TRANSFORMATIVE LEARNING IN ONLINE PROFESSIONAL DEVELOPMENT:

A PROGRAM EVALUATION

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Kim Cochrane

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Abstract

Teachers face myriad changes in world of education, not the least of which is the integration of technology into the curriculum. Continuous pressure to improve student achievement in this digital age places teachers in a position of urgent need for quality professional learning opportunities. In order to stay current and to improve practice, teachers need to participate in professional development that is effective and designed to change classroom practice. This problem of practice, the need for effective professional development for teachers, was explored in a qualitative program evaluation of online professional development for teachers provided by a small state university in Massachusetts. The focus of the study was on teachers’ perceptions of online professional development courses they had taken, and whether they believed those courses had transformed their classroom practice. Data was collected through document analysis, a survey, and interviews. The findings of this study indicate that online professional development can indeed be transformative for teachers if certain elements of course design are in place. Those elements are learner-centered design, a focus on in-depth student interaction, and opportunities for self-reflection.

Keywords: online professional development, transformative learning, teacher perceptions of professional development, online learning.
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Table of Contents

Abstract .............................................................................................................................. 2
Acknowledgements ........................................................................................................ 3
List of Tables ..................................................................................................................... 7
Statement of the Problem ............................................................................................... 9
  Topic ............................................................................................................................ 9
  Research Problem ...................................................................................................... 10
  Justification for the Research Problem ....................................................................... 14
  Deficiencies in the Evidence ....................................................................................... 14
  Relating the Discussion to Audiences ........................................................................ 15
Significance of the Problem .......................................................................................... 16
Positionality Statement ................................................................................................. 17
Research Question ......................................................................................................... 18
Theoretical Framework .................................................................................................. 19
  Disorienting Dilemma ............................................................................................... 20
  Critical Self-Assessment ......................................................................................... 21
  Exploration of New Ideas and Relationships ............................................................. 22
  Planning a Course of Action ..................................................................................... 22
  Taking Action Based on New Perspectives ............................................................... 23
Chapter 2: Literature Review ......................................................................................... 24
  Adult Learning .......................................................................................................... 24
    Historical background ............................................................................................. 24
  Andragogy .................................................................................................................. 26
    Teachers as learners ............................................................................................... 28
    Implications for transformative online professional development ...................... 30
    Teachers and online learning ............................................................................... 33
Transformative Learning ............................................................................................... 35
  Historical background .............................................................................................. 35
  Disorienting dilemmas ............................................................................................... 38
  Implications for transformative online professional development ...................... 40
Online Professional Development .................................................................................. 42
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical background</td>
<td>42</td>
</tr>
<tr>
<td>Implications for transformative online professional development</td>
<td>45</td>
</tr>
<tr>
<td>Summary</td>
<td>47</td>
</tr>
<tr>
<td>Chapter 3: Methodology</td>
<td>48</td>
</tr>
<tr>
<td>Research Design</td>
<td>50</td>
</tr>
<tr>
<td>Research Tradition</td>
<td>51</td>
</tr>
<tr>
<td>Participants</td>
<td>53</td>
</tr>
<tr>
<td>Data</td>
<td>54</td>
</tr>
<tr>
<td>Syllabi</td>
<td>54</td>
</tr>
<tr>
<td>Survey</td>
<td>55</td>
</tr>
<tr>
<td>Interviews</td>
<td>55</td>
</tr>
<tr>
<td>Recruitment and Access</td>
<td>57</td>
</tr>
<tr>
<td>Data Collection</td>
<td>58</td>
</tr>
<tr>
<td>Data Storage</td>
<td>61</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>62</td>
</tr>
<tr>
<td>Syllabi</td>
<td>62</td>
</tr>
<tr>
<td>Survey</td>
<td>64</td>
</tr>
<tr>
<td>Interviews</td>
<td>67</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>70</td>
</tr>
<tr>
<td>Summary</td>
<td>72</td>
</tr>
<tr>
<td>Chapter 4: Research Findings</td>
<td>73</td>
</tr>
<tr>
<td>Presentation of Findings</td>
<td>73</td>
</tr>
<tr>
<td>Findings from the Survey and Interviews</td>
<td>73</td>
</tr>
<tr>
<td>Findings from the Document Review</td>
<td>106</td>
</tr>
<tr>
<td>Comparison of the three datasets in relation to the Smith criteria</td>
<td>108</td>
</tr>
<tr>
<td>Emerging Themes and Key Findings</td>
<td>111</td>
</tr>
<tr>
<td>Summary</td>
<td>113</td>
</tr>
<tr>
<td>Chapter 5: Discussion of Research Findings</td>
<td>115</td>
</tr>
<tr>
<td>Major Findings from the Research in Relation to the Research Question</td>
<td>115</td>
</tr>
<tr>
<td>Findings in Relation to the Theoretical Framework</td>
<td>118</td>
</tr>
<tr>
<td>Theme 1: Technology integration</td>
<td>121</td>
</tr>
</tbody>
</table>
Theme 2: New perspectives ................................................................. 123
Theme 3: Learning community ........................................................ 124
Theme 4: Reconsidered practice ...................................................... 126
Findings in Relation to the Literature Review .................................. 129
  Adult learning ............................................................................... 129
  Transformative learning ............................................................... 133
Implications of Findings for Online Professional Development for Teachers .... 136
Limitations and Recommendations for Future Studies ....................... 139
  Conclusion................................................................................... 139
References .................................................................................... 141
Appendix A .................................................................................... 158
Appendix B .................................................................................... 159
Appendix C .................................................................................... 161
Appendix D .................................................................................... 163
Appendix E .................................................................................... 165
Appendix F .................................................................................... 167
Appendix G .................................................................................... 169
Appendix H .................................................................................... 171

List of Tables

Table 1: Mezirow’s 6 Criteria and the Number of Questions in the Survey and Interviews .... 61
Table 2: How the Smith criteria for transformative online professional development sources.... 62
Table 3: Teachers Interviewed for the Study by Grade Levels, Subjects Taught, Years Teaching, and Number of OPD Courses Taken ........................................................................ 69
Table 4: Questions related to disorienting dilemma ........................................ 76
Table 5: Questions related to critical self-assessment ...................................... 82
Table 6: Questions relating to recognition of others’ disorientation .................... 87
List of Figures

Figure 1: Order in which the data were collected and analyzed ........................................... 53
Figure 2: Teachers who took the survey .......................................................................... 64
Figure 3: Mezirow phases, Smith criteria, and the number of survey & interview responses ..... 74
Figure 4: Area chart of Mezirow and Smith criteria as represented in survey and interview data ........................................................................................................................................ 104
Figure 5: Online professional development courses including Smith criteria Smith Criteria .... 106
Figure 6: Syllabi, survey, and interview data in relation to Smith criteria ......................... 108
Transformative Learning in an Online Environment:

A Program Evaluation

Statement of the Problem

Topic

Education reform has created urgency about improving teacher effectiveness and student learning in the United States. In 2002, Congress enacted the No Child Left Behind Act (NCLB), a reauthorization of the Elementary and Secondary Education Act, originally passed in 1965, during President Lyndon Johnson’s administration. The goal of NCLB was to address the achievement gap between advantaged and disadvantaged American students by providing accountability, in the form of annual testing, and school choice options in cases where specific schools failed to make progress over time (Boehner, 2001).

President Obama’s Race to the Top (RTTT) program of 2009 was designed to raise rigor and standards of achievement, and to improve school leadership and teaching (Education, 2009). While recognizing that school curriculum is a state level issue, RTTT provided incentives for states to adopt uniform standards. The Common Core State Standards, national standards for English language arts and mathematics, were developed in response to RTTT in a nation-wide collaborative effort led by the Council of Chief State School Officers (CCSSO, 2012). The Common Core standards have now been adopted by most states. States adopting the Common Core are able to increase the number of standards up to 15%, but all states adopting must adopt 100% of the Common Core (CCSSO, 2012). In addition, new standards for learning in the
sciences, Next Generation Science Standards (Achieve, 2013), were released in hopes of establishing high national standards for academic achievement in the sciences.

**Research Problem**

Teachers in classrooms have to be able to adapt to these new standards and expectations as soon as possible; districts must address educators’ needs for learning to teach in the 21st century learning environment. Teachers have long been required by states to undertake professional development in order to maintain their licensure. More recently, government mandates are also demanding that teachers have opportunities for professional learning. Race to the Top (RTTT) defined an “effective teacher” as one whose students achieve the equivalent of one year’s growth from one academic year to the next, and “highly effective teachers” as those whose students achieve one and a half years of academic growth (Education, 2009). The pressure is on teachers to become effective or highly effective, improving their schools by improving their teaching. In turn, districts are directed by RTTT to increase teacher effectiveness by “providing relevant coaching, induction support, and/or professional development” (Education, 2009, p. 9).

Educator effectiveness and student learning are clearly related, according to many studies (Dede, 2006; Jaquith, Mindich, Wei, & Darling-Hammond, 2011; Kinzer & Taft, 2012). For example, a Stanford study by Jaquith, Mindich, Wei, and Darling-Hammond (2011) of four states whose students performed above national averages on the NAEP (National Assessment of Educational Progress) assumed that those high averages were related to teachers’ high rate of participation in professional development (Jaquith et al., 2011). Similarly, a school district in New Mexico attributes its students’ high scores on statewide assessments to a focus on collaborative professional learning (Kinzer & Taft, 2012).
Teachers who plan to improve student outcomes must reconsider their own teaching strategies and “teach in ways they have never taught before – and probably never experienced as students” (Darling-Hammond & McLaughlin, 2011, p. 81). Within this century, use of technology in the classroom has changed teaching strategies in content delivery and pedagogical practices. Therefore, content and pedagogy are crucial areas of need for many of today’s classroom teachers. Efforts to improve teacher effectiveness, particularly in content and pedagogical knowledge, lead to gains in student learning (Dede, 2006; Masters, Magidin de Kramer, O'Dwyer, Dash, & Russell, 2012). Strong professional development deepens teachers’ understanding of content and improves their knowledge of how to teach specific content to students. It is hands-on and fully engaging, part of an overall school reform plan, and it allows teachers to learn, practice, and reflect on the experience. To be effective, professional development should be collaborative and sustained over time (Darling-Hammond & Richardson, 2009). Effective teacher professional development can provide both new and experienced teachers with up-to-date strategies for improving learning for their 21st century students.

Effective professional development has been hard to find for some teachers, for several reasons. Despite the national recognition of the need for professional development to help teachers stay abreast of current practice, there is acknowledgement that the state of teacher professional development is inadequate (Lawless & Pellegrino, 2007). Professional learning experiences for teachers are not always designed with adult learning needs in mind, leading to negligible results (Beavers, 2009; Timperley, 2011). For example, some workshops last just a few hours, consisting of slides and a lecture with the hope that teachers will continue learning on their own. Such one-shot experiences tend to be meaningless. According to Curry and Killion (2009), teacher professional development has been missing experiential and collaborative
“micro” learning; transferring new knowledge to practice. “As a result, transformation rarely occurs and the investment in professional development is lost” (Curry & Killion, 2009, p. 62).

Some professional development merely reinforces teachers’ current classroom teaching practices instead of inspiring new pedagogical innovations (Hill, 2009). In addition, self-motivated teachers who would assume responsibility for their own professional development cite the vast number of possible resources for learning, such as MOOCs (Massive Open Online Courses), the many opportunities offered by local and distant universities, and even in-house district-led workshops, making it difficult to discover best alternatives for learning new teaching strategies, or the most appropriate learning experiences (Kabilan, 2005).

High-quality professional development might be defined as learning that is effective in challenging teachers’ previous assumptions about teaching practice, and creating new meanings at the same time as building their capacities to enhance student learning (Darling-Hammond & McLaughlin, 2011; Timperley, 2011). Learning activities need to challenge teachers, and require their active involvement, because transformative change to teaching practice, rather than added change, will help “solve entrenched educational problems” (Timperley, 2011, p. 5). One entrenched educational problem in teaching math is that teachers need to cover a great deal of material in a short amount of time. The pacing of the curriculum in class may prove too much for some students, who then fall behind. Technological alternatives to classroom work, such as Khan Academy, an online practice site for math and other disciplines, can alleviate this problem. Teachers not accustomed to using online math resources may hesitate to assign this alternative to their students.
School districts across the country are looking for professional development programs that are affordable and high-quality (Dede, 2006). Districts and teachers both need reasonably-priced, effective options for professional learning that will improve the capacity for teaching and learning. Online professional development is a convenient option for teacher learning that allows teachers to pursue learning, often for less cost than face-to-face workshops, and without missing valuable classroom instructional time ("Making Online PD Work," 2008; Masters et al., 2012; Vanides, 2007). Online professional development offers teachers the opportunity to access learning in current teaching methods from anywhere in the world. The vast availability of online learning opportunities produces the dilemma of determining which programs are best designed and most appropriate, and which online learning opportunity will provide a meaningful or transformative experience.

The current study was designed to discover what teachers perceive as the effect online professional development has had on their own teaching practices. The program evaluated for this study was called Online Professional Development for Educators, provided by a small state university in eastern Massachusetts. The 4-week long courses offered through this program each semester counted for one-credit, or 22.5 professional development points, which are required for teacher relicensure in Massachusetts. Many courses in this program were attended by teachers from across disciplines and grade levels. The topics ranged from integrating instructional technology into the classroom to best practices for teaching writing to children with learning disabilities ("Continuing Education: Online Professional Development for Educators," 2015). During the spring, summer, and fall semesters of 2013, 73 courses were offered, of which 27 related to integrating technology into the classroom, 18 related to literacy, mathematics or history, 13 related to health, nutrition and well-being, and 11 related to special education. Four
other courses were interdisciplinary in nature, relating to conducting research, engaging students in the classroom, and general instructional strategies (Hogard, 2015).

Specifically, in this study, the researcher concentrated on online professional development offered by a small public university in eastern Massachusetts, and whether teachers felt these programs provided them with transformative learning experiences. A transformative learning experience in teacher professional development is one that leads the participant to become deeply engaged in his/her learning, to challenge previous assumptions about teaching, to create new meanings, and ultimately to change classroom practice based on the new understanding (Timperley, 2011).

