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Curriculum Mapping in Higher Education: A Vehicle for Collaboration

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Abstract This qualitative study makes the case for the implementation of curriculum mapping, a procedure that creates a visual representation of curriculum based on real time information, as a way to increase collaboration and collegiality in higher education. Through the use of curriculum mapping, eleven faculty members in a western state university Teacher Licensure program aligned and revised the teacher education curriculum across a sequence of courses. An increase in collaboration and collegiality among faculty emerged as an unintended outcome as a result of participation in the project.

Key words curriculum mapping · collaboration · collegiality · higher education

"To go fast, go alone. To go farther, go together." (African proverb)

The norms of the higher education community at large encourage autonomy and independence. Junior faculty often speak of the loneliness and isolation that they encounter

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and frequently cite this as a reason for leaving an institution (Barnes et al. 1998). Tierney and Rhoads (1994) found that a lack of a sense of community was a key determinant in the decision to leave academia. Trower noted, "the single most important concern [of faculty] was autonomy in the workplace" (as cited in Fogg 2006, p. 1). Furthermore, in the pursuit of tenure and promotion, single-authored publications are more highly rated than are those with two or more authors, which can add to the pressure and sense of isolation. As Palmer (1998) summarized,

> Academics often suffer the pain of dismemberment. On the surface, this is the pain of people who thought they were *joining a community of scholars but find themselves in distant, competitive and uncaring relationships with colleagues* [emphasis added] (p. 20).

Organizations beyond higher education have shifted toward cultures where the norms of autonomy and independence are replaced by the norms of collegiality and collaboration. For example, the U.S. Department of Labor (1991) established skills and competencies for the workplace; and two of these elements, sociability and interpersonal skills, directly relate to norms of collegiality and collaboration. Sociability is defined as "demonstrate[ing] understanding, friendliness, adaptability, empathy, and politeness in group settings" (U.S. Department of Labor 1991, p. x). Interpersonal skills are defined as "participate[ing] as a member of a team, contributing to group efforts, negotiation, working toward agreement, and resolving divergent interests" (U.S. Department of Labor 1991, p. xi). Employers have identified these two elements as desirable traits for the workplace.

Tierney (1999) compared the values and norms of higher education to those of the workplace. He argued that the values of competition and individualism in higher education are replaced by cooperation and teamwork outside of the higher education arena. He also argued that the culture of higher education encourages employees to "fly solo" whereas most workplace organizations expect their employees to "fly in formation" (Tierney 1999). Whereas in higher education individuals often complete their own projects in isolation which may or may not have relevance to the department's or school's goals, workplace organizations tend to rely on teams that work together toward a common goal (Tierney 1999).

While it is not universally true that the culture of higher education is individualistic, experts in the field of higher education research suggest that, in order to survive, the culture must shift from one that values individualism and autonomy to one that values collegiality and collaboration (Simpson and Thomas as cited in Van Patten 2000; Tierney 1999). Fogg (2006) reported that collegiality is an important factor in job satisfaction for today's junior professors, often more important than salary. Furthermore, funding organizations encourage collaborations between and among individuals, departments, institutions of higher education, and the community. For example, the National Science Foundation Grant Proposal Guide (2007) encourages group proposals and interdisciplinary projects with specific funding solicitations often requiring collaborations.

This article describes a project where eleven school of education faculty members used curriculum mapping to align and integrate the curriculum across a sequence of courses. Curriculum mapping is a procedure which promotes the creation of a visual representation of curriculum based on real time information (Jacobs 1997). Using a template with predetermined categories and format, instructors "map" their curriculum as it occurs, in real time. Real time in this context means when the curriculum is delivered, rather than as projected in a course syllabus prior to the course or after the course is completed. The curriculum maps are aggregated first horizontally by course and then vertically across all courses in a sequence. All faculty members review the maps, identifying strengths, gaps,

and overlaps. Once the review is complete, the faculty determines what and where to add or eliminate content and/or strategies, which results in a more streamlined curriculum and integrated program. These maps become living documents for course instructors; and they can be frequently revisited and revised as courses are adapted to the needs of the established curriculum, the needs of students, or the incorporation of new instructors into the program.

