Opportunities and Challenges of Curriculum Mapping Implementation in One School Setting: Considerations for School Leaders

Tamara Shilling
Oklahoma State University

Abstract

This qualitative case study examined the perspectives and experiences of educators involved in the curriculum mapping initiative concerning the processes and activities that foster or impede curriculum mapping implementation. Twelve participants were recruited for the study. Data collection methods included semi-structured interviews, documents that involved standardized test reports and curriculum maps, and classroom observations. The results of the study indicated a strong congruence with the factors concerning initiating successful implementation identified in the literature, and they also highlighted some important aspects that are not widely discussed in the literature. The following strategies for successful curriculum mapping implementation were identified: consistency of leadership and support, sufficient and adequate training for mapping, provision of adequate resources and assistance, constant communication about the initiative, monitoring the implementation process, and providing incentives.

Curriculum is central to all the processes and experiences occurring in school settings. Curriculum development, however, has traditionally been an essential responsibility of outside experts, excluding teachers from active participation in the curriculum development process (Carl, 2009; Craig & Ross, 2008). Research and practice show that there is a significant difference between the official, written curriculum developed by experts and the actual curriculum taught in the classroom because teachers, working autonomously, make different choices regarding curriculum and instruction based on their knowledge, experiences, and the realities of their classrooms (Cuban, 1993). To ensure congruence between the written curriculum and the taught curriculum, English (1980) introduced the process of curriculum mapping that describes "what is actually being taught, how long it is being taught, and the match between what is being taught and the district's testing program" (p. 559).

Initially, curriculum mapping was used as a means of curriculum audit in the school systems. In the current era of standards-based reform and accountability, curriculum mapping is increasingly used by many schools and school districts as a planning tool that allows educators to align their curricula with the required state standards and assessment practices (Udelhofen, 2005). In spite of an ever-growing use of curriculum mapping, the research on it is limited and when found is frequently in the form of published dissertations (Lucas, 2005; Shanks, 2002). The extant research has documented teachers' positive perceptions of curriculum mapping as an effective instructional planning and curriculum alignment tool that promotes school improvement

(Huffman, 2002; Lucas, 2005). Some studies, described below, have found a relationship between curriculum mapping implementation and improved student achievement (Fairris, 2008; Shanks, 2002).

Rarely has research focused on the processes and activities transpiring during the curriculum mapping implementation or explored the conditions and types of support needed for successful curriculum mapping. Moreover, there is little discussion in the literature about the challenges and problems that educators encounter during the implementation process and how these challenges and problems are overcome. Therefore, the purpose of this study is to explore curriculum mapping implementation in a single school setting to document the opportunities and challenges of the initiative implementation and identify strategies for the curriculum mapping success.

Curriculum Mapping Process

The following review focuses on the curriculum mapping process and current research on mapping. As the literature suggests, schools and school districts base their curriculum mapping work on a seven-stage model of curriculum mapping defined by Jacobs (1997). The model allows individual teachers, using the school calendar and technology, to document their own curriculum, then examine each other's curricula for gaps and redundancies and create coherent, consistent curriculum within and across schools that is aligned vertically and horizontally (Kallick & Colosimo, 2009; Udelhofen, 2005). According to Jacobs' model, curriculum can be reviewed and modified on a regular basis in order to respond to school districts' curricular needs as they evolve and to address those changing needs (Udelhofen, 2005).

There are two types of maps that teachers develop during the curriculum mapping process: *diary maps* and *consensus maps*. Diary maps are teachers' personal maps that reflect what happens in their classrooms daily (Udelhofen, 2005). Consensus maps are collectively developed maps that target "those specific areas in each discipline that are to be addressed with flexibility in a school or a district" (Jacobs, 2004, p. 25). Relying on the expertise and active participation of all teachers, curriculum mapping can serve as an effective tool to sharpen teachers' curriculum planning skills and facilitate collaboration across subject and grade levels (Mills, 2003).

The mapping process gives teachers an opportunity to exchange information about instructional practices based on real classroom data. These data together with the assessment data can serve as "the basis for informed decisions to improve student learning" (Kallick & Colosimo, 2009, p. 5). Some studies have provided the evidence of teachers' views of curriculum mapping as beneficial for the instructional practices, school improvement, and ensuring alignment between state standards and school curriculum (Huffman, 2002; Lucas, 2005).