**Justification for the Research Problem**

Literature in the area of research about online professional development is increasingly available. Many researchers discuss online professional development in specific situations, such as Doubler and Paget’s (2006) “Science teaching and learning: A case of online professional learning”, which investigated science education for K-8 teachers at a private university in Massachusetts, or Chris Dede’s (2006) collection of reports on specific emerging models for online learning. There is evidence to support the possibility of transformative learning in online professional development. Specifically, online, reflective discussion formats provide opportunities for changes in fundamental beliefs about topics such as capabilities with technology and managing the online course design (Boyer, Maher, & Kirkman, 2006).

**Deficiencies in the Evidence**

There is a call for research to focus on whether online professional learning directly affects teachers’ classroom practice and skills (Borko, 2004; Masters et al., 2012; Yoon, Duncan,
Lee, Scarloss, & Shapley, 2007). While many studies have been conducted to evaluate the effect of professional development, few studies meet evidence standards set by the US Department of Education’s What Works Clearinghouse (Yoon et al., 2007). For example, Dede (2006) notes that assessment of the effectiveness of professional development is lacking because evidence is based on anecdotal accounts, or on surveys conducted immediately after the learning event, rather than after enough time has passed to get an idea of the long-term impact. The amount of money spent on professional development is considerable. In return, teachers need to receive training that improves classroom practice.

Another area of deficiency in the evidence relates to whether critical reflection and discourse about classroom practice, considered crucial for in-depth learning, can occur in an online professional learning environment (Boyer et al., 2006). Few empirical studies exist about fostering transformative learning in online environments. Smith discovered only one in her examination of peer-reviewed journals (R. O. Smith, 2012).

**Relating the Discussion to Audiences**

The findings from this study of the effectiveness of online professional development for educators from the perspective of participants will directly benefit the educational community as it will help address the gap in research about online learning for educators, and whether it is transformative for their teaching practices. This program evaluation will benefit those designing programs for continuing education for teachers, as well as teachers and school districts evaluating programs of professional learning.

Making teaching more effective is the ultimate goal of all professional development experiences. Educational leaders will benefit from evidence of transformed practice following
online professional development, and may feel more secure in supporting faculty’s online learning experiences. The director and staff in the office of continuing education at the university offering the evaluated program may use the information from this project to learn about course participants’ perspectives on the effectiveness of their experiences. Participants in this study benefitted from the self-critical analysis required for the surveys and interviews, as well as from learning about the effectiveness for other participants of online professional development they have undertaken.

**Significance of the Problem**

There is a need for effective online professional development for teachers. This educational problem is significant both locally and nationally, particularly as most states begin to incorporate the new Common Core State Standards and potentially the Next Generation Science Standards (Heitin, 2014). Teachers who are lagging behind in pedagogical methods or in content areas will be working doubly hard to understand and fully integrate the new standards into their curricula. Using only didactic teaching methods does not provide students with the self-directed learning skills they need to be successful in the future. Problem-based learning and inquiry-based instruction are more effective for student learning, since those methods engage students and allow for critical thinking, innovation and creativity (Ashcraft, 2006; Hmelo-Silver, Duncan, & Chinn, 2007). Professional development that affects change in teacher practice can have a positive effect on student learning (Guskey & Yoon, 2009).

The purpose of this program evaluation is to explore the experiences of participants in online professional development (OPD) courses at a small state university in eastern
Massachusetts to determine whether this type of OPD can be transformative for teachers’ classroom practices.

Teachers who are learning to teach are also adult learners who frame new learning on previous experience (Skibba, 2013). Online resources for professional development offer teachers the option of self-selected learning at their own pace and on their own time, with opportunity for reflection. In this evaluation, the researcher looked specifically at online learning provided for pre-Kindergarten -12th grade teachers. The literature regarding online professional development for teachers reveals many different models, including online learning communities, programs run by higher education institutions, and resources offered by independent groups or organizations (Sprague, 2006). For the purposes of this evaluation, online learning means coursework run by a higher education institution that takes place synchronously or asynchronously, and remotely in its entirety with no face-to-face class time. The online professional development courses in the program that was evaluated were 4 weeks long, and entirely online.

Positionality Statement

The researcher’s view of online professional development for teachers was that it is a dynamic, evolving tool continuously adapting to the advances of technology and the needs of adult learners. This bias related to the researcher’s experience as a professional development provider. Online, one-credit courses can be designed to engage teachers in the in-depth discourse, self-critical reflection, and learning that can be transformative. While learning a new strategy for classroom practice is not always a transformative experience, but more a transfer of learning, it is possible that some participants do recognize a need to discard a long-held habit of
mind, consider the new practice, and significantly alter their own classroom methods (Cranton & King, 2003). A transformative learning experience is one that challenges the beliefs of participants, helps them create new meaning, and is effective in inspiring teachers to alter their classroom practices based on new perspectives gained from that learning experience (Mezirow, 2000; Timperley, 2011).

The goal of this project was to understand how teachers experience online professional development. How do preK-12 teachers perceive the impact of online professional development (OPD) courses on classroom instructional strategies?

As an employee of the university, and a former instructor in the online professional development program being evaluated, the researcher could have an interpretive bias. The researcher guarded against bias by examining the data without allowing her own feelings to influence her interpretation of survey and interview data. Data were analyzed to see whether teachers’ experiences might have been transformative by evaluating specific criteria for transformative learning, mitigating possible researcher bias.

In a qualitative study such as this one, it is important to focus on the voices of the subjects, without concentrating on specific individuals. The participants in the study were anonymous, and it was clear to them that they could opt out at any time. The university where the study took place also remains anonymous.

**Research Question**

Based on the problem of practice and theoretical framework chosen for this program review, the research question was: How do preK-12 teachers perceive the impact of online
professional development (OPD) courses on classroom instructional strategies? Teachers not aware of transformative learning theory might not be able to identify a change as transformative, but could recognize that a new classroom practice inspired by some component of OPD experience is significantly different from past practice.

Transformative learning theory in this context supports the position that teachers who experience transformative learning undergo a substantial change in their belief systems, leading to new practices in the classroom (Cranton & King, 2003; Darling-Hammond & Richardson, 2009). This evaluation addressed teachers’ sense of whether an online professional learning experience transformed their practice in the classroom, and what aspects of the experience may have caused that change. In studying the benefits of online professional development for teaching, adult learning theory, and more specifically, transformative learning were explored.

**Theoretical Framework**

Transformative learning was used as the central theory to embrace the larger construct, the effectiveness of online learning for teacher professional development. Transformative learning is a model of adult learning theory (Merriam, Caffarella, & Baumgartner, 2007). Adult learning is “shaped by the context of adult life and the society in which one lives” (Merriam et al., 2007, p. 1). Transformative learning in the area of teacher professional development is learning that challenges teachers’ value systems and world views, leading to a substantive change in practice (E. W. Taylor, 2009; E. W. Taylor & Cranton, 2012).

Transformative learning requires the skill to be able to reflect critically on one’s ideas and habits of mind, part of a process leading to perspective transformation. Critical awareness of one’s presuppositions, or habits of mind, and how these affect the way one “perceive[s],
understand[s], and feel[s] about our world” (Mezirow, 1990, p. 14) are the first stages of perspective transformation. Reframing those presuppositions to develop new understandings more open to diverse perspectives, and then acting upon those new understandings, leads to transformative learning.

According to Jack Mezirow, considered the father of transformative learning theory, adult learners who experience transformative learning generally pass through six phases: a disorienting dilemma; self-critical assessment of assumptions; recognition through discourse that assumptions are shared by others; exploration of new ideas and relationships; planning a course of action; and taking action based on the new perspective developed through this process (Mezirow, 2012). These phases provided the framework for this evaluation.

**Disorienting Dilemma**

A disorienting dilemma occurs when an adult is brought up against a concept that is contrary to his or her long accepted beliefs, or habits of mind. The death of a loved one or similar life crisis can trigger a disorienting dilemma, a questioning of long-held ideas or beliefs. Mezirow asserts that it is important to understand that learners’ presuppositions, or habits of mind, may limit the way they “customarily perceive, think, feel and act” (Mezirow, 1990, p. 357). Habits of mind are long-held conceptions or beliefs that can affect individuals’ ability to accept new concepts. They can become obstacles in professional learning because teachers may “interpret new ideas in terms of their existing cognitive frameworks and believe their existing practice is more similar to the new ideas than it really is” (Timperley, 2011, p. 27).

Transformations in habits of mind may be dramatic and sudden, or may occur after a series of instances of conflict with other points of view (Merriam et al., 2007; Mezirow, 2012).
An illustration of a disorienting dilemma from Mezirow (2012) refers to the once common belief that “a woman’s place is in the home;” which led women and society at large to accept without question that women should not expect to participate or to excel in any sort of business or academic arena. Women who developed a different perspective on that assumption had first to overcome that long-held, and in some cases, deeply held, belief. Such a transformation can be an “intense and emotional struggle as old perspectives become challenged and transformed” (Mezirow, 2012, p. 86).

**Critical Self-Assessment**

A transformative learning environment provides opportunities for learners to reflect upon their habits of mind critically, in light of new or disruptive ideas, both individually and in discourse with others. According to Patricia Cranton and Kathleen King (2003), the goal of professional development is to bring teachers’ habits of mind about teaching into awareness, encouraging critical self-reflection about their own beliefs about teaching. This process is potentially transformative, as teachers open their minds to new strategies and approaches to practices they have used for years. Transformative learning requires individuation, or the focus on one’s sense of self and one’s values; in this case, confronting one’s views about teaching and learning (Cranton & King, 2003). Sometimes teachers need to be able to see themselves as different from their colleagues in order to transform their own individual choices and practices.

**Recognition Through Discourse That Assumptions Are Shared By Others**

Discourse is an important component of transformative learning, since reflective discourse allows learners to build consensus and validate meaning (Cranton, 2002; Ziegler, Paulus, & Woodside, 2006). According to Mezirow, “we need to justify our new perspective
through discourse” (2012, p. 85). Discourse provides an avenue for exposure to other perspectives and for deeper understanding of others’ points of view. Hirsh (2012) confirms the need for professional development to include collaboration and discussion: in discussing what is required for highly effective professional development in relation to the Common Core Standards, she identifies peer support and time to collectively collaborate, as well as teachers themselves acting as coaches and mentors for one another” (Hirsh, 2012).

**Exploration of New Ideas and Relationships**

As one reframes assumptions as a result of the earlier phases of transformative learning, the new insights lead to ideas for change as well as new roles and relationships. In her reflection on various transformations she has experienced in her life, Dorothy MacKeracher (2012) explains that once she had identified the new perceptions or changes she experienced, she could “get on with other things and stop thinking consciously about the change” and she began to introduce changes into her behavior that allowed her to feel “more congruent” with her new perspective (p. 348).

**Planning a Course of Action**

A transformative learning experience includes the learner making a reflective decision to act on the new insight gained, and developing a plan to take that action. The course of action may not happen immediately, since the learner may need to overcome “situational, emotional, and informational constraints that may require new learning experiences to move forward” (Mezirow, 2012, p. 87).
Taking Action Based on New Perspectives

New perspectives are transforming when one not only identifies the new awareness, but begins to live based on that perspective (Mezirow, 2012). “Reflective discourse and its resulting insight alone do not make for transformative learning. Acting upon these emancipatory insights, a praxis, is necessary” (Mezirow, 1990, pp. 354-355). Emancipatory learning is a term from Habermas’ (1971) work on domains of learning (technical, practical, and emancipatory). The emancipatory learner is self-reflective and discovers self-knowledge. In Mezirow’s term, emancipatory insights free learners from their prior mindsets, allowing them to act to bring about change (Cranton, 2002; Kitchenham, 2008; Mezirow, 1990).

Mezirow’s phases of transformative learning provided the framework from which the research question were addressed: Did the teacher experience a disorienting dilemma? Did the teacher experience critical self-assessment of unconsciously held assumptions? Did the teacher experience recognition of others’ disorientation through discourse? Did the teacher develop new ideas in response to the interaction with others and self-reflection? Did the teacher develop a plan for implementing new ideas? Has the teacher changed his/her practice in the classroom due to the coursework experience? Answers to these questions yielded a resolution to the question, How do preK-12 teachers perceive the impact of online professional development (OPD) courses on classroom instructional strategies?
Chapter 2: Literature Review

The literature was systematically reviewed and analyzed with the intent to examine the body of knowledge regarding online teacher professional development and transformative learning. Search terms included: online transformative learning, online professional development, teacher professional development, adult learning, transformative learning, and transformative professional development. Databases accessed include ERIC, InfoTrac (includes AcademicOne File and Educators Reference Complete), the EBSCO collection of databases such as Academic Search Premier and Master File Premier, ProQuest, and JSTOR, through the Northeastern University Libraries.

The research question for this project was: How do preK-12 teachers perceive the impact of online professional development (OPD) courses on classroom instructional strategies? In alignment with the research question, the literature review is presented in sections regarding adult learning, transformative learning, and online professional development. Each section is further broken down into subsections: historical background, and implications for transformative online professional development. Subheadings are included for clarity.

Adult Learning

**Historical background.** The human brain requires time for reflection in order to make connections between prior learning and new associations, leading to new understanding (Zull, 2006). The adult education literature generally supports the idea that the approach to teaching
adults should be different from that of teaching children. While adults and children both need opportunity for reflection as part of their learning, adults’ learning requirements are different from those of children, and methods for teaching them should reflect those differences (Galbraith, 1990; Imel, 1989).

Years of life, learning, and work experiences combine to develop habits of mind, or mental models that affect adults’ attitudes toward learning (Brookfield, 1986; 2011; Green & Ballard, 2011; Malcolm S. Knowles, Holton, & Swanson, 2005). Long-held beliefs about education (such as, memorization and rote learning is best, there are right answers and wrong answers in every situation) can undermine learning (Falasca, 2011). Adults’ views on education can also be affected by past emotional experiences relative to learning (Dirkx, 2006). Negative experiences in grade school may lead to reluctance to return to what could be a similar, unpleasant learning environment. In addition, adults have responsibilities outside of their learning environments that distract them (growing children, relationships, family difficulties, financial issues, jobs). They don’t have time for learning that is not relevant to their immediate situation; they are task- or problem-oriented learners (Imel, 1989).

