Up Bloom's pyramid with slices of Fink's pie: Mapping an occupational therapy curriculum

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Abstract

Curriculum design is a complex task. One tool used in the design process is curriculum mapping. A mandated transition from a quarter to a semester academic calendar, alongside preparation of accreditation self-study materials, provided an opportunity for faculty teaching in an entry-level occupational therapy program to review the underlying basis of the curriculum. Two taxonomies of learning (Bloom's cognitive domain and Fink's taxonomy of significant learning experiences) were used to examine existing courses and to consider how learning outcomes and experiences varied over the sequence of courses in the curriculum. This led to the creation of a series of course maps that have been useful in informing current curriculum design and guiding future work. In this article, the authors describe the context under which this review took place, briefly review the pertinent literature relating to curriculum design and mapping in occupational therapy education, discuss the mapping process, and provide examples of course maps. The authors reflect on the process and plans for using what was learned in future curricular design projects.

Keywords

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While universities may look like static monoliths to external observers, change is constant and accelerating in the contemporary academic environment. Institutional change is driven by a variety of pressures, many of them beyond the control of the academic programs in a university. Press for a specific change sometimes opens up space for programs to undertake a more comprehensive review of what they have been doing and what they could be doing through engaging in a scholarship of teaching and learning (SoTL) inquiry (Hutchings, 2010). This SoTL case study describes a situation where a systemic change, from a quarter to a semester academic calendar, in concert with accreditation self-study preparation, created opportunities to critically examine and represent an occupational therapy professional entry-level curriculum in a different way. The authors briefly describe the complexity of occupational therapy curriculum design, some tools used in curriculum design, and review two learning taxonomies often used in curriculum planning. We then describe how these two taxonomies were used for curriculum mapping as part of a two-stage curriculum review process currently underway. We conclude with reflections on how this work might be of benefit in the future to this specific program and to other occupational therapy programs undertaking curriculum design or revision.

The Complexity of Occupational Therapy Curricular Design

Typically, entry-level occupational therapy curricula are designed using a variety of approaches and quality criteria. Berg et al. (2009), in their model occupational therapy curriculum guide, describe two approaches to curriculum development that they label the traditional model and the narrative model. According to the authors, in the traditional model, the curriculum is designed to meet overall learning objectives set for the program, with courses developed and sequenced around mandated content. Learning objectives for each course tie back into competencies developed by accrediting bodies, and students are evaluated against these competencies. Berg et al. contrast this with the narrative model of curriculum development, in which curriculum development is guided by faculty collectively asking and trying to answer the questions: (a) What narrative will the students in the program live out? and (b) What key constructs will be core to the curriculum and evident to and articulable by the students? In this approach, the curriculum is seen as a co-constructed and constantly evolving answer to these questions and flows in and among classes and courses.

Competencies evolve in response to changes in society and in the institutions in which health care occurs. Curricular quality when using the narrative approach relates to four criteria: richness, recursion, relation, and rigor. Berg et al. (2009) also suggest that any program can be seen as having three curricula: explicit, implicit, and null. The explicit curriculum is that which is most often reported in curriculum documents. For example, occupational therapy curricula must show how courses and the overall curricula relate to specific student competencies established by national or international accrediting bodies. The implicit curriculum is frequently concerned with the culture of the educational program and of the profession

into which students are being inculcated. Discussions related to professionalism and expectations about involvement in occupational therapy organizations and initiatives might be examples of the implicit curriculum. The null curriculum is information that students will not hear about or experience in a particular educational program. For example, a program could choose not to teach specific conceptual practice models, avoid mention of specific clinical practices, or fail to critically discuss occupational therapy as a political practice (Pollard, Sakellariou, & Kronenberg, 2008). Finally, Berg et al. note that occupational therapy curricula may be organized around a number of other concerns: being student centered, looking to emerging practice, being competency-based, and/or being subject centered. The mission and vision of the university in which the program exists, as well as educational and social trends, also influence these considerations.