Several studies have attributed increases in student performance to teachers' engagement in the curriculum mapping process. Shanks (2002) compared standardized test scores of the second through sixth grade students in a rural

elementary school in Tennessee before and after curriculum mapping implementation. The results suggested that the students scored higher in each tested subject area (reading, language, mathematics, social studies, and science) after curriculum mapping implementation. Fairris (2008) assessed the effect of different degrees of curriculum mapping implementation on mathematics and literacy standardized test scores of sixth and eighth grade students during the second year of curriculum mapping implementation in 40 Arkansas school districts. The findings suggested that curriculum mapping led to higher student achievement in both subject areas.

The review of literature revealed a paucity of studies that examined the perspectives and experiences of the participants of the curriculum mapping process. The current study aims to document educators' views on the activities and processes inherent in the curriculum mapping process and to identify factors contributing to successful curriculum mapping implementation and sustainability.

Theoretical Framework

The current research makes use of Fullan's (2007) theory of educational change as well as some selective educational change concepts and principles as a theoretical framework.   This theory suggests three phases in the change process: initiation, implementation, and institutionalization or continuation and outlines what to expect at each phase. Change theorists caution that change cannot be viewed as a straightforward, linear process; in reality, phases of change "will merge imperceptibly into each other" (Marsh, 2009, p. 117), and "all phases must be thought about from the beginning and continually thereafter" (Fullan, p. 103).

Hall and Hord (2010) noted that "successful change begins and ends with understanding the importance of implementation constructs and dynamics" (p. xxiii). The educational change literature suggests that implementation should culminate in the actual use of innovation in practice. The five dimensions of implementation in practice proposed by Fullan and Pomfret (1977) include "changes in materials, structure, and role/behavior, knowledge and understanding, and value internalization" (p. 336).   The authors indicated that some dimensions of the implementation are easily observable, whereas others can either be inferred or determined through interviews and documents.

Because of the complexity of the implementation process, the factors that can positively impact change are numerous: professional development, resource support (e.g., time, facilities, materials), feedback mechanisms that promote interaction and problem identification, and implementers' participation in decision-making (Fullan & Pomfret, 1977). The process of change also requires leadership and teamwork, individual learning and commitment from the school staff, and a shared vision and strategic planning (Fullan, 1992; Hall & Hord, 2010).

The change literature emphasizes the decisive role of individuals in the change process. According to Hall and Hord (2010), "organizations adopt change – individuals implement change…successful change starts and ends at the individual level. An entire

organization does not change until each member has changed" (p. 9). Consequently, it is important to analyze all the processes and activities of the change initiative from the viewpoints of the initiative implementers.

Two research questions guided the study. What are the opportunities and challenges of curriculum mapping implementation in a single school setting? What are the strategies for curriculum mapping success?

Methodology

Participant Sampling and Context

The purposeful sampling strategy was used to select the research site and the participants of the study. A school with a four-year history of curriculum mapping was chosen for this research. Westlake High School (pseudonym) is located in a Midwestern school district and had a reputation for academic excellence in the district and across the state. At the time of research, the school had 988 students enrolled in grades 10 through 12. Among the school's 68 certified teachers, 52.8% had a bachelor's degree, 39.6% also had a master's degree, and 7.5% had a doctoral degree.

The researcher-generated survey was used to select participants of the study through SurveyMonkey®. With IRB permission, the survey responses were linked to email addresses through a SurveyMonkey's Email Invitation collector tool to track participants and purposefully select them for the study based on their specific responses. Twenty-seven completed surveys were returned for a response rate of 51%.

Sixteen participants, representing a range of demographic characteristics and a variety of perspectives on curriculum mapping, were sent invitations to participate in the interviews. Eleven teachers and one school administrator agreed to further engage in the study. The teachers were the primary informants for the study. The school administrator was included because his perspective contributed to a more complex picture of curriculum mapping implementation in one school setting.

Five males and seven females constituted the study participants. The majority of the informants were experienced classroom teachers. Two of the participants had less than ten years of teaching experience, but the mean teaching experience of participants was 18 years. Most of the participants identified themselves as being *reasonably proficient* with curriculum mapping. One participant self-reported an *expert* level of proficiency with curriculum mapping.