While the original intent of our project was to align and revise the teacher education curriculum, an unexpected and beneficial outcome emerged: we found that collaboration and collegiality increased as a result of participation in the project. To explain this outcome, we first define the meaning of collaboration and collegiality as it applies in the context of the curriculum mapping process. Next, we describe how the process was implemented including background information, a rationale for selecting curriculum mapping, and methods of data collection. Our findings follow; and finally, we share our conclusions, and implications.

Collaboration and Collegiality

In any community, collaboration and collegiality are sought after ideals. Haworth and Conrad (1997) noted that collegial and supportive cultures are an important component of high quality programs. As Grossman et al. (2001) eloquently explained, "The association between community and the good life reaches across religious, cultural, and philosophical traditions where the value of individuals working together for the common good is upheld and respected" (p. 945). The English language is replete with common sayings that illustrate the values of collegiality and collaboration. For example, "united we stand, divided we fall", "many hands make light work", and "circle the wagons." Other examples come from famous individuals in history. Isaac Newton (1675) wrote, "If I have seen further than others, it is by standing upon the shoulders of giants" (as cited in Kaplan 1992), and Henry Ford (n.d.) the developer of the assembly line stated, "If everyone is moving forward together, then success takes care of itself" (Thinkexist.com 2008). In short, these values allow communities to function and grow productively.

For this article we use the following definitions: "collegiality—cooperative interaction among colleagues" and "collaboration—to work together, especially in a joint intellectual effort" (www.Dictionary.com).

The values of collegiality and collaboration are embedded in the curriculum mapping process by providing a structure for all to engage in collective dialogue about the curriculum, instruction, and students' learning (Donald 1997; Udelhofen 2005). Curriculum mapping fosters respect for the professional knowledge and expertise of all instructors. It allows all participants to examine, or re-examine, their individual and collective beliefs about teaching and learning in a structured and safe setting.

The Process of Curriculum Mapping

Curriculum mapping is a cyclical process that consists of five stages. Figure 1 provides a graphic representation of this process. In Stage 1, individual instructors develop maps of their courses in real time as they teach over the span of a semester. Stage 2 begins with all instructors of a particular course working together to aggregate the maps. In Stage 3, all faculty members involved review all the maps in a program or set sequence of courses. If

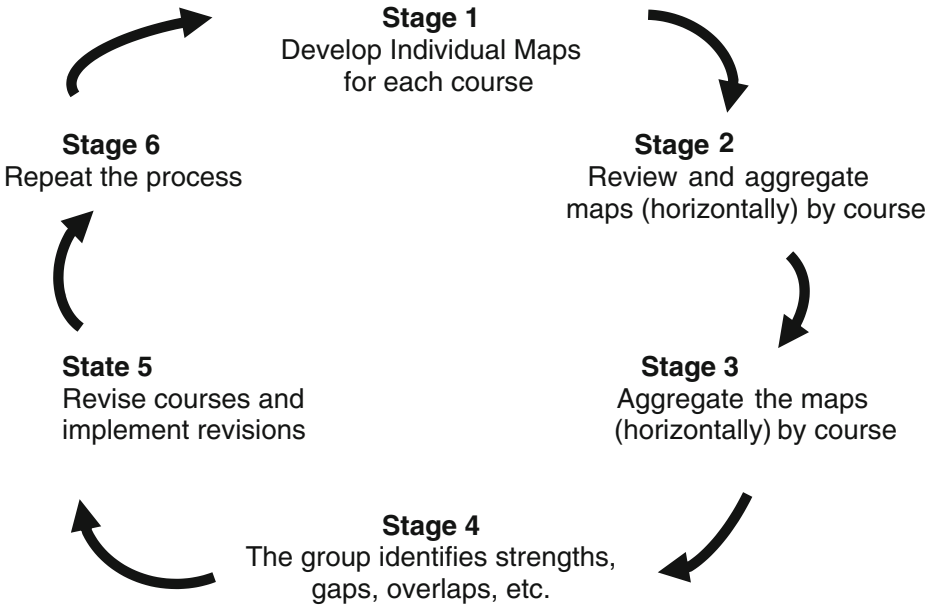

Fig. 1 The process of curriculum mapping.