Hooper (2010) adds further to our understanding of the complexity of occupational therapy curricular design by describing how curriculum designers may attempt to navigate their way through this process and yet lose sight of the end point described in the American Occupational Therapy Association's (AOTA) Centennial Vision for occupational therapy. Their vision is of a diverse profession that is influential, widely known, science- and evidence-driven, connected globally, and able to address the occupational needs of society (AOTA, 2006). Using the metaphor of bushwhacking in backcountry hiking, Hooper describes the value of maps, a compass, and landmarks. She suggests that using two landmarks

to guide curriculum design,—being subject-centered and developing the capacity for self-authoring,—will increase the likelihood that the profession will reach the destination described in the Centennial Vision. Subject-centered curriculum design puts occupation at the center of all courses and makes explicit the links between the skills and knowledge introduced in any course, the larger idea of occupation, and the occupational needs of society. Becoming self-authoring (Baxter Magolda, 2008) involves being able to construct knowledge in context, build an internal identity, and work alongside others while holding fast to one's identity. The latter ability, although Hooper does not discuss it in the article, may be particularly important in an environment in which there are increasing calls for interprofessional education and collaborative practice (Carson et al., 2012).

Hooper, Atler, and Wood (2011) describe the experience of using the model curriculum guide mentioned previously to undertake a comprehensive review of an occupational therapy curriculum. They note the extensive time commitment required for this work, as well as the need to develop a process and to create a "holding environment" that supports the redesign work (p. 197). They differentiate between the foundational and implementation work that was done by faculty over a 16-month period. They note that the advantages of using the model curriculum guide, as well as areas where it needs further development, became clear as their program moved through this process.

MacNeil and Hand (2014) give us another opportunity to understand the complexity of curriculum revision. During a yearlong review of

curriculum content and teaching approaches, faculty used curriculum mapping and dialogic evaluation to look at their program and determine their readiness to transition to an entry-level doctoral degree program. Faculty were asked to consider pedagogy, assessments, and program alignment. Curriculum mapping identified four areas for further exploration: gaps, repetitions, assessments, and questions. MacNeil and Hand (2014) note that this review took place without the pressure of an imminent accreditation visit and was undertaken as an incremental approach rather than a large-scale overhaul.

It is clear from this review of articles describing curriculum design in occupational therapy that such design and revision is complex. Curriculum designers must consider content, context (in their institutions, in the profession, in the health care environment, and in society), the teaching and learning process, and evaluation at the course and curriculum level. A variety of aids to curricular design have been suggested in the articles cited. These include using a model curriculum document, establishing landmarks so as to avoid getting lost during the design process, using dialogic evaluation, and mapping curriculum. In the next section of this paper, the authors will describe the process and tools used by one occupational therapy program during curriculum review and revision.

Case Study: Curriculum Revision and Mapping

The curriculum review, revision, and mapping that this case study describes took place over a short 6 month period— in association with the preparation of self-study documents for an upcoming accreditation site visit. It took place during a time when the university had established a new college of health sciences and public health and when all health sciences programs were being asked to transition from a quarter to a semester academic calendar to enhance interprofessional education opportunities. Finally, it coincided with the university's teaching and learning director promoting Fink's taxonomy of significant learning experiences (2013) as a focal point for discussing teaching and learning at the university.

The review and revision process began with an appreciative inquiry (Cooperrider, Whitney, & Stavros, 2008) into what faculty saw as the strengths of the program. Appreciative inquiry's 4D process involves discovering strengths, dreaming of the future, designing, and delivering. In response to this mandated change, we wanted to make sure that what we discovered as we looked at strengths and what we envisioned as future possibilities were clear as we moved into designing for semesters. As part of the discovery and design work, faculty wanted to find ways in which we could explore and graphically represent types of teaching/learning activities and how this changed as students moved through the master of occupational therapy (MOT) curriculum. To address this need, we turned to two taxonomies of learning: Bloom's revised taxonomy (Anderson et al., 2000) and Fink's taxonomy of significant learning experiences (2013).