Data Collection and Data Analysis

The present study primarily focused on the implementation phase of Fullan's theory of educational change and used other phases of the change process to better understand the factors impacting implementation and utilized an approach that has proven useful for examining educational initiatives and innovations and informing educational policy and practice (Merriam, 2009; Stake, 1995). Qualitative data allowed

the researcher "to preserve chronological flow, see precisely which events lead to which consequences, and derive fruitful explanations" (Miles & Huberman, 1994, p. 1). The focus on a single case helped unveil the interaction of important factors specific to the phenomenon of interest and analyze different processes and activities occurring in the research setting (Merriam, 2009).

The primary method of data collection was interviews. Lincoln and Guba (1985) recommended collecting data to the point at which saturation or redundancy is achieved. Originally, two interviews were planned with each participant; however, during the second round of interviews, it became apparent that additional interviews did not provide any new or additional information pertinent to the research questions. Thus, it was determined that *data saturation* had been reached. The initial interviews lasted 45-60 minutes and follow-up interviews lasted 30-45 minutes.

Additional data were obtained from classroom observations and documents. The purpose of the classroom observations was to identify the extent to which the teachers followed consensus maps and how much individuality and creativity the teachers added to the curriculum maps that were developed collectively by the department. The documents included diary and consensus curriculum maps for different grades and disciplines and standardized test reports. The classroom observations and documents were used to verify and corroborate findings gleaned from the interviews.

The data analysis process consisted of coding, categorization, and theme generation from the collected data, using a constant comparative method (Glaser & Strauss, 1967). The newly acquired data were constantly compared to previously collected data; categories created earlier were compared with the emerging ones in order to confirm or disconfirm them until the most plausible interpretation of data was reached (Cohen, Manion, & Morrison, 2007). A field journal kept during the study contributed personal reflections and concerns that arose during data collection and interpretation in order to disclose any possible biases, keep them under control, and minimize their impact on the interpretation of data.

Findings

Following Plano Clark and Creswell's (2010) suggestion, the study findings are reported through "a description of the case, a presentation of the thematic results, and an interpretation of the lessons learned from the case" (p. 243). The description of the case tells the story of the development and progression of the curriculum mapping initiative and establishes the foundations for data analysis and interpretation.

Description of the Case

Setting the Stage for the Initiative

Westlake High School became involved in the curriculum mapping initiative four years prior to the current research. Curriculum mapping was initiated by the school district curriculum coordinator no longer employed by the district and was supported by

the newly hired Westlake High School principal. To plan and coordinate the curriculum mapping process, a district curriculum mapping committee was formed in January 2007. The committee consisted of representatives of all district schools and selected members of the district administration. The participants indicated that the committee lasted two–and-a-half years. After laying the foundations for the initiative, it was dissolved, and the curriculum mapping became building-directed and teacher-led.

The curriculum mapping committee directed the purchase of the curriculum mapping software, determined curricula areas to map, sent teachers to national conferences to learn about curriculum mapping, and established a leadership cadre at each building. The high school administrator recalled during his interview that at least ten teachers from Westlake High School attended three-day curriculum mapping conferences during the initial phase of curriculum mapping. Five of the study participants received formal training for curriculum mapping at national conferences. The school principal and the district curriculum coordinator also attended one of the conferences.

After a group of leaders were trained, they provided Westlake High School faculty on-site training. One of the respondents described the training experience by saying, "The training we received was more of 'here's how you fill out the chart.' Not necessarily, 'here's what the purpose of it is, here's how it functions.'" His comments suggested that the training was general, rather than subject specific in nature.

The Implementation Process

After the training, the school started implementing curriculum mapping by subject areas and grade levels. Several professional development days were scheduled for curriculum mapping, but faculty reported that more time was needed and mapping had to be done on teachers' time, as some respondents noted. According to the interviews, the departments started with consensus maps, not with diary maps, as recommended in the literature. As a result, coming to consensus was difficult.