Natural stages in human development respond differently to various approaches to learning. Adults experience a phase before middle age when social conformity and social success are most important; in middle life, however, the individual becomes more intrinsically motivated and more interested in personal discovery and fulfillment (Crain, 1992; Maslow, 1970). Levinson (1986) describes adults aged 40-45 as transitioning to becoming more compassionate, more reflective, and more judicious, less concerned with external conflict and more internally driven.
Educators of teachers need to be aware of the characteristics of adult learners, and particularly the specific adults they are working with. “The same practices that work in a traditional educational setting do not always work for a group of adults, especially a group of well educated, independent teachers” (Beavers, 2009, p. 26).

**Andragogy**

Malcolm Knowles is considered the father of andragogy in the United States. As opposed to pedagogy, which is related to childhood learning, andragogy characterizes adult learning (M.S. Knowles, 1970; M. S. Knowles, 1980). Pedagogy is considered predominantly teacher-directed learning, while andragogy focuses on student-directed learning. In the mid-1980s, Knowles acknowledged that both pedagogy and andragogy can be situation-specific: depending on the situation, learners will need more or less direction. For example, while children may be naturally curious and self-directed in their learning, “an adult who knows little or nothing about a topic will be more dependent on the teacher for direction” (Merriam et al., 2007).

Andragogy, the widely acknowledged theory of adult learning, has evolved over time, but is based on six assumptions (Frey & Alman, 2003; M. Knowles, 1980b; Malcolm S. Knowles et al., 2005). Adults have their own self-concept, are independent, and capable of self-direction. Differences in learners’ experience, background and interests require examination of habits of learning and sharing of knowledge among peers. Adults want to learn the “things they need to know and be able to do in order to cope effectively with real-life situations” (Malcolm S. Knowles et al., 2005, p. 67). Adult learners face changing social roles, and want learning to help them address a specific, real-life problem or issue. Adults need to know why the learning is
important, and, adults are intrinsically motivated, desiring to improve quality of life and/or self-esteem (Malcolm S. Knowles et al., 2005; Merriam, 2001).

Scholars such as Grace (1996) question the validity of some principles of andragogy. Grace suggests that andragogy was a product of the 1960s, an era when self-improvement was something of a fad. “The andragogical model in the face of pedagogy was welcomed by many adult educators as revolutionary,” but Grace contends that Knowles did not develop the theory in an in-depth manner (Grace, 1996, p. 386). For some researchers, it is unclear whether andragogy is a theory of learning or a theory of teaching (Hartree, 1984; Merriam et al., 2007). Others, such as adult learning theorist Steven Brookfield, question whether the self-direction of adult learners is really a hoped-for result rather than a natural condition (Brookfield, 1986). According to Merriam, Caffarella and Baumgartner (2007), in relation to the role of life experience in adult learners, experience “does not necessarily translate into quality experience that can become a resource for learning; indeed, certain life experiences can function as barriers to learning” (Merriam et al., 2007, p. 86). Malcolm Knowles himself declared that pedagogy and andragogy are “two parallel sets of assumptions about learners and learning that need to be checked out in each situation” (M. Knowles, 2003, p. 235), and acknowledged that he wavered on whether pedagogy was just for children and andragogy just for adults, determining finally that each fit both age groups in different situations.

Even with such questions about the andragogical theory, it is important to consider the context of adult learning, the characteristics of adult learners, and the process employed in delivering professional development (Lawler & King, 2000). Patricia Lawler refers to six adult learning principles derived from the field of adult education: establish a culture of respect, assure learners’ active participation, build from learners’ past experience(s), encourage collaborative
inquiry, establish an immediate goal, and empower the learners to act on their learning (Lawler, 2003, p. 17). In essence, Lawler’s six principles echo Knowles’ list, since these principles focus on understanding the learner’s educational background, experiences, and professional goals when developing adult learning programs.

**Teachers as learners.** As adult learners with great experience in education, teachers expect respect for that experience from professional development providers (Powell, 2010). As students, teachers are educated and self-directed (Beavers, 2009). They desire meaningful professional learning that is relevant to their teaching lives (Lawler, 2003). Self-directed learning is fostered when teachers are supported in their individual professional development, when teachers are given the freedom to continually adjust their teaching based on the study of best practices, and when teachers have the opportunity to learn collectively in professional learning communities (Borko, 2004; Vanderbilt, 2008).

Self-directed learning can be cultivated in online learning environments. Online professional learning environments provide opportunities for participants to work both individually and within groups. The asynchronous nature of online learning removes the pressure of immediate response, allowing participants to take the time to reflect on new concepts before responding to prompts (Dede, 2006). The discussion forum environment promotes discourse on these same topics, providing collective learning opportunities as well as possibilities for the introduction of very dissimilar perspectives. Individual self-reflection and social discourse are both elements of self-directed learning and transformative learning. Teachers can learn to collaborate online and to become creators of meaning (Ketelhut, McCloskey, Dede, Breit, & Whitehouse, 2006). Different perspectives and stories can lead one to question long-held beliefs,
leading to a disorienting dilemma, phase one of transformative learning (Mezirow, 1990; E. W. Taylor, 2009).

Methodologies for teaching adults have an impact on learning, too. Research data have shown that teacher professional development is more effective when it is longer in duration, as opposed to what has become known as “one-shot” sessions (Boyle, While, & Boyle, 2004). To understand the best methods for working with teachers, a study of adult learning theory is helpful. Instructional design for teacher learning needs to align with the characteristics of adult learners.

Educators of adults should be considered facilitators rather than teachers (Beavers, 2009; Brookfield, 1986; Meyers, 2008), in order to emphasize the concept of adult learning as learning by all participants together, and to avoid memories of “authoritarian classrooms, heavily didactic procedures, and overly directive instructors” (Brookfield, 1986, p. 123). A facilitator of adult learning has the task of helping adults realize that their own behaviors and actions are the product of “accepted truths, commonly held values” and “internalized beliefs” (Brookfield, 1986, p. 125). It is the job of the facilitator to help adults become critically reflective, and to see that other possibilities for action and behavior exist.

One of the most difficult mindsets for teachers to overcome may be the very context of teaching; many teachers working now grew up learning in the traditional didactic classroom environment of the 20th century (Lawler, 2003). Letting go of the traditional student-as-empty-vessel theory, both for their students and for themselves as learners, may be a leap some teachers will not be able to make. Another tightly-held mindset, Americans’ centuries-old culture of individualism, contradicts the current emphasis on collaborative action (V. Richardson, 2003).
From that perspective, it might seem less honorable to gain success through the work of a group rather than by individual hard work and sacrifice.

**Implications for transformative online professional development.** In ancient times, adults were the students, not children. Socrates, considered the father of education, knew that his students needed to be able to choose the topics they were to discuss, in order to stimulate and sustain interest (Plato, 1956). The need for self-directed learning hasn’t changed for adult learners; teachers of adults understand that their students require a sense of control over their learning. In terms of online instructional design, that means providing choices and options that will lead to more meaningful learning experiences for each individual student (Drago-Severson, 2011).

Theories of adult learning were developed in the 1970s and 1980s, with traditional learning environments in mind. The work of some of the early theorists are particularly relevant for online learning (Frey & Alman, 2003), Howard Y. McClusky (1963), K. Patricia Cross (1981), Malcolm Knowles (2005), and Jack Mezirow (2000). These theorists incorporate the adult learner’s need for flexibility, control, relevance, self-direction and the value of perspective transformation; all of which are applicable in the online learning environment.

McClusky, a psychologist, developed a theory about learners’ Margin for Learning: \( M = \frac{L}{P} \), which states that “the learner’s Margin for learning is determined by his/her Load (demands of living) in relationship to his/her Power (or resources)” (as cited in Frey & Alman, 2003, p. 9). Relating this formula to online professional learning, the flexibility of online learning, and the ability to work asynchronously much of the time, reduces the learner’s Load.
With support from family and/or one’s school district in terms of equipment and time, a learner in an online learning experience will have a positive Margin for Learning.

Individual characteristics and overall readiness for self-directed learning will also impact the learning experience (Beavers, 2009). Adults’ abilities to engage in learning is dependent on multiple variables. K. Patricia Cross (1981) developed the Characteristics of Adult Learners model for adult learning, which holds that at different times in their lives, adults have varying degrees of readiness for learning. Her framework includes two sets of characteristics: personal, or life stages, and situational characteristics, such as an environment of full-time or part-time learning and voluntary or compulsory learning (Cross, 1981; Frey & Alman, 2003). Educators working with adult learners must consider both the life-phase of the learner and the situational context: is the learner in class because it is mandated by the employer, or because s/he chose to enroll for his/her own purposes? Cross asserts that the “power to determine what is studied moves from learner to teacher” when learning is compelled, removing the self-directed learning element that adult learners require (1981, p. 243). Adult learners in Cross’s model require flexibility and control in their learning environment; online instruction is often asynchronous, so educators can participate at times most convenient to them (Dede, 2006; Makinster, Barab, & Harwood, 2006; Sugarman, 2011; Summerville & Johnson, 2006).

Asynchronous interaction is not merely more convenient, but can be of value to learners. Makinster, Barab and Harwood (2006) examined the quality of student teachers’ reflections in three different forums: a private journal, an asynchronous discussion forum, and a discussion forum in a community of teachers. The researchers determined that while initially, the private journals were better reflections, both of the online discussion forums demonstrated that the student teachers reflected on their teaching in their posts, and felt the online discussion valuable.
Adult learners need to have a clear understanding that professional learning activities will relate to the primary concerns they have in their professional lives (Brookfield, 1986; Darling-Hammond & Richardson, 2009; Drago-Severson, 2011; Lawler, 2003). Knowles (1980a) recommended contract learning, a framework that allows students to clarify course objectives for themselves, establish their own deadlines, set their own targets and learning strategies, and to self-evaluate. Contract learning encourages students to take the initiative in their own self-development; learning becomes more individualized. Knowles notes that it’s exciting to see “what happens to a person when he or she stops waiting to be taught and suddenly discovers the joy of being in charge of one’s own learning,” with resources they discover themselves (1980a, p. 78). Online learning lends itself easily to learners’ control over their learning: they are able to set their own goals, to participate at their own pace, to conduct their own research, and to monitor their individual progress (Dede, 2006; Summerville & Johnson, 2006; Vanides, 2007).

Online professional development in the world of education is paralleled by virtual human resource development in the business world. A new type of online learning that is emerging in virtual human resource development (VHRD) involves the use of 3D virtual worlds, or an entirely virtual environment, using avatars for the participants (Mancuso, Chlup, & McWhorter, 2010). This cutting-edge technology is only just making its way into adult learning, but will undoubtedly be an important tool for teacher professional development in the near future, as rapid changes in technology and teacher familiarity with technology continue.

Those researching the impact of virtual worlds on adult learning agree that adult learning concepts must still be considered when designing learning experiences using these tools (Mancuso et al., 2010). Knowles predicted that technology would have a significant impact on adult learning in the 21st century (Malcolm S. Knowles et al., 2005). Indeed, technology is
“inherently a self-directed learning media” that caters to andragogical preferences of self-direction, flexibility, and the ability to tailor learning to their own specific requirements (2005, p. 237).

**Teachers and online learning.** Online professional development for teachers needs to meet four criteria in order to be effective, according to Taylor (2011): time, collaboration, content- and pedagogy-focused, and relevance. Teachers are busy during the school day, after school, and on weekends; professional development opportunities need to fit into their personal schedules (Summerville & Johnson, 2006; J. M. Taylor, 2011). Meeting new colleagues through online discussion and collaboratively sharing ideas about content and practice is an opportunity teachers enjoy and benefit from when they participate in online professional development (R. O. Smith, 2012).

The goal of online professional development is effective learning that will help teachers improve teaching and learning in their classrooms. Translating teacher professional learning into student achievement is not a natural progression, and requires critical reflection on the parts of both facilitator and learner (Guskey & Yoon, 2009; Lawler, 2003). It is important to continually evaluate progress throughout a professional learning experience. Formative assessments, whether formal or informal, help the facilitator understand what the participants feel is happening in the session; it may be completely different from the facilitator’s perspective (Brookfield, 1986). Assessment in online learning can mean pre- or post-tests, surveys, reflections, community blog posts, or synchronous online discussions (Doubler & Paget, 2006).

Online professional development must provide participatory, interactive, experiential learning that is meaningful for adult learners (Drago-Severson, 2011; Frey & Alman, 2003). In
the world of online learning, “online participation drives online learning” (Hrastinski, 2009, p. 79). Thus, online instruction that fosters interaction, collaboration, and engagement will be most successful.

Studies of professional development reveal that “hands-on work that enhanced teachers’ knowledge of the content and how to teach it produced a sense of efficacy” (Darling-Hammond & Richardson, 2009, p. 47), reinforcing the importance of meaning and relevance to teachers’ daily work. Professional learning that actively involves teachers in problem-based inquiry incorporating both pedagogical and content knowledge is most effective (Duffy et al., 2006).

In keeping with Knowles’ requirements for adult learning, Darling-Hammond & McLaughlin (2011, p. 82) described effective teacher professional development as: engaging teachers in concrete tasks that focus on the processes of learning and development; grounded in inquiry, reflection and experimentation that are participant-driven; collaborative, involving a sharing of teachers’ knowledge; connected to, and derived from teachers’ work with students; sustained, ongoing, intensive, and supported by modeling; and connected to other aspects of school change. Each of these elements is supported in an online professional learning environment.