Exploring and Mapping a Curriculum Using Two Taxonomies

Bloom's taxonomy. Educators will be familiar with Bloom's work, published in the

1950's and 60's, and his original three learning taxonomies: cognitive, affective, and psychomotor levels, through which students are expected to ascend during a course or a program. The most used of these taxonomies is the cognitive one. In this original taxonomy, evaluation is presented as the pinnacle of learning. Anderson et al. revised the cognitive taxonomy in 2000. In this revised taxonomy, students move from remembering and understanding information, to learning experiences that require applying, analyzing, evaluating, and, finally, creating. Bloom's taxonomy remains an influential framework for curriculum design. These taxonomy levels are evident, if not explicitly acknowledged, in the current Accreditation Council on Occupational Therapy Education (ACOTE) standards for American occupational therapy educational programs. For instance, higher numbered items in subsections of the *ACOTE B Standards* (AOTA, 2016) regarding curriculum outcomes ask that students have skills in evaluating and creating rather than simply remembering or understanding specific information.

Following a suggestion about the use of Bloom's taxonomy in gifted education and considering the typical progression of students from diverse undergraduate programs to entry-level graduate study in occupational therapy, Hamilton and Burwash (2008) suggested that the entire sequence in graduate professional education might be represented by an inverted triangle resting on top of the more familiar triangle. This forms a somewhat hourglass shape, depicting students progressing upward to engaging in some creating in their undergraduate work, moving back into some

foundational learning early in their graduate coursework, then quickly moving into spending much more of their time analyzing, evaluating, and creating (see Figure 1).
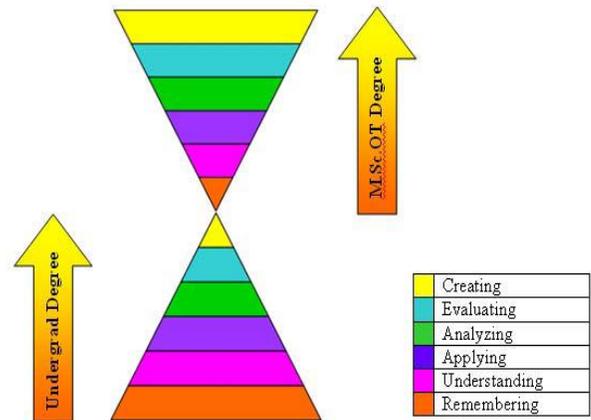

Figure 1. Representation of the transition between undergraduate and graduate education on Bloom's revised taxonomy. Reprinted from *Professional & Educational Conceptual Framework & Curriculum Philosophy: Executive Summary*, p. 3. A. Hamilton and S. Burwash, 2008. Copyright 2008 by A. Hamilton and S. Burwash. Reprinted with permission.

As faculty considered this hourglass model, we ultimately decided that there should be some overlap between the two triangles to reflect more accurately that there is a significant amount of new learning on entry into a professional degree program. We also looked at how clinical fieldwork fits with this model. We saw fieldwork as wrapping about the hourglass, starting as the student moves upward from the remembering and understanding levels of the top triangle to begin his or her Level I fieldwork experiences. This continues as a larger and larger "wrap" around the top of the upper triangle as analyzing, evaluating, and creating occur both in the classroom and fieldwork settings, and then are a significant focus for Level II fieldwork. Following this discussion, we considered if and how

we could use Fink's taxonomy of significant learning experiences (2013) to further represent our curriculum design.