The mapping process was driven by different forces in different departments, mostly by State Standards and End of Instruction (EOI) tests. In the English and Foreign Language departments, mapping was tied to textbook adoption, as respondents from these departments indicated. The Board promised the teachers new textbooks if they had maps for different grade levels in place. As one participant noted, "That's not a good way to introduce anything. You are not going to get a lot of fans of it that way. That didn't work very well. That turned a lot of people off."

The interviews revealed considerable variation in the levels of response to the curriculum mapping initiative, as evident in the following quote:

We are sort of split. Some really like it. There were others that did it because we were told to do it. And there were some that didn't mind. They just tolerated it and they don't really form a very strong opinion.

Successes and Challenges of Mapping

As the data suggested, some positive achievements have been gained since Westlake High School became involved in the curriculum mapping initiative. Consensus maps have been created in all the core areas. The data also revealed that increased collaboration and professional dialogue became the major successes of curriculum mapping in Westlake High School. Some of the participants attributed improved test scores to curriculum mapping; however, some participants stated that they did not see any connection between the curriculum mapping implementation and increased test scores because state test results had always been high in Westlake High School.

According to most participants, the curriculum mapping initiative was neither fully implemented nor used to its full potential. Furthermore, curriculum mapping was not spread evenly throughout the school organization because different subject areas were at different stages of the curriculum mapping process. It was also unclear if teachers used their maps on a regular basis or if the departments constantly reviewed and revised their maps. Initially, each participating teacher was given access to the curriculum mapping software, but due to budget cuts, at the time of the study, fewer teachers had access to the curriculum mapping software—four or five teachers only from each department. Limited access to the curriculum software was identified by most of the participants as an obstacle to the successful mapping process.

To sum up, in spite of some positive gains, the implementation phase of curriculum mapping in Westlake High School was filled with uncertainties, concerns, and challenges.

Thematic Results

Three overarching themes emerged as a result of the data analysis: benefits of curriculum mapping, challenges to implementation, and perceived strategies for success.

Benefits of Curriculum Mapping

The majority of interviewees reported positive perceptions of curriculum mapping as an effective planning tool that can help set up short-term and long-term instructional goals, eliminate gaps and unproductive repetitions in the curriculum, and provide better alignment of curriculum with state standards.   When curriculum maps are in place, teachers can trace the previous knowledge and skills of their students and build on them. One participant noted, "You know what they've seen, what they were supposed to have seen, what they have supposedly mastered, and at what level they saw that." Curriculum mapping helps ensure that all students are getting the same education and the same foundations.

Some participating teachers indicated that curriculum maps kept them focused and on track. One of the respondents shared, "I love to get sidetracked. There are so

many interesting and exciting conversations that seem to be valuable, but if you have that map there, it really grounds you, keeps you focused and on target." Most participants suggested that curriculum maps can be a great communication tool with parents, administrators, and other stakeholders. Additionally, curriculum mapping can serve as a *safety net* that enables teachers to show the interested audience how they reach their instructional goals. "This is what I've covered. My course is quite comprehensive. This is the knowledge that my students have learned. I have done all these things to the best of me," one interviewee noted.

Curriculum mapping was identified as a useful tool for both new and veteran teachers. New teachers were supported in determining the sequence and pace appropriate for covering the material and to meet the school and department expectations and veteran teachers were provided opportunities to share their knowledge and experience with their colleagues via the creation of well-designed maps. One respondent remarked, "If you have a seasoned teacher who has been a highly successful practitioner retire, the map captures some aspects of that teacher who's left. We don't lose that for the person who comes in and takes that role over."

Everyone involved in this study valued increase in collaboration among teachers within and beyond departments. The existence of openness and collegiality among the faculty with curriculum mapping was evident in the following quotes:

I think what curriculum mapping does--it opens the doors and just puts the ideas out there, and just starts the curriculum discussions that you really need to have.

I think we passed the point where you can work alone in education anymore… So it's probably made us work more as a unit, and I don't have to worry about being on an island.

The discussions now are about how we can be better as departments, how we can be better as a school. And it's much more collegial… there's much more camaraderie and there's much more of a team spirit.

Five of the twelve participants identified a positive relationship between curriculum mapping implementation and increased test scores, arguing that students' test results have improved due to the more aligned curriculum and constant changes and adjustments they make to the curriculum. One participant noted: "Curriculum maps help us identify where the skills need to be introduced, mastered, and reinforced before the test."