Social engagement, or teachers sharing knowledge through discourse and dialogue, provides insight into previously unexplored points of view, and can create new connections for learning (Beavers, 2009; Brookfield, 1986; Harasim, 2012; Mezirow, 1990; E. W. Taylor, 2009; Zepeda, 2008). Smith and Sivio (2012) cite three specific benefits to online learning for teachers, including perceived ease of use, perceived usefulness, and social presence. Social presence in an online learning environment is the “degree to which the participants' online engagement creates
the perception that the other person is physically present or 'real.'” (p. 873) Collaborative online learning environments promote open discussion and critical reflection among participants, and contribute to meaningful professional development experiences. The opportunity to share experiences, thoughts and beliefs with other educators helps teachers reformulate habits and ideas of teaching (Doubler & Paget, 2006; Malcolm S. Knowles et al., 2005). As one researcher states, “if we want to enhance online learning, we need to enhance online participation” (Hrastinski, 2009, p. 81). Online discussion boards, wikis, or synchronous online chats are just three examples of strategies for engaging learners in discourse.

While most experts emphasize the need for discourse and sharing among participants in any professional learning environment (Harasim, 2012; Hrastinski, 2009; Mezirow, 1990), some researchers disagree. In developing the Learning to Teach with Technology Studio (LTTS), Duffy et al. concluded that group learning is not a critical component for effective professional development (Duffy et al., 2006). They found that teachers in their online courses considered “any collaborative activity as distracting or beyond the task” (2006, p. 194). The LTTS courses use one-on-one mentors to support their learners, and they believe the mentors provide more focused, individualized, context-relevant assistance than could a peer group from diverse environments. This perspective is not widely supported in the literature.

**Transformative Learning**

**Historical background.** Increasingly, literature in the field of adult learning includes transformative learning as a framework for educator professional development. Jack Mezirow defines transformative learning as “the process of learning through critical self-reflection, which results in the reformulation of a meaning perspective to allow a more inclusive, discriminating,
and integrative understanding of one’s experience” (Mezirow, 1990, p. xvi). Critical self-reflection is inspired by interaction and discourse with classmates, through which ideas are introduced, investigated, and balanced against prior knowledge and beliefs. New constructs, developed after in-depth consideration and discourse, are integrated into planning and ultimately into practice. Evidence of a transformative learning experience is planning change and then acting based on the new understanding, according to Mezirow (Kitchenham, 2008; Mezirow, 1990, 2000, 2012; Mezirow & Taylor, 2009; E. W. Taylor, 2009).

Mezirow’s theory emerged from a study he conducted in the late 1970s of women re-entering the world of education as part of a process of returning to work after a hiatus, such as years taken for child-rearing (Baumgartner, 2012; Imel, 1998). The initial theory, in which transformative learning depends upon rational “contextual understanding, critical reflection on assumptions, and validating meaning by assessing reasons” (Mezirow, 2012, p. 3), has evolved over the years to incorporate the concept of transformational growth as an emotional experience which must be understood as “developmentally challenging” (K. Taylor, 2000, p. 160).

Transformative learning theory is based on constructivist principles, according to Taylor and Cranton (E. W. Taylor & Cranton, 2012): an individual’s view of the world is the result of his/her perceptions and experience. Learning is a continual modification of what s/he already knows (Zull, 2006). Transformative learning occurs when the individual critically examines and questions those perceptions, and makes changes in practice based on the new perspectives resulting from the construction of new meaning. Social constructivism, based on Vygotsky’s theory (Vygotsky, 1978) that sociocultural systems affect individual learning, emphasizes that knowledge is socially situated and is constructed through self-reflection as well as reflection on others’ ideas. Transformative learning includes discourse and in-depth interaction as part of the
learning experience. Active engagement in learning, including discussion and disagreement, is the basis of a more meaningful learning experience (Merriam et al., 2007).

Transformative learning is the “new andragogy” (Cranton & Taylor, 2012, p. 16). Cranton and Taylor believe transformative learning theory has expanded the lens of andragogy, since andragogy is “more a framework for teaching adults” while transformative learning offers “a framework for both understanding adult learning and guiding the teaching of adults” (p.16). Cranton and Taylor hope to see transformative learning become even more associated with societal change as individuals grow with learning, and act upon that growth.

According to Clark (1993), transformative learning "shapes people; they are different afterward, in ways both they and others can recognize" (p.47). Evidence of transformative learning experience is in the learner’s actions. Effective transformative learning leads to a change in practice, a new perspective that leads to new habits of mind. Transformative learning and teaching “is the process by which we call into question our taken-for-granted habits of mind … to make them more inclusive, discriminating, open and reflective in order to guide our actions” (Keegan, 2011, p. 66).

Helsing, Howell, Kegan and Lahey (2008) emphasize that programs designed to help educational leaders change their attitudes toward professional development need to be truly developmental, providing the “opportunity for participants to make qualitative shifts in the ways that they understand themselves and their work” (2008, p. 437). Effective professional development needs to help individuals make transparent the contradictions between intended goals and the individual’s behaviors that likely undermine those goals. This can be particularly difficult for experienced teachers; they often believe they have reached a level of expertise in
their profession, and to be told that they need to adopt new approaches to teaching not only challenges their concepts of how to teach, but also their personal professional identity in relation to competence (Timperley, 2011).

The transformative process includes some variation of six phases (Cranton, 2002; Mezirow, 2012). Phase one is a disorienting dilemma, meaning an experience that belies one’s assumptions about what is true, which is followed by self-examination, or the understanding that one has unconscious assumptions of what is true. A critical assessment of assumptions, or the process of recognizing the sources of one’s assumptions, and the consequences of unquestioned adherence to these assumptions is followed by recognition that others also have such assumptions and beliefs. The exploration of possibilities, by “engaging in discourse, where evidence is weighed, arguments assessed, alternative perspectives explored, and knowledge constructed by consensus” (Cranton, 2002, p. 66) is next, and planning and executing a course of action based on the new self-knowledge and understanding completes the process.

**Disorienting dilemmas.** Such self-discovery and behavior adjustment can be an uncomfortable experience for the learner, and difficult for those around him/her, as s/he attempts to make changes in long-held beliefs and actions (Brookfield, 1986; Kreber, 2012; Lee & Brett, 2015; Mezirow, 2000; P. C. Rogers, 2011). Confronting dilemmas of self-understanding elicits strong emotions from adult learners such as anger, denial or distress (Dirkx, 2006; Lee & Brett, 2015). Emotions and habits of mind play a “powerful role” in transformative learning for adults (Dirkx, 2006, p. 18). For example, traumatic educational experiences such as having been told one cannot learn, or that one is a poor student, can cause barriers to new learning. Sometimes it can be helpful to connect emotional associations from the past to new learning: “encourage
learners to use negative experiences as a basis for thoughtful reflection,” in order to begin to “reframe” and learn from those past experiences (Zull, 2006, p. 6).

One example of a digital age challenge to a long-standing educational tradition is online learning for K-12 students. In an online interview with Joan Richardson of Phi Delta Kappan (PDK) about their 2008 book, Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns, Christensen and Horn state that online learning is a “disruption,” or an innovation that is improving the quality of education while challenging traditional models of learning (J. Richardson, 2010Web). “Online learning is very clearly acting as a disruption. If we put online learning into the existing architecture, it won’t work. We’ll spend a lot of money and it won’t transform anything” (J. Richardson, 2010Web). Teachers need to be able to focus on student outcomes rather than time on learning. For example, Horn says in the online PDK interview, “We’ve been measuring the wrong end of a student for the last 80 years. Free up all those constraints of Carnegie units and seat time” (J. Richardson, 2010Web). Addressing these concepts could produce significantly disorienting dilemmas for teachers who were educated and trained in the 20th century world of education.

Part of adult growth and development is becoming aware of the value and potential of difficult or self-perceived “threatening” differences, and viewing them instead as “a welcome source of new possibilities and perspectives” (K. Taylor & Elias, 2012, p. 153). The challenge for facilitators of online professional development is to provide opportunities for the type of in-depth discourse and dialogue that can lead to such discoveries; adult learners tend to avoid engaging in “the kinds of reflection or discussion that could lead to transformative learning” (R. O. Smith, 2012, p. 417). Learning in an online environment is new to many teachers, and interacting with others online can be an uncomfortable situation for them. One strategy to help
students understand the need to engage in deeper, more meaningful discussion would be to convey this discomfort when the course begins, and to provide examples for them to learn from and to follow (R. O. Smith, 2012). Participants will then be aware of this common issue, and may be able to overcome it.

Professional development experiences can inspire change that places teachers in a new situation as a change agent. Sometimes teachers find “transformation generates resistance from those who benefit from keeping the school system in its current form” (Dede, 2006, p. 239), or from those who are challenged by change. A study of the persistence of change in teaching practice after a transformative learning experience in an environment resistant to change would be useful. Green and Ballard (2011) begin to address this situation in a study on new teacher training based on experiential and adult learning principles. They cite resistance to change by master teachers as a significant barrier to improvement in practice in new teachers.

**Implications for transformative online professional development.** While literature regarding transformative learning is profuse, there is less in the way of transformative pedagogy, or how-to literature about online teaching for transformative learning (Masters et al., 2012; McQuiggan, 2011; R. O. Smith, 2012). Transformative pedagogy needs to be extended from the classroom into the online learning environment because of the increasing number of online courses in all disciplines (Meyers, 2008). Both transformative pedagogy and the effectiveness of online professional development are targets for further research. Some researchers have recommended that future research concentrate on whether online professional development “has effects on teachers’ knowledge, skills, attitudes, beliefs, and classroom practices, and whether these changes translate to improvements in student achievement” (Masters et al., 2012, p. 23).
The facilitator’s goal in transformative learning is to help adults address disorienting dilemmas, to guide them as they reflect on their long-held assumptions, and to lead them to discover and examine new perspectives, acquire new knowledge and take action in light of their new outlook. Steven A Meyers (2008) has four recommendations for implementing transformative pedagogy online, including creating a safe and inviting environment for interaction between students either synchronously or asynchronously. Meyers asserts that facilitators should encourage critical self-reflection and online discourse as they begin to identify and address long-held beliefs and prejudices. In addition, facilitators should utilize strategies to promote active participation and engagement. Facilitators need to promote students’ self-reflection, and help identify actions to take, based on the discoveries they make (Meyers, 2008).

The literature on transformative online learning tends to align with Meyers’ suggestions. Online teaching can be transformative because it allows facilitators to transfer time from content delivery to time that can be dedicated to fostering student engagement, stimulating intellectual development, and building rapport with students (Brinthaupt, Fisher, Gardner, Raffo, & Woodard, 2011). Lave and Wegner’s theory of situated learning (1991) promotes the idea that learning is fundamentally a social process and not solely in the learner’s hands. Lave and Wegner were considering apprenticeships and other communities of practice, but their theory has been cited in several studies on teaching (Borko, 2004; Lee & Brett, 2015). Learning as a community of practitioners, teachers build meaning through social interaction and engagement with one another.

**Social interaction.** Professional development that engages participants’ emotions can inspire transformative experiences (Dirkx, 2006). Using storytelling and fully engaging facilitation can lead to more meaningful learning (Wilson & Parrish, 2011). Transformative
professional development must enable teachers to share freely their experiences, practices, and knowledge, and must include “personal, critical reflection, active participation, and willingness to share and challenge other perspectives” (Beavers, 2009, p. 28). Meaningful and transformative adult learning has an emotional component that is enhanced by participants sharing feelings of inner conflict or dilemma relative to learning content. Sharing in groups and storytelling assignments can help elicit the emotions that heighten understanding (Dirkx, 2006; Wilson & Parrish, 2011). Boyer, Maher and Kirkman (2006) found that in a Web-based course designed to encourage self-planned learning, learning communities, reflection, and metacognitive awareness, students reported experiencing a change in perspective about those aspects of learning.

Effective, transformative, online professional development must provide teachers with experiential learning comparable to that which their students will experience. For example, when teachers are learning about using technology in the classroom, they need to use the same tools their students are using when they aren’t in school, “so that educators understand firsthand the strengths and challenges promoted by lifestyles infused with new media” (Dede, 2006, p. 239).

**Online Professional Development**

**Historical background.** Online learning is a version of distance learning, which has long provided access to continuing education for those who are otherwise separated from academic opportunities (Merriam et al., 2007). The early times of correspondence courses via postal service have evolved into online learning. Using online communication for education has been a practice since the mid-1970s (Caplan, 2004; Frey & Alman, 2003; Harasim, 2012). Arpanet (Advanced Research Projects Agency Network), the precursor to today’s Internet, was invented
in 1969, email arrived in 1971, and the first online communities of practice were created by academics in the mid-1970s (Harasim, 2012).

In the last ten years, online learning has exploded, moving from the limited web-based instruction of the first few years of the 21st century to the vast complexity of Massive Open Online Courses (MOOCs) today. Any statistic chosen to support this claim will be out of date before it is typed, but while most institutions of higher education (55%) have not yet decided whether to incorporate MOOCs into their offerings, 69.1% of all such institutions agree that online education is critical to their long-term strategy; 6.7 million students were enrolled in online courses in the fall of 2011, as compared to 1.6 million in 2002 (Allen & Seaman, 2013).

Literature about online teacher professional development is currently proliferating, as teacher education has been identified as the best path to transforming the nation’s education system. Online professional development can provide “powerful resources often not available locally, and… real-time, ongoing, work-embedded support” for teacher learning (Whitehouse, Breit, McCloskey, Ketelhut, & Dede, 2006, p. 13). Online professional development is considered the future of teacher training, “mainly because of its features that transcend geographic and time factors” (Kabilan, 2005, p. 51).

Apart from the convenience, however, online professional development must be evaluated in terms of what it contributes to teachers’ learning experiences and whether it helps teachers improve their competencies (Ally, 2008; Dede, Jass Ketelhut, Whitehouse, Breit, & McCloskey, 2009; Guskey & Yoon, 2009; Kabilan, 2005; Vanides, 2007). Ultimately, it is not the delivery medium that provides effective learning, but the quality of instructional design utilizing the chosen medium (Ally, 2008). Without making adjustments to the traditional
professional development design to improve content delivery, online professional learning “will prove the educational equivalent of pouring old wine into new bottles” (Hill, 2009, p. 471).

There has been criticism about the short duration of many professional development activities, and a lack of follow-up to such programs. The result of such experiences can be that “teachers either assimilate teaching strategies into their current repertoire with little substantive change or they reject those suggested changes altogether” (Penuel, Fishman, Yamaguchi, & Gallagher, 2007, p. 929). In a one-credit professional development program lasting just 4-5 weeks, the absence of lasting change would not be a surprise.