Fink's taxonomy. Fink's taxonomy (2013) includes six dimensions of significant learning: foundational knowledge, application, integration, human dimension, caring, and learning how to learn. Some of these dimensions are at least somewhat similar to those found in Bloom's cognitive taxonomy; for instance, Fink's foundational knowledge and application are roughly analogous to Bloom's remembering, understanding, and applying, and Fink's integration could reflect the upper three levels in Bloom. Others, however, are distinct and are more associated with some of the elements described by Bloom in his affective and psychomotor domains: the human dimension, caring, and learning how to learn. Fink describes these three dimensions as focusing on learning about self and others (human dimension); changes in feelings, interests, and values (caring); and metacognition about one's learning, as well as development as a self-directed learner (learning to learn). Fink notes that, unlike the elements in Bloom's taxonomies, these dimensions are not arranged in a hierarchy, but rather are transactive. Fink's taxonomy is variously presented as a pie chart or, to more clearly emphasize the transactive nature of learning, as a flower with six long oval petals that overlap with adjacent petals, with the center of the flower being where significant learning is situated. Fink describes the need for a taxonomy that captures educational outcomes that extend beyond the cognitive domain and emphasize "learning to learn, leadership, interaction skills,

ethical problem-solving, tolerance, and flexibility in the face of change" (p. 34). Each of the six dimensions includes specific types of learning and provides specific value for the learner. For instance, foundational knowledge includes understanding and remembering information and ideas that provide a platform for further learning. Caring focuses on learning in which one develops new feelings, interests, and values. Fink suggests this dimension provides students with the motivation and drive to learn and to integrate what they are learning into their everyday lives. Learning to learn has the distinctive value of helping a person become a self-directed lifelong learner and to be more effective as a learner.

As occupational therapists and educators, faculty members could see the merit of Fink's six dimensions. Faculty also wanted to understand whether these dimensions were represented in the current curriculum and if they could help better explain the educational journey of becoming an entry-level practitioner. Rather than look at the curriculum overall, we decided to analyze each course in terms of the six dimensions. While one usual representation of the six dimensions is a pie chart with six equally sized segments, we specified the size of each segment based on the percentage of the course's content and emphasis that represented each of the dimensions. This created a unique Fink's Pie for each course.

The first part of this process was to determine how to assign the percentage. While it is relatively easy to determine the percentages for the three dimensions that closely resemble Bloom's levels of analyzing, evaluating, and creating by

looking at the course's assessment measures, deciding how to represent significant learning in caring, the human dimension, and learning how to learn was more challenging. As a basis for determining this, each instructor described the student's efforts in his or her course, modes of instruction, and outcome measures used to assign grades. This gave a loose representation of the course's learning opportunities. From this, each instructor determined what percentage of the course each activity contributed to each learning dimension

as defined by Fink (2013). For example, a course that relied heavily on presenting new material would have a high percentage of the course assigned to the foundational knowledge dimension, while a course that later built on this foundation with in-class activities and assignments would have more assigned to the integration and/or application dimensions. Figure 2 shows how the Fink's Pies would look for a first year, first quarter course compared to one that would be taken at the end of the program.
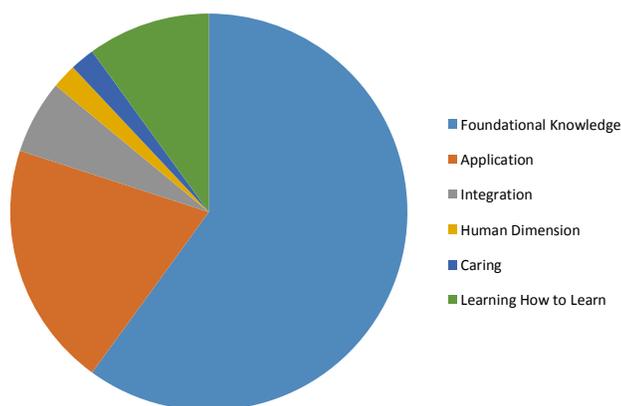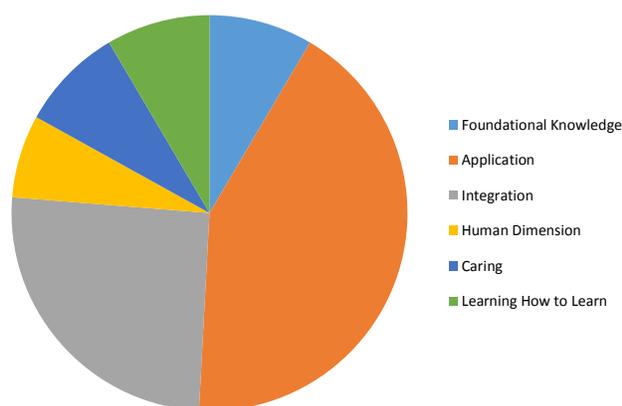