The teachers in this sample saw the value in curriculum mapping, but not all of them believed that curriculum mapping was an implementable and sustainable initiative because of the numerous challenges that the teachers encountered during the implementation process.

Perceived Challenges to Implementation

Challenges to the curriculum mapping implementation perceived by respondents fall into four categories. The first category of challenge is *concerns with the teacher buy-in.* Most participants argued that not all teachers bought into the need for curriculum mapping because the relevance and benefits of curriculum mapping were not explained well by school leaders, and teachers feared from the beginning that they all would have to do the same thing and there would be no place for individuality and creativity in curriculum and instruction.

The fact that the teaching staff was not involved in the decision-making processes concerning curriculum mapping adoption and implementation might have contributed to a low level of teacher buy-in. One of the participants argued, "We were just told we were going to do it. There wasn't any discussion whether it is applicable or not. We were not given any discussion about whether or not to participate in the curriculum mapping." Comments like "why reinvent the wheel," "they are always giving us more to do, more to do," and "we already have scope and sequence," demonstrate that there were teachers who did not see the need for mapping, and the broad consensus about the necessity of the initiative had not been achieved.

Another challenge to implementation was *resistance to change.* As one respondent put it, "It's not particularly mapping that some teachers don't like, it's more of whether you want to change or whether you don't want to change as a teacher." The seasoned teachers were identified as a group who did not show enthusiasm for the proposed initiative, as summarized in the following quote:

> A lot of seasoned teachers talk about pendulum and how it swings this way, and now we all are going to do this sort of thing, and then it swings this way, and now we are going to do this. You wait long enough and it's going to swing back and here we go again.

The third challenge concerned *training for mapping.* As the data revealed, training for mapping was a one-shot session that focused on the technicalities of the mapping process and did not take into consideration the specific characteristics of different subject areas. One respondent argued: "It is so different for every subject; you almost need someone in your subject area that has done it well to work with you." The participants suggested that training for mapping should be provided on an ongoing basis to address the needs of the existing and the newly hired faculty.

The issue of *inconsistent support and leadership* was the fourth category of challenge. Most participating teachers reported that at the onset of curriculum mapping there was a lot of support from both the district and school administration, and curriculum mapping was intense for two years, but then it seemed that there was not much discussion of curriculum mapping in the school and the district. One participant noted, "This year we had only one mention of it. Last year we had several mentions of it. And then the year before when it started, that was when we had the most."

There was no evidence found that the administrators were checking on the progress of the initiative. One interviewee admitted, "I haven't entered anything in the computer for over a year because no one is requiring it…I am not actively updating my map, but no one is checking it either." The interviewees indicated that the school principal was still behind the initiative, but his hands were tied because of big budget cuts. The majority of participants opined that if the current principal were gone, the entire idea of curriculum mapping might change or the initiative might fade away.

Perceived Strategies for Success

The participants of the study argued that curriculum mapping can become a successful and sustainable initiative if certain strategies are applied. One respondent argued, "Good instruction from the beginning and continuous assistance through the process will certainly lead to success." The training for mapping should focus not only the technicalities of the mapping process, but also on the theory and philosophy behind mapping and the potential benefits of the mapping process to students and teachers. There was a suggestion "to go over statistics of other schools that have gone with curriculum mapping and how that's helped them and first accounts of other teachers and other schools that have implemented curriculum mapping." Another suggestion was to make the training more subject-specific and ongoing to train and coach newly hired teachers and help existing teachers.

Leadership and consistency were mentioned in most interviews as significant factors in the curriculum mapping success. One participant asserted, "There has to be consistency, otherwise people forget about it. The leadership has to have a constant voice, even if it's a little nagging." The respondents emphasized the importance of administrative leadership in the change process. One interviewee argued, "That can't be departmental. Otherwise you pit colleagues against colleagues."

Change cannot happen without sufficient resources to be provided for its implementation because any initiative increases teachers' workloads in terms of additional non-teaching duties and paperwork. According to one of the participants, "any decision that educators make should be made for students. If it truly benefits students, there should be commitment at the district level. If there's that commitment, the time for the teachers to do these things should be provided." The interviewees suggested that a significant amount of time should be provided to teachers on a regular basis, without any distraction, where they sit down and work on their maps, either reviewing or modifying them.

