Team

To increase the likelihood of the learning objects (LOs) being useful to a larger audience we used a collaborative approach to identify common learning objectives and to develop appropriate LOs. To begin with, we created a Collaborative Administrative Team of the deans of the partner Schools of Nursing. This group initially met to develop memoranda of agreement as to the rights and responsibilities of the partners. Each partner institution agreed to identify a contact person for the purposes of communication between the project director and the faculty and administration at their institution. They also agreed to have a faculty representative participate on the design teams for the LOs as well as encourage faculty to pilot the products of the grant once developed and participate in evaluations. In exchange, the partner institutions had the right to unlimited use of the products of the grant free of charge for credit or non-credit offerings, receive recognition through presentations and publications, and benefit from networking with others involved in online education. The project staff provided centralized services in the form of faculty support of design, creation, and use of LOs.

During the terms of the grant, the Collaborative Administrative Team met twice a year in conjunction with a semi-annual national meeting of the deans of nursing schools across the country. At the very first meeting this group decided to narrow the focus of the LOs to be developed on two key content areas in health care education—health disparities and patient safety. The deans felt these two areas were central to all nursing curricula, would be useful on differing academic levels (i.e., graduate, undergraduate, and continuing education), and were “hot topics” that would benefit from quality, authoritative, engaging learning materials. Subsequent meetings dealt with faculty motivation and development, choosing a repository for publishing the LOs to the Web, and marketing, dissemination, and sustainability.

The use of the Collaborative Administrative Team served multiple purposes. Involving the deans from the outset of the project increased the likelihood of participation and buy-in. The deans knew about the project and could encourage and cajole faculty to participate in the development, evaluation, and use of the LOs. The semi-annual meetings were useful to educate the group about LOs and repositories, about the challenges and tasks of the project, and to elicit broader ideas and solutions. One challenge we found
was the high turnover of deans (and faculty, for that matter) at some schools which required re-education and commitment.

**Design Teams**

We created a design team for each of the identified focus areas with faculty from each of the partner schools, recruited by their respective deans. These teams identified specific teaching and learning challenges to address within the topics chosen by the administrative team. We decided to concentrate on the Health Disparities topic first. This process was initiated with an audioconference to establish purpose, expectations, and a plan of action. The Health Disparities Design Team decided to use a Delphi process to identify and prioritize the specific learning challenges and potential experts to approach to be content experts for development of the related LOs. Based on categories of Institute of Medicine recommendations for addressing health disparities in health care, we developed a teaching challenges matrix. We then proceeded with three rounds to identify key concepts that were the most challenging to get across to students. At the end of the Delphi process the ten faculty members had identified six cells of the matrix on which to focus our attention, all within two categories: (a) Legal Regulatory and Policy, and (b) Health Systems. They had also identified a number of leading experts to try to recruit.

A year later we mobilized the Patient Safety Design Team. We made some changes to the process based on lessons we’d learned with the Health Disparities Design Team. This time we had the team narrow the topics down even further, all the way to the specific topics for each of the proposed LOs. This proved to be much more efficient and made it so we could immediately start developing LOs. We also had learned that our best source of content experts were the faculty from the Design Teams themselves. We were unable to entice the national experts to spend the time to develop LOs – they were way too busy and we paid way too little. The team members were much more interested and motivated for a variety of reasons. (See Faculty Perspective below.)

The Design teams also provided peer reviews, then piloted the products, including the NEAT LOs Repository and the Virtual Teaching Guide, in their own courses and facilitated the dissemination and adoption by others. As with the Collaborative Academic Team, one of the biggest challenges was in the turnover of faculty and keeping the list current and the new representatives informed of the project.

**Production Teams**

These teams consisted of a content expert (or two or three), an instructional designer, a graphic artist, and a producer. With the Health Disparities content area, we had a more narrow scope to tackle but had not identified specific learning objectives, thinking that would be the task of the production team. In hindsight, this step took too long so, with the Patient Safety Design Team, we used the Delphi process to identify at least 25 specific topics to be developed into LOs.