Online learning is still considered a new concept in the history of education, and is not well understood, since there are many different formats and variations. There is a growing field of online tools for developing rigorous and accessible online courses and programs, one of which is Quality Matters ("Quality Matters," 2015). Such services provide resources to educational institutions to help educators develop online course environments that include instructional design and assessment, ultimately promoting student learning.

Online programs can deliver instruction entirely asynchronously, or incorporate a blended approach that includes synchronous discussions or conversations with the instructor (Dede, 2006; Harasim, 2012; Kabilan, 2005). Institutions of learning have different criteria for what constitutes an online course. In Florida, Web-based courses are defined as more than 75% online (Boyer et al., 2006), which could include both blended and fully online courses. A research foundation defines online learning as 80% or more online (Allen & Seaman, 2013). For the purposes of this study, online professional development was considered courses delivered 100% online. It included only one-credit, online professional development courses for teachers that might incorporate synchronous as well as asynchronous participation.
**Implications for transformative online professional development.** Online professional development presents new challenges for facilitators, whose roles are often unclear and varied (Park, Johnson, Vath, Kubitskey, & Fishman, 2013). The most important concern for transformative online learning, according to R.O. Smith (2012), is “the pedagogical strategy embedded in the course design” (p.414). Smith notes that transformative learning can be fostered in online environments when the course is designed specifically with a strong pedagogy including a learner-centered approach, a focus on student interaction and discussion, and deliberate attention given to student self-reflection. Ultimately, the purpose for facilitators has not changed: “assisting adults to free themselves from externally imposed direction in their learning and … encouraging them to become proactive, initiating individuals in reshaping” their practice (Brookfield, 1986, p. 60).

One element that can affect an online professional learning experience for teachers is the attitude of the participants toward online learning. Teachers who believe that an online learning experience will be successful are often satisfied with the results in terms of usefulness and effectiveness (Kao & Tsai, 2009). The more positive experiences with online professional development a teacher has may lead him/her to feel comfortable about participation in further online learning. This aligns with Maslow’s theory that people are better motivated to learn when their own unique knowledge base gives them a sense of control over their learning (Maslow, 1970).

Facilitators whose goal it is to foster self-direction, critical self-evaluation and transformative learning have multiple options for assisting their students; perhaps so many as to be overwhelming. Teaching online affords the ability to provide content in various formats
(multimedia, video, text), to provide access to huge repositories of content on every conceivable subject, and to support social interaction in many formats (Anderson, 2004).

Online professional development is still in the early stages. Universities and other institutions for learning are struggling to standardize online course design. Several products are being developed to assist instructors with online instructional design, to help assure rigorous standards are met. One service, Quality Matters, facilitates a peer-review process in which trained colleagues share comments and views of instructors’ online course designs with the goal of improving student access and learning (Varonis, 2014).

Some researchers, such as Moallem (2003) and Muirhead (2000), suggest that online learning does not necessarily provide an environment conducive to the critical self-reflection, dialogue, self-direction and participation required for transformative learning (Boyer et al., 2006). Moallem (2003) and Muirhead (2000) both offer methods to improve interaction in online courses. Fusarelli questions the academic value of online higher education programs, suggesting these programs give up quality for convenience (Fusarelli, 2004). However, recent studies conducted at the Harvard School of Education, New Mexico State University, and other institutions demonstrate that common learning management system tools such as discussion boards and online journals can provide the means to develop elements of communication (Adams, 2010; Boyer et al., 2006; Dede, 2006; R. O. Smith, 2012; Whitehouse et al., 2006). Group activities can be conducted online utilizing collaborative tools such as Blackboard Collaborate, Skype, Facetime, blogs, and wikis. Group assignments provide the opportunity for informal discussion, often leading to exposure of different perspectives and assumptions, which can nurture transformative learning (Meyers, 2008).
Online communication offers the opportunity for students to connect globally with others very different from themselves, creating “the potential for transformative learning” (R. O. Smith, 2012, p. 412). In addition, online class discussion provides the liberating sense of anonymity associated with the “stranger on a train” phenomenon (Cranton, 2010), in which participants feel a sense of security about sharing their feelings with complete strangers they will likely never meet in person.

**Summary**

A review of the literature supported the premise that teacher professional development can be successfully implemented online, and that the potential for transformative learning exists within that mode, as long as courses are designed with transformative, andragogical strategies in mind.

Consideration of the characteristics of adult learning and the elements that lead to transformative learning is critical in the process of developing professional development learning experiences for adult online learners. In an online environment, that means asynchronous courses with multiple opportunities for group discussion and group work, facilitating discourse and the exchange of thoughts, ideas, and feelings, as well as sharing of personal stories and experiences. These elements may be easier to incorporate in a 3- or 4-credit graduate level course than in a 1-credit online course lasting only 4 weeks.

A discussion of the methodology for understanding how teachers experience online professional development follows in the next chapter.
Chapter 3: Methodology

The problem of practice identified for this study was a need for effective online professional development for teachers in the K-12 environment. To address this problem, the researcher explored the responses of teachers to professional development they had taken online, in order to assess whether they felt their experiences had been transformative for them as practicing teachers. Online professional development (OPD) can take different forms, including entirely online or blended (Dede, 2006). For this study, OPD refers to courses taken entirely online, with no face-to-face classroom time. Transformative learning, in this study, refers to meaningful learning that leads teachers to make deliberate changes in classroom practice (Wilson & Parrish, 2011).

Transformative learning (Mezirow, 1990) is the theoretical framework on which this evaluation was based. This is learning that challenges teachers’ value systems and world views, leading to new habits of mind and substantive changes in practice (Cranton & Taylor, 2012; E. W. Taylor, 2009). The research question grounded in the theoretical framework was:

How do PreK-12 teachers perceive the impact of online professional development courses on instructional strategies?

The research question was suited to the lens of transformative learning theory since it focused on changes in classroom practice as a direct result of online professional development (OPD). Transformative learning was introduced over thirty years ago as a framework for both research and practice in the field of adult learning (Cranton & Taylor, 2012). Jack Mezirow, the originator of the theory, was primarily concerned with transformative learning experiences that
“facilitate major identity or worldview shifts” (Tisdell, 2012, p. 25). This is a very personal form of learning that transforms one’s way of knowing, or way of feeling, understanding, relating, and acting (Kegan, 2000; K. Taylor & Elias, 2012). Teachers who experience transformative learning as a result of an online professional development experience may be able to identify the OPD as having an impact on their teaching strategies. Boyer, Maher, and Kirkman (Boyer et al., 2006) found students experienced “fundamental changes in preconceived ideas, beliefs, habits, or assumptions” in their study of OPD and transformative learning (2006, p. 335). Classroom practice may be affected by a teacher’s exposure to others’ stories, reflections, or learning experiences. Online learning often incorporates discussion forums and group work, in which participants share beliefs and experiences. One’s long-held pedagogical beliefs can change in response to an alternative viewpoint.

One-credit, four-week online professional development courses focusing on integrating educational technology were selected from the many different courses offered by the state university because learning about technology integration is potentially challenging for some teachers (Boyer et al., 2006; Marrero, Woodruff, & Schuster, 2010). Participants in the Boyer study acknowledged fear of or incompetence with technology, and several studies mention participants’ worries about online interaction or their lack of technological skills (Boyer et al., 2006; Harris, Mishra, & Koehler, 2009; Kabilan, 2005). The potential for transformative learning may be increased when people are learning in an environment which feels unfamiliar, if the conditions are optimal (R. O. Smith, 2012). Smith notes that transformative learning can be fostered in online environments with a strong pedagogy, including a learner-centered approach, a focus on student interaction and discussion, and deliberate attention given to student self-reflection (R. O. Smith, 2012, p. 411).
Research Design

Key theorists in the area of qualitative research include Y.S. Lincoln, E.G. Guba, R. Stake, and M.Q. Patton. “Qualitative research aims to look at a ‘process’ or the ‘meanings’ individuals attribute to their given social situation” (Hesse-Biber & Leavy, 2011, p. 45). A qualitative program evaluation of an online professional development program is based upon responses from participants for evidence and data. The exploration into teachers’ responses to professional development called for understanding individuals’ personal experiences, a natural fit for qualitative methodology evaluating individual outcomes within a program (Patton, 1990).

In the words of Robert Stake, “qualitative researchers treat the uniqueness of individual cases and contexts as important to understanding” (1995, p. 39). Qualitative methods are appropriate for this investigation of the individual experiences of teachers involved in online professional development (OPD). Throughout the research process, the researcher focused on the meaning that participants derive from OPD, and did not integrate her own perspective (Creswell, 2009). Qualitative researchers interested in the meaning their subjects make of an experience incorporate a holistic view of subjects’ prior experiences, their relationships with learning, and individual perspectives.

This was qualitative research, using data that reflect teachers’ feelings about the effectiveness of one-credit, online professional development (OPD) courses. In order to determine whether teachers believed their OPD experiences were transformative for their classroom practice, the researcher analyzed course syllabi, implemented a survey of teachers who had participated in the courses, specifically those courses related to integrating educational
technology, and interviewed teachers about their perceptions of the impact of OPD courses on their teaching.

**Research Tradition**

This study was a program evaluation, using a goals-based evaluation model as a framework (Patton, 1987, 1990; Stake, 1995). Program evaluations are often conducted using qualitative methods “because they tell the program’s story by communicating the participants’ stories” (Patton, 2003, p. 2). Evaluative research is an established method for “systematic collection of information” about a program’s activities and outcomes in order to form a judgment about the program’s effectiveness, or its impact on the program participants (Patton, 2015, p. 18). Program evaluation “may include ongoing monitoring of a program as well as one-shot studies of program processes or program impact” (Newcomer & Triplet, 2010, pp. 5-6).

Evaluation data in this project consisted of subjects’ words and stories, as well as program documents. Direct observation is also usually part of a program evaluation, but in the case of this study of professional development conducted entirely online, direct observation was not possible. Answers to open-response survey and interview questions provide direct quotations that can “yield in-depth responses about peoples’ experiences, perceptions, opinions, feelings, and knowledge” that convey the meaning they derive from a program (Patton, 2015, p. 14).

According to Patton (1990), a goals-based program evaluation measures “the extent to which a program or intervention has attained clear and specific objectives” (p.115). Official goals of a particular program do not need to be the focus of an evaluator (Weiss, 1998). A goals-based program evaluation was appropriate for this project, since teachers’ perceptions of online professional development can be evaluated based on specific criteria for transformative learning.
The six goals by which the online professional development (OPD) were measured aligned to Mezirow’s phases of transformative learning: Did the teacher experience a disorienting dilemma? Did the teacher experience critical self-assessment of unconsciously held assumptions? Did the teacher experience recognition of others’ disorientation through discourse? Did the teacher develop new ideas in response to the interaction with others and self-reflection? Did the teacher develop a plan for implementing new ideas? Has the teacher changed his/her practice in the classroom due to the coursework experience?

Answers to these questions as derived from a survey, interviews, and program documentation in the form of course syllabi, revealed whether the OPD experience caused the participants to make changes in their classroom practices. As Merriam et al (2007) aver, action is the indicator of transformative learning. Teachers whose classroom methods were actually modified as the result of OPD learning experiences demonstrated that the OPD had indeed had an impact on their professional practices.
The research process followed is described in Figure 1, below.

Figure 1: Order in Which the Data were Collected and Analyzed

- Compare the syllabi from the 1-credit, online education technology professional development courses to the Smith criteria
- Administer and collect data from the survey, using a one-time SoGoSurvey poll.
- Review the survey results, contact those who indicated an interest in being interviewed. E-mail consent forms to those subjects.
- Analyze the survey results in relation to the 6 goals of the program evaluation.
- Conduct the interviews, organize and analyze responses
- Compare the survey results with the interview results to find patterns, discrepancies
- Triangulate the survey and interview results with the syllabi data to see whether individual courses were more or less likely to lead to a transformative learning experience.

Participants

This evaluation used a maximum variation sampling method, one strategy of purposeful sampling, in which the researcher would “purposely select a wide range of cases to get variation on dimensions of interest” (Patton, 2003, p. 5). A purposeful sampling approach provides researchers with rich information about the central focus of a study (Patton, 1990). As the focus of this study was teachers’ responses to online professional development, a pool of subjects in which the participants are Pre-Kindergarten - grade12 (PreK-12) teachers was appropriate. A maximum variation sampling strategy can expose “common patterns [within] core experiences and central, shared aspects of impacts of a program”(Patton, 1990, p. 172). The sample for this evaluation was teachers in the online professional development program for educators at a small state university in eastern Massachusetts.
In 2013, a survey of teachers in the state university’s professional learning programs was conducted by the university’s Office of Continuing Education. The 2013 survey provided the impetus for the present program evaluation because it demonstrated, to some extent, changes in classroom practice following online professional development experiences. While the results of the 2013 survey inspired the current evaluation, no data from the 2013 study was used for this project.

Data

Using more than one method for data collection strengthens research design (Patton, 1987). The strategy used for this evaluation was methodological triangulation, “the use of multiple methods to study a problem” (Patton, 1987, p. 60). Three sets of data were collected for the study: syllabi from the online educational technology courses presented by the university during 2014 and 2015, responses to an online survey, and interviews with teachers. Data from the syllabi were compared to the survey and interview datasets. The three data sources are described in this section.

Teachers wanting to learn about or keep up with educational technology may be more likely to change their practice based on their professional learning experiences. As the purpose of this study was to determine whether teachers believe OPD can lead to transformative learning, and since educational technology is constantly changing, the courses chosen for the study sample were those focused on integrating educational technology into curriculum.

Syllabi. The first data set reviewed for this program evaluation was a document review which examined syllabi. Syllabi from all OPD courses offered during 2014 and 2015 concerning technology integration were collected in hard copy from the university, and analyzed to
determine whether course designs included elements conducive to transformative learning: a learner-centered approach, a focus on student interaction, and deliberate attention given to student self-reflection (R. O. Smith, 2012). Using Smith’s (2012) criteria for fostering transformative learning in an online environment, the course syllabi were analyzed to find design elements such as discussion boards, reflections, group work, journaling, and other learner-centered, interactive, or reflective methods.