Interpretation of the Lessons Learned

Research suggests that teachers' positive views of the educational initiative serve as the primary indicator of an initiative's successful implementation (Hall & Hord, 2010). Based on the teachers' responses, this study's findings indicate that curriculum mapping, if fully implemented, can be a worthwhile process for the school and the district. As Fullan (2007) put it, "Success is about one quarter having the right ideas and three-quarters establishing effective processes" (p. 104). As with any other initiative, it is important to create and maintain a high level of teacher buy-in for curriculum mapping. This can be accomplished by involving the teaching staff in decision-making processes concerning the initiative adoption and implementation. O'Donoghue (2007) noted that "teachers who have no input into the innovation will have no sense of ownership of it and, consequently, little commitment to it" (p. 74).

Change initiatives cannot entirely rely on the previous knowledge and skills of the implementers; therefore professional learning should be considered as "the basis of and corollary to change" (Hall & Hord, 2010, p. 150). If school administrators see curriculum mapping as a long-term goal, training for mapping should be ongoing and address the needs of the newly hired faculty and existing teachers. This finding confirms the previous research results that continuous learning opportunities should be offered to constantly train newly hired teachers in curriculum mapping processes and procedures and to address the emerging challenges of implementation (Hale & Dunlap, 2010; Yuen & Cheng, 2000).

Researchers studying change efforts argue that leaders of change should not expect a smooth and non-problematic journey towards achieving desired outcomes; they should constantly monitor the implementation process and provide assistance if needed (Louis & Miles 1990; Spillane, Reiser, & Reimer, 2002). The formal methods for monitoring the progress of the initiative may include surveys; informal methods include interaction between change leaders and people implementing the initiative. The resulting information should lead to consulting and assisting the initiative implementers.

Furthermore, the change leaders should maintain constant communication about the initiative; otherwise, people who are directly involved in the implementation process might think that the initiative has lost its value, and the progression of the initiative might slow down. One of the means of signifying the importance of the initiative is to acknowledge the efforts of the individuals who contributed to the implementation process. Celebrating progress is an aspect that is most often overlooked while change is implemented in the school setting (Kallick & Colosimo, 2009).

Previous research has demonstrated that many change efforts have disappointing results partly because of the limited participation of the school district administration in the implementation process (Honig & Hatch, 2004; Marsh, 2002). Unfortunately, the findings of this study are similar to studies concerning the school district administration's role in the change process and underscore the importance of substantial school district support in realizing change efforts. Hale and Dunlap (2010)

argued, "For curriculum mapping to be systematically sustainable, district and school-site administrators must work harmoniously" (p. 14).

Although some study participants indicated that they would continue doing mapping even if it were not required any more, change scholars suggest that educational initiatives can be sustained through the efforts of the people at the *bottom* for several years, but without ongoing active support of those at the *top*, there is the likelihood that the change efforts will founder (Hall & Hord, 2010). To become sustainable, the change initiative cannot be individual and fragmented; it should have a widespread use in the school setting.

The findings discussed above provide some insight into how to increase capacity and promote sustainability of curriculum mapping in the school under study and other school settings. An ongoing, systematic approach with clear guidelines and expectations as well as the application of a number of effective strategies should be used to make curriculum mapping a successful initiative.

Conclusions and Recommendations for School Leaders

The results of the present study echo previous research findings that document benefits in numerous areas; however, several additional findings emerged that are not frequently discussed in the curriculum mapping literature. Multilayered leadership at all levels and in formal and informal positions, including district administrators, school administrative personnel, department heads, teacher leaders, and combinations of these, has been well-established in the literature. Teacher leadership is especially cited as a significant factor in the success of curriculum mapping. The findings of this research, however, argue for a more nuanced conclusion: Although teacher leadership is very important, it is administrative leadership that has the utmost importance to the successful implementation and sustainability of curriculum mapping.

Educational leaders may find valuable several recommendations relating to this study on the implementation of curriculum mapping. First, before launching the curriculum mapping initiative, educational leaders should develop a vision of the curriculum mapping process and promote teachers' understanding of the purpose and benefits of curriculum mapping. Positive experiences of other schools with curriculum mapping should be used to increase teacher buy-in.