Figure 2. Fink's Pie charts for two courses in the quarter curriculum. OCTH 502 (Occupational Performance and Movement) occurs in the summer of the first year while OCTH 541 (Technologies for Enabling Occupational Performance) occurs in the winter quarter of the second year.

As we looked from the initial to the final courses in the curriculum, we saw a decrease in most courses in the size of the slice associated with foundational knowledge and increases in the size of application and integration slices. This is consistent with students moving up the levels of Bloom's taxonomy. Many courses included some attention to the dimension of learning how to learn. What was less predictable was the proportion of significant learning experiences related to the human dimension and caring across the curriculum,

although all courses had these two dimensions included to some degree.

This exercise was useful in helping to support that the program did, in fact, use the modified Bloom's taxonomy as a skeleton. More significantly, it was able to show that while some courses deviated from the traditional taxonomy, types of significant learning could be represented using Fink's taxonomy to show how new knowledge must be layered in the complex curricula of entry-level professional programs.

Reflections and Future Directions

Exploring the curriculum using these two taxonomies was a useful exercise. It allowed us to move beyond the traditional content-focused approach to curriculum mapping so we could look more closely at the process of learning embedded in each course. In this way, it was more akin to the narrative model of curriculum design that Berg et al. (2009) describe, in which we were interested in exploring which stories about what occupational therapists know and do were being co-created and told in our curriculum. It also gave us a chance to focus on the implicit curriculum that Berg et al. described. Caring, the human dimension, and learning how to learn are important aspects of skilled and ethical practice as an occupational therapist. Constructing these Fink's Pies allowed us to see how we were including these crucial aspects in and among our courses. The results of this review have also been valuable in representing the program to students throughout the curriculum. We have started to include the relevant pie charts in course syllabi. In addition, we have also used them in discussions with clinical educators and when describing the curriculum to other academic programs, academic administrators, and accreditors.

This inquiry arose from a systemic change as we moved from a quarter to a semester academic calendar. Given ongoing changes in the academy, in our specific institution, and in the profession of occupational therapy, we anticipate many future opportunities to continue to engage in SoTL inquiry. Our future plans with regard to this particular inquiry are to: (a) refine the process for determining the relative proportions of the various significant learning experiences in a course, (b) use this process to map new/revised courses that are part of Phase 1 of our transition to semesters and compare these Fink's Pies with those from previous courses under the quarter system, and (c) discuss what we hope to see as students progress through the curriculum. A final question we would like to explore is: How could these six significant learning experiences be used in representing the experiences students have in specific Level I and Level II fieldwork? We would like to know what students think is happening, in terms of their progression through the program, and the relative weight of these types of learning experiences as they make this journey. We wonder if and how these maps could be used in formal program evaluation. How can we capture information about these significant learning experiences as they are happening? It could be interesting to reanalyze the information from exit interviews with our graduating classes and from students' Level I and II fieldwork journals for examples of significant learning experiences and/or gaps in these learning experiences. What would our null curriculum look like (Berg et al., 2009)? Finally, how can we use the information from looking at a curriculum through the lenses of both Bloom's and Fink's taxonomies? These are questions we will explore as we implement Phase One of our curriculum revision and begin to consider what our next changes will be.

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