The project staff provided centralized production of the LOs and took on the task of pushing the process forward. At first we tried having the faculty provide more of the content and produce more of the outline and content of the course. This proved not to be an efficient process so the instructional designer has become a more central to the process, working with faculty to take raw content, articles, and power point presentations and create a draft of a storyboard. We find that the process moves much quicker if the faculty are reacting to a draft instead of needing to create a draft. As a result, our instructional designer has become an expert in patient safety and health disparities! We found the best way to get a published LO is to have an initial session with the content expert to determine what you want the student to get out of the experience, what are the key points, and to rough out an outline. The instructional designer then creates a detailed storyboard that the faculty edit. At this point the graphic/flash designer gets involved to make the LO as visual and interactive as possible. This goes through a number of cycles until everyone is
satisfied with the finished product and it is ready for review. If necessary, based on the reviews, the LO will go through yet another cycle for revisions before being published and available to the public.

Products

Learning Objects

Learning Objects geared toward graduate students need to be more thought provoking and more open ended than for more basic levels. We were constantly challenging ourselves to create more substantive, interactive LOs that require higher order thinking skills. These are invariably longer, more involved, and take considerably more time to develop. However, they are possible. We found a number of strategies especially useful for this purpose. Rather than being fed facts, figures, and other didactic information, we use discovery learning to make students consider the information more closely and tool-based exercises to foster understanding of new concepts through manipulation. We use reflection/discussion questions with “thought tickers” for open-ended responses. These can be used by faculty as a springboard for group discussions, papers, or projects. We draw upon student experiences by having them recall related situations in their own work life, have them apply the concepts they learned and then provide expert modeling to give feedback. We also use case-based scenarios and simulations to allow for extended exploration of connected concepts.

Evaluation. For evaluation of the LOs we contracted with Iota Solutions to conduct the evaluations and collect the data. When LOs were ready for review Iota solutions would send an automated email to each of the respective Design Team members alerting them of a LO to evaluate and directions on how to access both the LO and the evaluation form online. Each LO was evaluated for content, interactivity, potential effectiveness as a teaching tool, usability (user friendliness, readability, ease of navigation and manipulation), and reusability (ability to be applied across disciplines and contexts, to run on different platforms and in different delivery modes). A minimum of three reviews were required before revisions were made. Only once were revisions so extensive that we sent the LO back for review. If the revisions are content based the faculty member is contacted for their input.

NEAT Learning Object Repository. (http://webcls.utmb.edu/neat/)

Once final revisions are made the LO is published to the NEAT Learning Objects Repository. This is an extension of a similar repository developed through another FIPSE grant for the Web Clinical Laboratory Sciences program by the University of Texas Medical Branch. Through this repository faculty can search for, preview, download or link, and then evaluate LOs.

Use in Evaluation. We also use the repository to collect user evaluation data, both faculty and student, on the published LOs. The only “cost” to faculty for using a LO is filling out a short evaluation and sharing tips and tricks they used. Once faculty have identified a LO they want to use in their course they are asked to fill out a very brief survey to determine when and how they plan to use the LO. After the intended use date, they are sent an email reminding them to evaluate the effectiveness of the LO in their teaching. In addition, each LO has a link from the object for learners to immediately evaluate the LO from their perspective. This is the first semester that the repository and the LOs are being piloted. We will have updated evaluation data to share at the presentation.

Virtual Teaching Guide. (http://www.neatproject.org/vg.htm)

To enhance use of the LOs we developed a virtual teaching guide to help faculty technologically and pedagogically enrich or construct courses with LOs. Available through the project website, this guide covers everything related to LOs: what they are (including examples), how they enrich teaching and learning, as well as how to find, evaluate, and use them effectively. There is also a “Tips and Tricks”
section where faculty share stories and examples of what has worked for them – and what has not. This section is in its infancy since this is the first semester of piloting the LOs in courses.