Second, change will not happen unless the majority of the staff members understand its necessity. Moreover, each staff member should have a voice in decision making concerning curriculum mapping adoption and implementation. It is advisable to develop implementation plans collaboratively with the staff members. The execution of the initiative should not be left to the discretion of a small group of people; rather, the involvement of the majority of the teaching staff is critical.

Third, curriculum mapping requires sufficient resources for implementation and institutionalization. It is important to provide adequate training for teachers and then sufficient time to develop and review maps and not to expect maps to be done on

teachers' time. Assistance and support should be ongoing; otherwise teachers might lose interest in the initiative in the face of different obstacles.

Lastly, curriculum mapping leaders need to make sure they have developed monitoring mechanisms that are not punitive in nature and will enable them to stay focused on the initiative, respond to implementers' questions and concerns in a timely manner, provide assistance if needed, and celebrate even modest successes to signify the importance of the initiative and promote its success and sustainability.

Drawing on Fullan's (2007) theory of educational change and qualitative data collected in a Midwestern high school involved in the curriculum mapping process, this study illuminated the benefits and barriers of curriculum mapping and suggested strategies for implementation and sustainability. The findings from this research may inform school leaders who are initiating curriculum mapping or whose schools are at some stage in the process and help them pave the way for a successful enactment of this educational change.

References

Carl, A. E. (2009). *Teacher empowerment through curriculum development: Theory into practice* (3rd Ed.). Kenwyn, South Africa: Juta Academic Press.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education.* New York, NY: Routledge.

Craig, C., & Ross, V. (2008). Cultivating the image of teachers as curriculum makers. In M. Connelly, M. He, & J. Phillion (Eds.), *The SAGE handbook of curriculum and instruction* (pp. 282-306). Los Angeles, CA: Sage Publications. CrossRef

Cuban, L. (1993). The lure of curriculum reform and its pitiful history. *Phi Delta Kappan, 75*(2), 181-185. GS Search

English, F. W. (1980). Curriculum mapping. *Educational Leadership, 37*(7), 558-559. ERIC Document number EJ221530.

Fairris, J. (2008). *The effect degree of curriculum mapping implementation has on student performance levels on sixth and eighth grade benchmark examination.* (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations. (UMI No. 3313258).

Fullan, M. (1992). *Successful school improvement: The implementation perspective and beyond.* Buckingham, England: Open University Press.

Fullan, M. (2007). *The new meaning of educational change*. New York, NY: Teachers College Press.

Fullan, M., & Pomfret, A. (1977). Research on curriculum and instruction implementation. *Review of Educational Research, 47*(2), 335-397. CrossRef

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Chicago, IL: Aldine.

Hale, J., & Dunlap, R. (2010). *An educational leader's guide to curriculum mapping: Creating and sustaining collaborative cultures*. Thousand Oaks, CA: Corwin Press/Sage.

Hall, G., & Hord, S. (2010). *Implementing change: Patterns, principles, and potholes* (3rd Ed.). Boston, MA: Allyn and Bacon.

Honig, M. I., & Hatch, T. J. (2004). Crafting coherence: How schools strategically manage external demands. *Educational Researcher, 33*(8), 16–30. CrossRef GS Search

Huffman, S. (2002). *Middle school teacher' perceptions of the value and efficacy of curriculum mapping and state standards.* (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations. (UMI No. 3044121).

Jacobs, H. (1997). *Mapping the big picture: Integrating curriculum and assessment K-12.* Alexandria, VA: Association for Supervision and Curriculum Development.

Jacobs, H. H. (2004). *Getting results with curriculum mapping*. Alexandria, VA: Association for Supervision and Curriculum Development.

Kallick, B., & Colosimo, J. (2009). *Using curriculum mapping and assessment data to improve learning.* Thousand Oaks, CA: Corwin Press.

Lincoln, Y. S. & Guba, E. G. (1995) *Naturalistic inquiry.* Thousand Oaks, CA: Sage.

Louis, K. S., & Miles, M. B. (1990). *Improving the urban high school, what works and why*. New York, NY: Teachers College Press.