the number of faculty members or the number of instructors per course is small, this can be done as one large group. If not, Jacobs (1997) suggested creating a number of heterogeneous groups consisting of those who represent all courses and having these groups review the vertical array of maps, looking for alignment, gaps, overlaps, inconsistencies, and strengths. A representative from each group records the findings, aggregates them, and then reports out to the large group. Stage 4 includes all faculty members and focuses on identifying areas in need of alignment, revision, and/or elimination. The group prioritizes those areas that need attention first and those that need further study. The group then develops a plan following with action in Stage 5. The process comes full circle in Stage 6. The result is a curriculum that is fluid and adaptable as the needs of students, policies, and new research findings change over time.

The Project

This section details background information leading up to the project, the sequence for implementation of curriculum mapping, data collection for documentation, and data analysis.

Background of the Project

In the fall of 2005, the School of Education (SOE) at an institution in a western state was part of a grant project involving four institutions of higher education across the state. This project focused on developing and integrating data driven instructional practices into Teacher Licensure curricula. As part of the grant, the four institutions together developed Information-Based Educational Practice (IBEP) standards, which accurately described the

process of data driven instruction. From there, each institution determined its own methods for data collection and procedures for the integration and implementation of the IBEP standards into the curriculum.

At our institution we, as the primary investigators for the grant and members of the licensure faculty, needed to establish if, where, and when the IBEP standards occurred in the Teacher Licensure program's course sequence. To do that meant closely examining the curriculum in place. We were aware that K-12 schools and districts were using curriculum mapping to form a picture of their curriculum, so we decided to employ the same process. We recognized that this work would mean a change in how the Teacher Licensure faculty operated. As Jacobs (2004) had stated, "[through curriculum mapping] colleagues create new pathways in a shared profession" (p. x). First, we examined the current literature on change to structure this process. We drew heavily on Fullan's (2001) work, noting that successful change depends on shared meaning among all involved. While the Teacher Licensure faculty members were all involved with preparing pre-service teachers though a set course sequence, the challenge was to create shared meaning and buy-in to the project.

Sequence for Implementation of Curriculum Mapping

We had a two-year time period based on our grant funding. To facilitate the work, we organized to follow the university semester system. During the first semester, we developed a timeframe for the work and identified and planned the use of available technology for implementation. We also reviewed and aligned the licensure program's foundation and belief statements with our state's Department of Education Performance-Based Teacher Education Standards, the National Council for Accreditation of Teacher Education standards, principles from the Interstate New Teacher Assessment and Support Consortium standards, performance indicators from our state's Council on Higher Education, and the Information-Based Educational Practice Standards developed by the four institutions. The result was a written document that outlined our program. However, having a written document was no guarantee that these standards and beliefs were translated into our teacher education courses. We also suspected that course syllabi might or might not reflect what was actually implemented in the classroom. For example, when we reviewed the course syllabi, we found that not all faculty members were teaching to the state's performance standards for teachers, even though these standards were mandated. In fact, one colleague commented during a licensure faculty meeting discussion, "Teach to standards? What happened to academic freedom?" At this point, we knew mapping the curriculum would provide a forum for sharing, discussing, analyzing, and realigning coursework with standards.

Using data to develop commitment. Research has shown that "change takes place at the individual level prior to the organizational level" (Hall and Hord 2006, p. 7). In order for change to be successful, there must be pressure and support for those engaged in the change (Fullan 2001). We knew we needed to instill a sense of urgency to show licensure faculty members that change was necessary so we reviewed student satisfaction data such as individual course evaluations. These data indicated that students felt there was considerable overlap and repetition among the courses in the program sequence. An upcoming state accreditation visit and a national accreditation visit also provided pressure to review the current curriculum. Using data to inform practice was an ongoing theme of our work.