**Survey.** The second data set for this study was a web survey sent to a purposeful sample of teachers who had completed OPD for educators at the University during 2014 and 2015. According to Patton (1990), a maximum variation sampling includes a wide variety of individuals because, “any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared aspects or impacts of a program” (p. 172). In this maximum variation sampling, each person in the chosen population received a survey. The chosen population included teachers in OPD focusing on integrating technology in the classroom. The questions were mostly open response, intended to elicit responses related to transformative learning experiences. The researcher implemented the online survey. The researcher does not currently teach in the online professional development program, and did not during the period from which the sample was drawn.

**Interviews.** Individual, recorded telephone interviews were held with six subjects who volunteered to be interviewed as part of the web survey. Interviews were the primary dataset, since “interview data for program evaluation allows the evaluator to capture the perspectives of program participants” (Patton, 1990, p. 278). The interview dataset provided a window into participants’ thoughts, feelings and concerns about their experiences with online professional development. The people who volunteered to be interviewed submitted their information, and the
researcher responded by sending a consent form and a request to schedule times for phone interviews. Upon receipt of the signed consent forms, interviews of approximately 45 minutes in length were conducted with six teachers from grade ranges 3-12.

Participation in the research was voluntary, and participants’ identities remained anonymous, as did the university. Subjects volunteered to be interviewed by making a specific selection in the web survey. It was made clear to participants that they would be able to opt out of the study at any time. The participants were volunteers and not the researcher’s own students, therefore not under her supervision and would not feel coerced or influenced by the researcher.

All subjects had participated in OPD with a focus on integrating educational technology from the university during some part of a two-year window (2014-2015). The OPD program for teachers has been in place for more than eight years. The sample’s limitations relate to the single-institution focus, to the focus on technology integration, and to the level of responses received. Most members of the sample chose not to respond, and only 6 elected to be interviewed. Also, some may have considered the 1-credit OPD courses to be casual learning, as opposed to 4-credit graduate level coursework designed to lead to an advanced degree. Such a perspective might have affected the seriousness with which subjects considered the survey and interviews.

In a naturalistic inquiry such as this qualitative, goals-based program evaluation, trustworthiness, or generalizability is limited by the small sample and context. This evaluation was not designed to generalize results for places, institutions, or people outside of the evaluation, but the results may be of interest to researchers in similar environments (Creswell, 2009; Lincoln & Guba, 1985; Patton, 1987, 1990).
Recruitment and Access

In addition to applying for approval for the program evaluation from Northeastern University’s IRB, permission was also sought from the state university’s Institutional Review Board (IRB) and the office of Continuing Education to access the Continuing Education enrollment bank for the years 2014-2015. All participants in the Online Professional Development program who were enrolled in courses about integrating education technology received the survey. The pool of subjects participated in one-credit, fully online professional development courses designed to help teachers integrate technology into their classroom practice. Twenty-three courses with that focus were offered 56 times during 2014 and 2015, with 613 teachers participating. Many of the 613 teachers were people who had taken more than one course during the two years; removing duplication, 377 teachers received the online survey. Thirty teachers responded to the survey. From that sample, a pool of six subjects consented to be interviewed in a one-on-one telephone session. According to Weiss (1998), there are “two basic ways to select respondents from the total population of program participants: purposive sampling (picking particular people for particular reasons), or random sampling (allowing the laws of chance to determine who is chosen)” (Weiss, p. 164). No such selection was required, with only six interview volunteers.

Teachers who have taken more than one OPD course may be assumed to be more accustomed to online learning technology, therefore less focused on learning to use the technology and more able to describe their learning experiences. Teachers who have been in their positions for several years may be less likely to change practice, as opposed to teachers with less experience. Interviewing school teachers from each of three grade spans (3-5, 6-8, 9-12) clarified the sample, making it possible to determine whether transformative learning
occurred across grade levels. The sample was a purposeful, maximum variation sample because it included program participants from different grade levels who provided data from a wide range of perspectives as to how preK-12 teachers perceive the impact of online professional development on professional practice (Patton, 2003)

No incentives were offered to subjects who chose to participate in the survey or interviews. Participation was entirely voluntary, and did not impact any coursework participants may have taken or may intend to take at the university. Subjects remained anonymous, and their responses were kept confidential. To protect the privacy of the human subjects, survey results automatically omit respondents’ names. Only those who volunteered to be interviewed identified themselves, and those names will continue to be protected by secure data storage. No participant names appear in the study. The recruitment letter that accompanied the survey is included in Appendix A. Participants who agreed to be interviewed signed the informed consent form in Appendix B.

Data Collection
This section will describe how the three datasets were collected. It is organized according to the order in which the data were collected: syllabi, survey, and interviews.

Syllabi. Document review is often part of a qualitative evaluation (Patton, 1990). In this evaluation, program documents consisted of syllabi. Syllabi at the university include the course description, goals, objectives, requirements, and schedule. Each instructor is able to include more or less detail in his/her syllabus, making it possible that content would not include the data needed for this project, or that none of the courses had been developed with transformative learning in mind.
The university offered 23 1-credit online professional development courses that were related to integrating technology in the classroom over the course of the years 2014 and 2015. Many of the courses were offered in each of three semesters, spring, summer, and fall. In 2014, there was also a winter semester. For example, Creating Assessments Using Online Tools ran in the spring and fall semesters of both 2014 and 2015. The total number of courses in the time period is 43. Appendix C shows the course titles, when they were offered, and the number of students enrolled. Each of the syllabi were requested and delivered in hard copy from the university.

**Survey.** The survey was distributed through an online survey tool called SoGoSurvey to the 377 teachers who participated in the university’s online professional development program during 2014 and 2015. Each student who participated in the teachers’ online professional development program courses that were focused on technology integration received an online survey.

Surveys conducted via the Internet have advantages such as low cost, quick distribution and analysis, and a high level of confidentiality for participants (Newcomer & Triplet, 2010). The short survey incorporated 9 open-response questions. The survey questions are listed in Appendix D. These questions were designed to elicit responses related to participants’ experiences after their professional development programs, focused on the research question of how teachers perceive the impact of OPD on their classroom practices. In order to assure anonymity, neither the participants nor their school districts were identified. Gender identification was not requested in the survey.
**Interviews.** In one of the online survey questions, respondents were asked whether they would consent to be interviewed by the researcher to help improve the accuracy of the study. For those respondents who agreed, there was a field in the survey for first name, last initial, grade level taught, years in their current position, number of OPD courses taken, and contact information. In addition, the field seeking volunteers contained a guarantee that all participants would remain anonymous. In a scenario where selection would be necessary to narrow the number of interviews, knowing grade levels and the number of courses taken would be helpful. Selection was not necessary for determining interviewees, since only 6 volunteered. Fortunately, the representation was balanced across grade level ranges 3-5, 6-8, and 9-12.

The interviews were conducted on the telephone, via speakerphone, and recorded onto the researcher’s computer. The interviews were then transcribed by the researcher, using a tool called Transcribe, and the transcripts were sent to the interview subjects for member checking.

Table 1 shows the relationships between the six goals of the program evaluation, which align to the Mezirow phases of transformative learning, and the two sets of questions (survey, interviews). The evaluation questions are descriptive, seeking to discover teachers’ experiences and the meaning derived from those experiences (P. J. Rogers & Goodrick, 2010). Each of the phases were reflected by at least two questions, from the two different instruments.
Table 1

*Mezirow’s 6 Phases and the Number of Questions in the Survey and Interviews*

<table>
<thead>
<tr>
<th>Research Question: How do PreK-12 teachers perceive the impact of one-credit online professional development courses on instructional strategies?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mezirow’s Phases for Transformative Learning</strong></td>
</tr>
<tr>
<td>Disorienting Dilemma</td>
</tr>
<tr>
<td>Critical Self-Assessment</td>
</tr>
<tr>
<td>Recognition Through Discourse</td>
</tr>
<tr>
<td>New Ideas in Response</td>
</tr>
<tr>
<td>Plan for Implementation</td>
</tr>
<tr>
<td>Changed practice</td>
</tr>
<tr>
<td><strong>Total Survey Questions:</strong></td>
</tr>
</tbody>
</table>

**Data Storage**

Data from the survey are stored on a password-protected SoGoSurvey site, as well as on a secure digital drive. The interview files will be stored in password-protected audio files in a secure location for three years, based on regulation 45 CFR 46.115(b) of the U.S. Department of Health and Human Services (2014). Any printed material related to the survey and interview results will be stored in a secure location for three years. The researcher is the only person with access to any of the data.
Data Analysis

This section will describe the methods used for analyzing the three datasets. Syllabi were the first dataset analyzed, the survey second, and individual interviews were analyzed third.

**Syllabi.** Syllabi from the online professional development (OPD) courses concerned with the integration of technology into the classroom were compared to Smith’s (2012) three criteria for fostering transformative learning in an online environment. Data from the syllabi analysis were coded separately and distinctly from the survey results and interviews. The syllabi were color coded by hand to mark areas in which the courses met the Smith criteria: learner-centered course design, a focus on student interaction, and opportunities for self-reflection. The syllabi for all 23 courses presented by the university during 2014-2015 involving integration of educational technology were analyzed, since it was not known exactly which of the courses were taken by the survey respondents.

Table 2 shows how Smith’s (2012) criteria for fostering transformative online professional development were analyzed in the syllabi, the survey data, and the interviews.

Table 2

*How the Smith Criteria for Transformative Online Professional Development Are Reflected in the Three Data Sources.*

<table>
<thead>
<tr>
<th>Smith Criteria</th>
<th>Syllabi</th>
<th>Survey Questions</th>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner-Centered</td>
<td>Do participants help plan the course or projects?</td>
<td>How was the course suited to your own professional needs?</td>
<td>Did you develop a plan to implement any changes in your</td>
</tr>
<tr>
<td>Are assignments designed to be applicable to participants needs?</td>
<td>In what ways were you able to make this course meet your needs?</td>
<td>classroom practice? Please explain.</td>
<td></td>
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<tr>
<td>---</td>
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<td></td>
</tr>
<tr>
<td><strong>Student Interaction</strong></td>
<td>Are there discussion board questions that inspire sharing of personal stories?</td>
<td>Did discussion with your classmates, either asynchronously or synchronously, help you clarify anything you were learning?</td>
<td>What did you learn when talking with your classmates about teaching?</td>
</tr>
<tr>
<td></td>
<td>Are there group activities?</td>
<td></td>
<td>Did you feel a sense of trust in your fellow students that might have helped you open up to them more?</td>
</tr>
<tr>
<td></td>
<td>Are students allowed to collaborate on some assignments?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Self-Reflection</strong></td>
<td>Do assignments require critical thinking?</td>
<td>What ideas came to you as a result of discourse with your classmates, if any?</td>
<td>Did you feel as though your thoughts about your practice were much the same as your classmates?</td>
</tr>
<tr>
<td></td>
<td>Is there a journaling element to the course?</td>
<td></td>
<td>Please tell me about a time during one of your OPD courses when something you had always believed to be true was brought into question.</td>
</tr>
<tr>
<td></td>
<td>Do participants need to submit reflections relative to their learning?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please tell me how you may have re-evaluated your practice based on new information from one of your OPD courses.

**Survey.** Online surveys have the advantage of providing precise recording of subjects’ written responses. The online survey consisted of 13 questions, 9 of which were open response, including the last question, which asked if the respondent would agree to be further interviewed. The other four questions were quantitative in nature, multiple choice questions designed to help narrow down the pool of interviewees if necessary.

Overall, the teachers participating were veterans, most having taught for at least 10 years, and most having taken from 1-3 online courses. These data points indicate that these experienced teachers were likely comfortable with their current strategies, but looking for new ideas in the area of instructional technology. Figure 2 shows the distribution of teachers taking the survey.
The online survey was sent to 377 teachers who had participated in online professional development (OPD) concerning technology integration in the classroom. Thirty teachers responded to the survey, a 7.95% response rate. The 30 teachers responding to the survey were in all grade ranges, from pre-school through high school. Most (18 or 60%) had taken from 1-3 OPD courses, 7 (23.33%) had taken 4-6 courses, and 4 (13.33%) had taken more than six. Most of the teachers responding to the survey had been teaching for more than 10 years (22 or 73.33%), and all had been teaching for at least 6 years.

Appendix D contains the list of questions used in the survey. The relatively few open response questions in the survey made it feasible to hand-code the data. The survey data were analyzed to study teachers’ attitudes about their experiences in online professional development (OPD). All responses were evaluated in relation to the six goals of the program evaluation, which align with Mezirow’s phases of transformative learning, and Smith’s criteria for fostering
transformative learning in an online environment. Appendix E lists the questions from the survey in relation to Mezirow’s phases (2000, 2012; 2009) and Smith’s criteria (2012).

Once the survey data were organized and prepared for analysis, coding began. Simply stated, coding involves reviewing all narrative information, looking for common threads or topics, developing categories, abbreviating those categories as codes, clustering data around similar codes, and then beginning to analyze the data (Creswell, 2009; Weiss, 1998). In data analysis, coding consists of “bracketing chunks [of data] and writing a word representing a category in the margins” (Creswell, 2009, pp. 198-199). When coding the survey responses, the researcher looked for keywords and themes or patterns that related to the research question of what teachers perceive to be the impact of OPD on their classroom practice (Saldana, 2013). It was anticipated that responses reflecting individuals’ feelings or the meaning they took from the OPD could best be evaluated using values coding and emotions coding. Values coding is applied to qualitative data reflecting “a participant’s values, attitudes, and beliefs, representing his or her perspectives or world view” (Saldana, 2013, p. 110). Emotions coding labels “the emotions recalled and/or experienced by the participant, or inferred by the researcher about the participant” (Saldana, 2013, p. 105).