Lucas, R. (2005). *Teachers' perceptions on the efficacy of curriculum mapping as a tool for planning and curriculum alignment*. (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations. (UMI No. 3190194).

Marsh, J. A. (2002). How districts relate to states, schools, and communities: A review of emerging literature. In A. M. Hightower, M. S. Knapp, J. A. Marsh, & M. W.

McLaughlin (Eds.), *School districts and instructional renewal* (pp. 25–40). New York, NY: Teachers College Press.

Marsh, C. (2009). *Key concepts for understanding curriculum.* London, England: Routledge/Taylor & Francis Group.

Merriam, S. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Miles, M., & Huberman, M. (1994). *Qualitative data analysis: An expended sourcebook.* Thousand Oaks, CA: Sage.

Mills, M. S. (2003). Curriculum mapping as professional development. *Curriculum Technology Quarterly*, *12*(3), 1-4.

O'Donoghue, T. (2007). *Planning your qualitative research project: An introduction to interpretivist research in education.* London, England: Routledge.

Plano Clark, V., & Creswell, J. (2010). *Understanding research: A consumer's guide.* Upper Saddle River, NJ: Pearson Education.

Shanks, D. (2002). *A comparative study on academic gains between students in second through sixth grade before and after curriculum mapping.* (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations. (UMI No. 3061779).

Spillane, J. P., Reiser, B. J., & Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of Educational Research, 72*(3), 387-431. CrossRef GS Search

Stake, R. (1995). *The art of case study research.* Thousand Oaks, CA: Sage.

Udelhofen, S. (2005). *Keys to curriculum mapping: Strategies and tools to make it work.* Thousand Oaks, CA: Corwin Press.

Yuen, P. Y., & Cheng, Y. C. (2000). Leadership for teachers' action learning. *The International Journal of Educational Management, 14*(5), 198-209. CrossRef GS Search

Appendix: Researcher-Generated Survey

Read each statement carefully and choose only one that best describes you:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Curriculum mapping is a worthwhile process for high school	O	O	O	O	O
2. Goals and objectives for curriculum mapping are clear to me	O	O	O	O	O
3. Curriculum mapping helps eliminate gaps, redundancies, and repetitions within grades and subject areas	O	O	O	O	O
4. Curriculum mapping is a valuable tool for curriculum alignment with state standards	O	O	O	O	O
5. Teachers in my department have favorable opinions of curriculum mapping	O	O	O	O	O
6. I like to be involved in the curriculum mapping process	O	O	O	O	O
7. I have had enough training for curriculum mapping	O	O	O	O	O
8. We have a curriculum mapping software program in place	O	O	O	O	O
9. I use curriculum mapping software	O	O	O	O	O
10. Curriculum mapping helps me reflect on what I have taught and how I have taught the material	O	O	O	O	O
11. Curriculum mapping is an instructional tool	O	O	O	O	O

12. Curriculum mapping has no effect on my teaching	O	O	O	O	O
13. Curriculum mapping is a measure of administrative control	O	O	O	O	O
14. I collaborate with other teachers about curriculum mapping	O	O	O	O	O
15. If curriculum mapping were optional in our school, I would choose not to participate	O	O	O	O	O
16. I believe that curriculum mapping will improve instructional practices	O	O	O	O	O
17. Curriculum mapping will eventually improve student achievement	O	O	O	O	O
18. I believe the curriculum mapping process will continue	O	O	O	O	O
19. I believe the curriculum mapping process will fade away	O	O	O	O	O

Demographics:

Gender :_____(male)   _____ (female)

Age group _____ (20-30) _____ (31-40) _____ (41-50) _____ (over 50)

Years of teaching experience:

___0-5____6-10 _____11-15 _____16-20 _____21-25 _____over 25

How long have you been teaching in this school? _____

Your assigned teaching area _____ Grade level _____

What is your level of proficiency with curriculum mapping?

___None   ___Very little   _____Somewhat proficient

_____ Reasonably proficient   _____Expert

About the Author

Tamara Shilling earned her Ph.D. in Curriculum Studies and Social Foundations of Education. She is currently an adjunct faculty at Oklahoma State University. Her research interests focus on curriculum design, curriculum planning, and alternative models of curriculum development. Additional research interests include educational change and curriculum reform. Email: romant@okstate.edu