Inviting participation, constructing a timeframe, collecting data. We provided support for change by using existing scheduled meetings to inform the licensure faculty about the data

and the process of curriculum mapping, by offering professional development activities to help implement the mapping process, and by disseminating handouts and articles. We also offered small stipends from the grant monies to those who volunteered to engage in the work. At the beginning of the project, nine instructors of two key licensure courses in the six-course sequence volunteered to participate in the process. In return, over the two-year period of the project, these participants agreed to map their courses for a minimum of one semester in real time, attend meetings to aggregate the maps, complete an open ended survey of the process, and participate in an end of the project interview.

To supplement the survey and interview data, we employed participant observation data collection methods to include detailed field notes of each meeting.

Initially our colleagues were skeptical about curriculum mapping, but their thinking changed once they engaged in the process. For example, one colleague commented: "My very first reactions were that I wasn't exactly sure what curriculum mapping was, but when I learned about it and discovered what the purpose of it was, I was very interested" (Participant A). Still another colleague stated,

> I must admit that I was a little concerned because I thought it was going to be an additional job, additional work to do around something that I thought I had already fairly well gotten a handle on. I was one of those people that looked at what I taught after I taught it, and then made changes before I went on. And so I didn't see much difference between what I was doing and what [curriculum mapping] was doing. (Participant C)

Technology decisions. We placed a mapping template for all to use on the Teacher Licensure WebCT page. The nine instructors mapped their courses onto the template in real time throughout this first semester. Technology made creating, storing, and sharing information smooth and also easy to revise. It increased collaboration among the faculty members as we did not have to deal with using unwieldy posters or large sheets of butcher paper covered with sticky notes.

Implementing the curriculum mapping process. The curriculum mapping process addressed three critical questions:

- Who is doing what?
- How does the work align with the Teacher Licensure program's goals and standards?
- Are we working efficiently and effectively? (Jacobs 2004)

Over the course of the first semester, each instructor completed a map independently, without influence from colleagues. In the first month of the next semester, the instructors for each particular course met to aggregate their maps. During this process, the course leaders were encouraged to keep in mind the need for individual creativity but to maintain fidelity to the state's established Performance-Based Standards for Teachers. The result was a course map, a visual representation of what was taught in that specific course, which included content, materials, standards, and assessments.

The remainder of the second semester was spent with the nine instructors meeting every other week to develop an aggregated map that represented what was taught in both courses in the licensure sequence. The meetings were held in a comfortable conference room with computer access so that the work could be projected on a screen for all to see. The group elected a meeting facilitator from within itself and then began by looking at the courses

sequentially to identify strengths, gaps, redundancies, and misalignments for these key courses while combining the two maps. The group came to agreement as to what content should be kept in the course sequence, what should be dropped, and what new content should be added. For example, during a combined course meeting the group discovered that the same activity around learning theory was contained in both courses. Together, they decided in which course this content and activity belonged and eliminated it from the other course. One participant commented:

> I really liked the accountability piece of the mapping. It was exciting to see, as the two teams met together, that one [course in the sequence] would introduce something, the next [course] would go a little bit more in depth, the next [course] would have the students do that benchmark, standard, concept or topic full-blown. (Participant D)

Another colleague stated:

> I began to look at the mapping as a way of bringing life to the syllabus, that it was not only a work done in isolation where I thought something was done "right" or "wrong", but all the work done in the process of collaboration, which of course we know is the strongest way to have collegiality. (Participant F)

A third colleague noted,

> We identified specific needs for professional development as we shared our knowledge base and pedagogical practices. We were communicating, collaborating, articulating, and aligning! We were building the shared meaning that is so important to successful change. (Participant B)

For the remainder of the semester, the group continued to meet, discuss, and revise their respective syllabi, always keeping in mind the three critical questions for curriculum mapping. This cycle concluded at the end of the second semester of implementation.

At the beginning of the second year, we invited instructors from the other licensure courses to participate. Two faculty members representing two additional courses in the course sequence volunteered to participate, thus increasing our group to eleven members in total.