Survey responses were coded according to keywords and patterns. Themes and codes were developed as the data were analyzed, and include terms such as changed practice, surprise, interaction, reflection, and discussion, as well as other phrases or words used related to the six goals of the program evaluation, disorienting dilemma, critical self-assessment, recognition of others’ disorientation, developing new ideas, planning to make changes, and taking action (Patton, 1990; Saldana, 2013).
According to Saldana (2013), there are multiple methods for coding, including first cycle, or initial coding, and second cycle coding, which provides deeper analysis. The research question was, How do preK-12 teachers perceive the impact of one-credit online professional development (OPD) courses on classroom instructional strategies? First cycle coding methods were intended to discover the meaning participants had taken from OPD, and the emotions involved in thoughtful reexamination of a deeply-held conviction. During first cycle coding, the 30 responses to the 9 open response survey questions were hand coded using Emotion and Values codes. Second cycle coding aligned with the six Mezirow phases of transformative learning (2000) and the three Smith criteria for online transformative learning (2012). Responses were sorted by Smith or Mezirow phase and element of that phase. During second cycle coding, it was determined that the first cycle Emotion and Value coding were not helpful for the analysis procedure, and those were dropped, as the focus of the analysis shifted to coding only for the Mezirow and Smith elements, and then for patterns.

**Interviews.** Interview data are often rich sources of personal feelings and thoughtful responses from participants. The sometimes quick responses in survey data do not always provide such rich material. The interviews were helpful for identifying subjects’ specific feelings about whether their teaching practices changed in response to their OPD experiences. The interview questions are listed in Appendix F, aligned with the goals of the program evaluation, which align with the Mezirow (2000, 2012; 2009) phases of transformative learning, and Smith’s (2012) criteria for fostering transformative online professional development.

Of the 30 responses to the survey, 6 teachers volunteered and were interviewed. The interview subjects are not identified, nor are their schools, districts, or locations, although each of these teachers teaches in Massachusetts. One teacher is in a grade 3-5 environment, three teach
grades 6-8, and two are in the high school environment. Two of the teachers are school library media specialists, one is a language teacher, and the others are classroom teachers teaching art, social studies, and business. It is noteworthy that the teachers were from multiple grade levels and disciplines, and that two of the six were librarians. This demonstrates that teachers from all grade levels and disciplines are interested in learning about integrating educational technology.

An especially interesting note is that 5 of the 6 teachers who volunteered to be interviewed had been teaching for more than ten years. This could indicate that experienced teachers are more willing to participate in educational research, or that this particular study was especially intriguing to them. Two of the interviewed teachers had taken more than 6 OPD courses, 1 had taken 4-6, and 3 had taken 1-3. Each of the teachers interviewed was female. Table 3 lists the teachers who were interviewed by the grade levels taught, the courses they teach, the number of years they have taught, and the number of OPD courses taken. Taken together, the participants from the survey and interviews were experienced teachers, diverse in the grade levels and disciplines taught, interested in learning about integrating educational technology, and somewhat familiar with learning online.
Table 3

*Teachers Interviewed for the Study by Grade Levels, Subjects Taught, Years Teaching, and Number of OPD Courses Taken*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Grade Levels Taught</th>
<th>Subjects Taught</th>
<th>Years Teaching</th>
<th>Number of OPD Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3-5</td>
<td>Library</td>
<td>10+</td>
<td>4-6</td>
</tr>
<tr>
<td>2</td>
<td>6-8</td>
<td>Social Studies</td>
<td>10+</td>
<td>7+</td>
</tr>
<tr>
<td>3</td>
<td>9-12</td>
<td>Art</td>
<td>10+</td>
<td>1-3</td>
</tr>
<tr>
<td>4</td>
<td>6-8</td>
<td>Library</td>
<td>10+</td>
<td>1-3</td>
</tr>
<tr>
<td>5</td>
<td>9-12</td>
<td>Business</td>
<td>10+</td>
<td>7+</td>
</tr>
<tr>
<td>6</td>
<td>6-8</td>
<td>Languages (French, Spanish, Italian)</td>
<td>6-10</td>
<td>1-3</td>
</tr>
</tbody>
</table>

The researcher conducted all interviews. The six interviews were conducted on speaker phone, and recorded using the sound recorder on the researcher’s laptop. Interviews lasted approximately 30-45 minutes. The conversations were subsequently transcribed by the researcher using a product called Transcribe, and transcriptions sent to the interviewees for member checking within 48 hours. The interviewees reviewed the transcript and responded with a message either with minor edits or assurance that the transcript was accurate. All recorded information is stored in a secure location, to protect participants’ responses and identities.
Data from the interviews were coded in alignment with the goals of the program evaluation, which align with Mezirow’s phases of transformative learning. The six phases include disorienting dilemma, critical assessment of unconsciously held assumptions, recognition through discourse that others share similar assumptions, relationships and actions, developing new ideas based on new understandings, planning a course of action, and acting upon those plans. Data from the interview questions were enriched by the data retrieved from the survey as they were compared to determine the meaning teachers took from the OPD experience, their thoughts, feelings and intentions (Patton, 1990).

Many of the answers received could have fit into different categories, since differences in meaning between concepts such as planning to implement ideas and developing new ideas are difficult to separate. Appendix G lists the goals of the program evaluation that were used in analysis. Interview responses reflected all of the 6 Mezirow phases except for DD3, Disorienting Dilemma 3 (Disbelief, refusal to accept new concepts) and PII2, Plan for Implementing Ideas 2 (Plans developed in collaboration with others in class).

**Trustworthiness**

Potential threats to internal trustworthiness included the unconscious personal biases of the researcher (Saldana, 2013), and a possible inability to establish evidence of transformative learning as opposed to change in practice due to OPD. Teachers enroll in OPD programs with the specific intent of improving classroom practice, and might consider any altered approach a natural consequence of the educational experience rather than a significant and fundamental change in their outlook toward professional practice. The researcher hoped to minimize this
potential by posing questions that would cause subjects to carefully consider their personal experiences and the depth of changes they may have experienced.

Lincoln and Guba (1985) cite four criteria of trustworthiness in research: credibility (confidence in the truth of the findings), transferability (assurance that the findings have applicability in other, similar contexts), dependability (findings are dependable and repeatable), and confirmability (findings are objective, not based on the researcher’s biases).

Peer debriefing (Lincoln & Guba, 1985; Schwandt, 2007), or the input of an objective third party peer, who would question the methodology, design, and trustworthiness of the data interpretation was part of the effort to establish credibility. An objective third party agreed to perform this review.

Transferability, the applicability of findings to other contexts or with other subjects (Lincoln & Guba, 1985), is difficult to prove when using a small purposive sample. Further research on online professional development (OPD) and teachers’ transformative experiences will need to be conducted in order to make this claim.

Dependability, or consistency, meaning the findings are repeatable, is supported by triangulation (Creswell, 2009; Lincoln & Guba, 1985; Maxwell, 2005; Patton, 1987, 1990, 2003, 2015). The qualitative data were triangulated using the “triangulation of sources” method (Patton, 1990, p. 467). “It is usually assumed that the different data collection methods are biased in different ways, and if they agree, the evidence is strong, and if they don’t fully agree, their idiosyncratic biases will cancel each other out” (Weiss, 1998, pp. 263-264). The process of triangulation was to cross-check the different results from the three data sources to find agreement and patterns. All three data sets were analyzed in relation to the other data sets: first
the course syllabi were analyzed; then the syllabi results were analyzed in relation to the survey data; then the syllabi results and the survey data were analyzed in relation to the interview data. The syllabi data informed the survey data, and both the syllabi data and the survey data informed the interviews. Finally, the relationships among the three data sets were analyzed for continuities and discontinuities. Data triangulation provided the researcher with valuable information for evaluating whether OPD can transform teachers’ practice.

Confirmability, or the assurance of the objectivity of the researcher and methodology, was maintained by objective data interpretation and member checking (Creswell, 2009; Lincoln & Guba, 1985). Member checking is the process of asking participants to review the information derived from their interview data, to assure that the researcher’s construction agrees with the intent of the interviewed subjects. After transcribing the interviews, each interviewee reviewed the transcript from their interview for accuracy, and reported back to the researcher with confirmation or with minor edits. The informed consent form (Appendix B) confirms this intent.

Summary

In summary, the qualitative design of this program evaluation was to elicit from the interview participants meaningful commentary on their experiences in the online professional development (OPD) courses. It was hoped that their responses would reinforce evidence from the syllabi of the OPD courses and responses to the online survey. By examining the syllabi of the courses and including an online survey and phone interviews, the researcher attempted to answer the research question, How do preK-12 teachers perceive the impact of one-credit online professional development courses on classroom instructional strategies?
Chapter 4: Research Findings

The purpose of this chapter is to report and discuss the findings from the data collection and analysis process. The purpose of the research was to investigate the perspectives of teachers concerning the effect of online professional development on their classroom practice. The research question for this study was: How do preK-12 teachers perceive the impact of one-credit online professional development (OPD) courses on classroom instructional strategies? The goals of this program evaluation, which mirror the six Mezirow phases of transformative learning, provide a framework for presenting the findings in relation to the research question.

Presentation of Findings

This chapter includes two sections based on the findings from the data analysis. The first section presents the findings from the data analysis and themes that emerged, in order of the goals of this goals-based program evaluation. The findings from the document review of the course syllabi are presented next, separately from the survey and interview data.

Findings from the Survey and Interviews. This section presents the findings from the data analysis and themes that emerged, in order of the goals of this goals-based program evaluation. The six goals align to the Mezirow (2000) phases of transformative learning (Did the teacher experience a disorienting dilemma? Did the teacher experience critical self-assessment of unconsciously held assumptions? Did the teacher experience recognition of others’ disorientation through discourse? Did the teacher develop new ideas in response to the interaction with others and self-reflection? Did the teacher develop a plan for implementing new ideas? Has the teacher
changed his/her practice in the classroom due to the coursework experience?). Where appropriate, the relation of the findings to the Smith (2012) criteria for transformative online professional development are included.

Figure 3 summarizes the survey and interview data relative to the goals and to the Smith criteria for transformative OPD. Comparing the survey and interview data revealed many areas of agreement, and several patterns. The survey and interview responses were compared based on the six Mezirow phases of transformative learning (Mezirow, 2000), and then to the Smith criteria. The responses exceed the number of teachers surveyed or interviewed in some cases because the chart is noting the number of responses to a certain criteria, not the number of people surveyed or interviewed. This section will discuss the data illustrated in Figure 3.

Figure 3

Mezirow Phases and Smith Criteria and the Number of Survey and Interview Responses
Disorienting dilemma. A disorienting dilemma occurs when an adult is brought up against a concept that is contrary to his or her long accepted beliefs, or habits of mind. Disorientation or surprise were revealed by both the survey and interview data. Six interview responses and 21 survey responses reflected experiencing disorientating dilemmas during the online professional development (OPD) experience. Themes that emerged were disorientation due to technology integration, to learning online, and to new perspectives the respondents hadn’t considered before.

Survey questions 1, 2, and 3, and interview question 1 elicited responses relevant to the experience of a disorienting dilemma. Table 4 lists the questions related to the concept of a disorienting dilemma, the number of teachers who responded, and areas of disorientation. The table illustrates that survey question 1 and interview question 1 elicited the strongest positive response to the idea of a disorienting dilemma. It should be noted that survey question 2 was confusing for some teachers. Five teachers responding expressed a sense of misunderstanding the question.
Table 4

Questions Related to Disorienting Dilemma

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of Responses</th>
<th>Areas of disorientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (S) During your online professional development (OPD) course, were you</td>
<td>28 Responses total</td>
<td>Instructional technology integration</td>
</tr>
<tr>
<td>surprised by anything you learned? In other words, did you experience an</td>
<td>11 (39%) “No”</td>
<td>Sudden understanding of another’s perspective</td>
</tr>
<tr>
<td>“aha!” moment? Please explain your “aha!” moment.</td>
<td>14 (50%) Directly related to disorienting dilemma</td>
<td>Learning online</td>
</tr>
<tr>
<td></td>
<td>3 (11%) Not related to disorienting dilemma</td>
<td></td>
</tr>
<tr>
<td>2. (S) Did anything strike you as contrary to your experience? For example,</td>
<td>28 Responses</td>
<td>Learning online</td>
</tr>
<tr>
<td>ideas that were presented, or instructional design?</td>
<td>15 (54%) “No”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (11%) Directly related to disorienting dilemma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 (35%) Not related to disorienting dilemma</td>
<td></td>
</tr>
<tr>
<td>3. (S) Did discussion with your classmates, either asynchronously (via a</td>
<td>28 Responses</td>
<td>Learning online</td>
</tr>
<tr>
<td>discussion board) or synchronously (online together), help you clarify</td>
<td>6 (21%) “No”</td>
<td></td>
</tr>
<tr>
<td>anything you were learning?</td>
<td>4 (14%) Directly related to disorienting dilemma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 (65%) Not related to disorienting dilemma</td>
<td></td>
</tr>
</tbody>
</table>
1. (I) Please tell me about a time during one of your OPD courses when something you had always believed to be true was brought into question.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Instructional technology integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 (83%)</td>
<td>Directly related to disorienting dilemma</td>
</tr>
<tr>
<td>1 (17%)</td>
<td>Not related to disorienting dilemma</td>
</tr>
</tbody>
</table>

(S) = Survey  (I) = Interview

Teachers discussed being surprised that they would be able to integrate technology, and by the very success of their integration. In addition, some had entered the OPD experience with some skepticism about how it would work for them, and expressed surprise that they had both enjoyed the courses and learned from them. Learning about situations other teachers were experiencing in their professional lives provided a significantly new perspective for some teachers, causing them to reconsider their own thoughts about their own workplaces and situations.

Many of the discoveries teachers reported related to the potential of integrating technology into curriculum. Several teachers stated that taking the OPD courses in education technology introduced them to new possibilities in methodology that they had not considered. Discovering possibilities for using gaming as an integral part of the curriculum, using iPhones to conduct quick formative assessments, or finding online teaching and learning tools such as Edmodo or Google Classroom changed teachers’ approaches to many topics they had taught for years. Five of the six teachers interviewed (83%), and 50% of those surveyed believed they had learned something surprising during their online professional development (OPD) courses. In most cases, the surprise they experienced was related to integrating technology. One subject, a
studio art teacher, had been skeptical about integrating technology into her hands-on learning methods, but said the course she took made her “realize that I could have a stronger presence with technology… that I could do way more than I was doing without it … it has been transformative for me.”