**Faculty Perspective**

Just as a collaborative process was important to establishing purpose, expectations and an action plan, so it was important to collaborate with faculty who agreed to develop and use the LOs. To encourage faculty interest in developing and using LOs, it was helpful to introduce the concept of LOs and share stories about their use through the Virtual Teaching Guide. By requiring faculty to access LOs via a repository, the Project Director was able to collect data from users.

**Developing LOs**

Many authors have noted the complexities of developing LOs. In a study exploring barriers and facilitating factors that affect the development and use of LOs, Moisey, Ally & Spencer (2006) stated that the amount of work involved in their design was a typical barrier. Ploetz (2004) observed that its technologically challenging for faculty to create quality LOs. Nursing faculty involved in the NEAT Project felt fortunate to partner with a development team of instructional designers and media specialists who helped address their inevitable time and skill deficits. This freed us to focus on providing learning objectives and activities, along with expert review of content. Our collaboration was successful because all members of the development team were committed to using their talents in the service of enhancing the students’ learning experience.

**Using LOs**

Faculty users need to recognize an essential connection between learning objectives and LOs, in order to find them useful. Our faculty quickly recognized that LOs have much in common with any other type of assigned learning activity, along with some key advantages. LOs can be revisited as often as necessary. They’re great for presenting difficult or less frequently encountered concepts. We learned that we had to be careful not to go overboard with LOs or they begin to lose their appeal. Just as faculty sift and select among assigned readings and homework activities to help students accomplish learning objectives, so we need to weigh the value of an assigned LO. It is also important to remember that adult learners need to see the relevance of learning activities and have competing interests in their lives. When LOs are assigned, rather than offered as supplemental or enrichment activity, it is more likely that students will view them. More research is needed to compare the effectiveness of LOs with other instructional strategies.

**Summary**

**Why Is This NEAT?**

For faculty, developing LOs is an opportunity to share knowledge with the broader health care community. It provides a professional opportunity to be involved in a teaching modality that is innovative, unique and unfamiliar and to collaborate with experts in online learning and design. LOs provide a learning modality that has potential to be more timely than texts, to say nothing of the fact that learners today desire more innovative learning opportunities.

From previous tips on development, remember that this is really a marriage of technical support and content expertise. If each partner takes time to understand the other’s unique contribution to the union, the product is a better LO.
Assuming You’re Able to Build It, Will They (i.e., Faculty) Come?

As stated previously, faculty need to recognize a connection to learning objectives and see the LO as helpful to meeting them. An assigned LO should take the place of another assignment and student learning related to it needs to be evaluated (versus stand alone as “supplemental”). Faculty need to confront their own reservations about new technology and keep an open mind to deciding if the LO best supports the lesson.

Useful Resources


Biographical Sketches

Jeannette McDonald, DVM, PhD is a distance educator and Director of the Technology for Learning Center at the University of Wisconsin School of Veterinary Medicine. Dr. McDonald’s research has been in the area of the social aspects of online education for which she was awarded the 1999 Wedemeyer Award for Outstanding Distance Educator. She and her staff are currently exploring the creation and use of LOs as a way to provide efficiency and scalability in online learning, as well as the use of podcasting and games and simulations.

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Paula Jarzemsky, RN, MS, is a clinical professor at the School of Nursing at the University of Wisconsin-Madison. She has taught undergraduate students in the first and second clinical nursing courses at UW-Madison since 1992. She also provides leadership to 12 clinical instructors at four area hospitals as course professor for the first clinical nursing course and is an active member of the School’s Undergraduate Program Committee. Ms. Jarzemsky served as content expert for a number of learning objects and can speak to their development and use in
this setting. Her practical experience in using learning objects with students and instructors is instructive and helpful.

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