Data Analysis

We analyzed our interview data, survey data, and observation notes employing Miles and Huberman's (1994) four step process: "underline key terms, restate key phrases, reduce the phrases and create clusters, and reduce clusters and attach labels" (p. 87). The clusters of collaboration and collegiality unexpectedly emerged across all data sources.

Finding

Although the original intent of curriculum mapping was to align the Teacher Licensure coursework with the state standards, we were surprised by the unexpected finding—that the curriculum mapping process fostered increased collegiality and collaboration among the 11 participating faculty members. These faculty members became more energized and engaged with colleagues, mitigating the isolation often felt by many in higher education (Damrosch 1995; Goodlad 1984; Lortie 1975; Sarason 1996). Throughout this process, faculty members discussed which state standards and related topics should be included in which

courses. Some topics were eliminated in certain courses and added to others. Faculty also discussed strategies and activities that they used in classes, again eliminating duplications and filling gaps. Furthermore, the discussions sparked new ideas for teaching the course content. For example, after one mapping meeting a faculty member commented, "It was really exciting to talk about what we were doing in our classes and to get ideas for different ways to teach the same content. I have never seen so much energy!" (Participant E). Another participant wrote in the end of the semester survey of the process:

> It was really fun to exchange ideas and determine how each of us taught the major components of [our course]. We shared numerous materials, activities, and resources with each other. As a result of the mapping, I'm energized to teach a number of things differently next year. (Participant A)

Still another colleague noted:

> I have found both the mapping exercise and the discussion with colleagues to be invaluable. Armed with the knowledge of my own pedagogical skills, tools, and desires, I attended meetings with others who brought their own toolbox to the common table. I am appreciating both the similarities and differences in the ways my colleagues approach our common course. (Participant D)

One participant stated in the final interview, "it's been good for our faculty, my curriculum is far richer because of [curriculum mapping]" (Participant C).

Other collaborative efforts developed from the curriculum mapping process. The aggregated curriculum map was enlarged to poster-size and prominently displayed and referred to at every Teacher Licensure meeting, and, most recently, during our external review visit. This large map was used to clarify the licensure program, coursework, and standards for the Teacher Licensure faculty and SOE faculty members other than licensure faculty. The map was also used to clarify the program for instructors from other schools and colleges across the university who teach content methods courses for our students. The SOE annual report featured the map as well.

Our desire to collaborate on scholarly work increased as a result of participation in this project. With input from colleagues, several faculty members prepared joint presentations and papers for three different national education conferences on the topic of curriculum mapping in higher education. In addition, three faculty members presented a poster session on the same topic at the 2007 American Educational Research Association conference in Chicago. This collaboration broke down the academic barriers of competition that keep us fragmented (Palmer 1998).

Conclusion

In our experience, curriculum mapping provided a method to not only align and articulate the curriculum, but also a way to foster collaboration and collegiality of those participating in the process. The interaction among participants in this project promoted collaboration and collegiality, allowing the participants to share knowledge and beliefs about teaching and learning. Participants in our study examined and reflected upon their practice in this collegial setting. Our experience with this process exemplified the following:

> Curriculum mapping shatter[s] the glass ceiling of teaching in isolation. It move[s] us toward clear communication, meaningful connections, and understanding the power of

> professional collaboration that truly [makes] a difference. (Chapman, as cited in Jacobs 2004, p. 79)

As Massy and Wilger (1994) have found, keeping the curriculum modern and relevant through shared participation increases faculty members' interest and engagement in teaching and learning as well as updating disciplinary knowledge and meeting students' needs. We have continued to engage in this process, knowing "there is no epilogue once the process begins" (Jacobs 2004, p. 8).

Curriculum mapping is an ongoing, dynamic process. Our faculty recognizes that, by accepting this as an ongoing process, we will continue to grow as a collaborative community, to connect with each other to decrease isolation, to consider curricular changes carefully, and to promote collegiality. We highly recommend curriculum mapping as a vehicle for other institutions or departments who wish or need to improve not only course alignment and articulation, but also want to promote a supportive, collaborative culture that enhances the learning of all stakeholders (Donald 1997; Haworth and Conrad 1997).

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