Another teacher spoke of the discoveries she made in a course about online resources that encouraged her to change her practice with an increase in her use of interactive technology, improving the connections her students could make in science: “One of the things I really enjoyed learning about were the interactives, where kids could go and not just read about something, but do something. Do a simulation, or watch the moon go through an eclipse, or whatever.”

Not every teacher was surprised by the integration of technology; one teacher was surprised by the way students were using it on their own, and at what ages. “One thing that really jumped out at me was that for young children, the phone is the cyberbullying tool of choice. I had always thought of cyberbullying as something that happened on a computer.” She was shocked to discover first graders were being bullied via their cell phones.

For some, learning in an online environment was disorienting, “contrary to the way I think of myself as a learner. Originally it was an isolating experience.” This teacher was skeptical about being able to learn in an online environment, but found that quite the opposite was true. She had not expected to enjoy or to learn from this new way of accessing professional development, but instead discovered that she learned much more than she had expected due to both teacher facilitation and participant interaction.
Some participants reacted to their discomfort with their online experience with a response of disbelief, or refusal to accept the new concepts. For example, one participant did not enjoy the self-directed online experience: I was not impressed by the course design, and essentially felt that I was learning the material by myself.” One teacher found the online course design uninspiring. “The course was not set up to facilitate interaction with classmates. Discussion questions did not prompt discussion.” A teacher who was disillusioned by the discussion board component of the OPD course considered the element “busywork just to fulfill the requirements of the course.” This type of response was uncommon.

Some disorienting experiences were not related to integrating technology. Teachers were exposed to widely new perspectives in their OPD courses. A striking example of disorientation came from one participant in a math-oriented course. She described how she began crying when she could not complete an assignment that was difficult for her, and how that led her to a revelation causing her to consider how her students must feel sometimes in her own classroom. She had not been in such a difficult position in a learning environment, and had not expected to experience such stress, but was able to make a connection between her feelings and those of her students. This was a transformative moment for her.

Some teachers take the courses expecting to encounter new ideas and revelations. One teacher reported that in most of her classes, she was pleasantly surprised by the discoveries she made, but had expected those discoveries to occur as part of her learning experience, based on previous OPD courses, and did not consider the concepts particularly significant.

To sum up, teachers did relate discoveries made during their OPD experiences. The concepts most contrary to their long held beliefs were about integrating technology, learning in
an online environment, or suddenly understanding another’s perspective. For a few teachers, the OPD experience was not pleasant or helpful, and they felt disillusioned.

**Critical Self-Assessment.** This phase of transformative learning relates to critical reflection on one’s world view, beliefs, or actions, and determining whether one’s current path is best. Some teachers who responded to the survey did experience internal self-assessment, a reconsideration of their current practice in relation to what they were learning about others’ practice. Comparatively, the incidence of responses relative to critical self-assessment was higher in the interviews than in the survey. Six interview responses from 6 interviews (100%) as compared to 11 responses from 30 surveys (36%) indicates that the teachers who were interviewed felt strongly that critical self-assessment was part of their OPD experience. None of the survey questions explicitly addressed critical self-assessment, which may account for the discrepancy.

Four of the six interview subjects (66%) believed their OPD experiences changed their practice, and even their sense of efficacy. They experienced critical self-assessment in various ways, according to both survey and interview data. Teachers credited the discourse with classmates for helping them reconsider practice as well as rethinking things in general. Themes that reflect these instances include teachers thinking of the class as a support network, as a learning community, and as a source of new perspectives, as well as teachers reconsidering practice based on input from the course content and fellow classmates.

Both survey and interview responses included references to the value of having a support network within their OPD courses. One survey respondent described her discomfort when a fellow student was not understanding certain concepts, but she felt relieved when the group came
to that student’s rescue by providing assistance and support. An interviewed teacher stated very strongly that the online community made her feel “not alone.” Talking with others helped her understand that her ideas were good ones, and that she should feel confident in trying them out with her students.

New perspectives that were “shocking” caused one surveyed teacher to reevaluate her views of others. She was very surprised to find that there were teachers in her course who were younger than she was, but who were skeptical of technology integration or even fearful of it. She had thought that only older teachers would have such an attitude toward new ideas. Learning more from her classmates, she discovered that in other districts, technology support, administrative support, and professional learning communities were not as strong as they were in her district. She had believed her district was average, but discovered they were above average in this area. This was a new perspective on her own situation that gave her pause.

The OPD courses offer a way to evaluate new ideas and technological resources in an environment where everyone is there for the same reason. “We’re all looking to discover how we can integrate technology into the curriculum to help students,” said an interviewee.Discourse with others in the class helped many of the interview participants evaluate their reactions to different ideas and methods. The courses they took required teachers to think self-critically on their feelings about teaching and learning, and how they might incorporate that new knowledge about themselves.

Survey questions 1, 2, 3, and 7 and interview questions 1, 2, 3, 4, and 6 all elicited responses relevant to critical self-assessment in relation to OPD changing value systems or world view, reconsidered practice, or new views of colleagues’ perspectives. Table 5 lists the
questions, the number of responses, and the themes reflected in participants’ answers. The number of “no” responses is included to indicate whether a majority of teachers believed the course had not met the criterion within the question.

Table 5  
*Questions related to critical self-assessment*

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of Responses</th>
<th>Area of Self-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (S) During your online professional development (OPD) course, were you surprised by anything you learned? In other words, did you experience an “aha!” moment? Please explain your “aha!” moment.</td>
<td>28 Responses</td>
<td>Learning online, instructional technology integration</td>
</tr>
<tr>
<td></td>
<td>11 (39%) “No”</td>
<td>Sudden understanding of another’s perspective</td>
</tr>
<tr>
<td></td>
<td>5 (18%) Directly related to critical self-assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 (43%) Not related to critical self-assessment</td>
<td></td>
</tr>
<tr>
<td>2. (S) Did anything strike you as contrary to your experience? For example, ideas that were presented, or instructional design?</td>
<td>28 Responses</td>
<td>Instructional technology integration</td>
</tr>
<tr>
<td></td>
<td>15 (54%) “No”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (4%) Directly related to critical self-assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 (42%) Not related to critical self-assessment</td>
<td></td>
</tr>
<tr>
<td>3. (S) Did discussion with your classmates, either asynchronously (via a discussion board) or synchronously (online together), help you clarify anything you were learning?</td>
<td>28 Responses</td>
<td>Understanding another’s perspective</td>
</tr>
<tr>
<td></td>
<td>6 (21%) “No”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (8%) Directly related to critical self-assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 (71%) Not related to critical self-assessment</td>
<td></td>
</tr>
<tr>
<td>7. (S) Please summarize how this course has changed your teaching practice. Do you feel your</td>
<td>28 Responses</td>
<td>Sudden understanding of another’s perspective</td>
</tr>
<tr>
<td></td>
<td>5 (18%) “No”</td>
<td>Evolution of teaching practice</td>
</tr>
<tr>
<td>Question</td>
<td>Responses</td>
<td>Related to Critical Self-Assessment</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Experience in this course has caused a significant change in your practice?</td>
<td>3 (11%)</td>
<td>Directly related to critical self-assessment</td>
</tr>
<tr>
<td>1. (I) Please tell me about a time during one of your OPD courses when something you had always believed to be true was brought into question.</td>
<td>6 Responses</td>
<td>1 (17%) Directly related to critical self-assessment</td>
</tr>
<tr>
<td>2. (I) Please tell me how you may have re-evaluated your practice based on new information from one of your OPD courses.</td>
<td>6 Responses</td>
<td>2 (33%) Directly related to critical self-assessment</td>
</tr>
<tr>
<td>3. (I) What did you learn when talking with your classmates about teaching?</td>
<td>6 Responses</td>
<td>1 (17%) Directly related to critical self-assessment</td>
</tr>
<tr>
<td>4. (I) Did you feel as though your thoughts about your practice were much the same as your classmates’? Why?</td>
<td>6 Responses</td>
<td>2 (33%) Directly related to critical self-assessment</td>
</tr>
<tr>
<td>6. (I) Did you develop a plan to implement any changes in your classroom practice? Please explain.</td>
<td>6 Responses</td>
<td>2 (33%) Directly related to critical self-assessment</td>
</tr>
</tbody>
</table>
Several teachers who participated in the survey (11, or 36%) made statements supporting the claim that online professional development can change teachers’ value systems and world views, can cause teachers to reconsider their practice, and can provide new views of their colleagues’ perspectives. For example, one teacher wrote about the sense she developed based on her OPD course about the impact social media has on her students, and what that meant for her style of teaching: “it was about shifting a mindset and perception about how students learn and act.” Many teachers who responded to the survey believe the OPD courses made a difference, and caused them to reconsider their practice. One teacher responded to Question 7 (Please summarize how this course has changed your teaching practice. Do you feel your experience in this course has caused a significant change in your practice?), “I think the most significant impact these classes have had is to help me continue evolving my practice – maybe not a full 180, but continual growth.”

Simply adjusting to learning in the online environment can lead one to self-examination. One teacher wrote about the impact of understanding the difference between “delivery vs. content” and its effect on her personal learning experience: “involvement and feedback from the instructor was critical in my enthusiasm for participation.” This teacher re-examined her style of learning in relation to a new learning environment, and took that back to her classroom.

The online professional development (OPD) courses gave some teachers a new understanding of their colleagues’ perspectives. Discussion, both synchronous and asynchronous, helped some of the survey participants discover a new outlook: working with teachers from
different grade levels and districts raised the level of understanding about what’s considered normal for other teachers, and led teachers to think differently about their own practice and situations. Teachers surveyed also simply enjoyed the opportunity to converse with others and get to know people in the class through discussions with classmates around course work.

A teacher who was discussing her experience taking a website development course discovered that her present website could be much better by using a new platform. Through self-critical assessment, she determined that a better website would be helpful for both her students and their families. She also decided it was important to share her new knowledge, just as she had received new knowledge in her courses. “I always try to pick something that I’m going to make sure I take forward.” One person she shared with was a teacher in a private girls’ school who was in her final year of 42 years teaching. That teacher “was so impressed” that she wanted to develop a website for her own students. The interview subject helped the older teacher develop her own classroom website.

One interview subject described her many years of teaching experience, and the fact that her subject area, studio art, is not like other high-school subject areas, concluding that all her years of teaching experience didn’t really matter in the world of OPD, because everyone in the class was there to learn something new. She was at the same level of learning in the world of educational technology as many others in her class, regardless of her 22 years in education. It gave her a sense of being a new learner.

One teacher said that the discussions in her OPD courses demonstrated to her that it is acceptable to do things differently for the benefit of her students. She has always felt somewhat unusual among teachers because she tries out new ideas regularly. She believes, “because of the
online classes I’ve taken, they’ve given me the confidence … the ability to say, okay, this is really best practice for my students.” Similarly, the librarian’s critical self-assessment and reflection led her to use her new knowledge to provide new ideas to teachers. She felt more confident about sharing her learning because of her OPD experience.

In summary, some teachers surveyed did believe the course offered them the opportunity for self-reflection, and described the critical self-reflection they experienced that was inspired by their courses. Their critical self-assessment led them to re-think their approaches to teaching, to their own learning in an online environment, and to understanding their students’ and colleagues’ perspectives. For some, the OPD inspired a new sense of confidence relative to teaching practice.

**Recognition of Others’ Disorientation.** The phase Mezirow described as recognizing others’ disorientation relates to teachers making connections to other teachers on a personal or professional level through discourse or discussion. Teachers responded strongly to questions related to connecting with other teachers in both datasets, with 23 survey responses and 17 interview responses. Teachers referred to the inspiration from others in their classes and the help they received in response to 5 survey questions and 3 interview questions.

Survey questions 1,2,3,6, and 7, and interview questions 3, 4, and 9 elicited responses relevant to the opportunity to make connections, a sense of community, enhancing understanding of others’ feelings and perspectives, and the value of input from others. Table 6 lists the questions that elicited responses relevant to recognition of others’ disorientation, the number of responses, and the areas of recognition described by the teachers.
Table 6
Questions Relating to Recognition of Others’ Disorientation

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of Responses</th>
<th>Area of Recognition</th>
</tr>
</thead>
</table>
| 1. (S) During your online professional development (OPD) course, were you surprised by anything you learned? In other words, did you experience an “aha!” moment? Please explain your “aha!” moment. | 28 Responses total  
11 (39%) “No”  
4 (14%) Directly related to recognizing others’ disorientation  
13 (47%) Not related to recognizing others’ disorientation | Enhanced understanding of others’ perspective |
| 2. (S) Did anything strike you as contrary to your experience? For example, ideas that were presented, or instructional design? | 28 Responses  
15 (54%) “No”  
2 (7%) Directly related to recognizing others’ disorientation  
11 (39%) Not related to recognizing others’ disorientation | Making connections  
Understanding another’s perspective |
| 3. (S) Did discussion with your classmates, either asynchronously (via a discussion board) or synchronously (online together), help you clarify anything you were learning? | 28 Responses  
6 (21%) “No”  
13 (46%) Directly related to recognizing others’ disorientation  
9 (33%) Not related to recognizing others’ disorientation | Making connections  
Enhancing understanding  
Understanding another’s perspective  
Integrating instructional technology |
6. (S) What ideas came to you as a result of discourse with your classmates, if any?

<table>
<thead>
<tr>
<th>Responses</th>
<th>Details</th>
</tr>
</thead>
</table>
| 27        | Making connections  
Understanding another’s perspective  
8 (30%) “none”  
3 (11%) Directly related to recognizing others’ disorientation  
16 (59%) Not related to recognizing others’ disorientation |

7. (S) Please summarize how this course has changed your teaching practice. Do you feel your experience in this course has caused a significant change in your practice?

<table>
<thead>
<tr>
<th>Responses</th>
<th>Details</th>
</tr>
</thead>
</table>
| 28        | Understanding another’s perspective  
Integrating instructional technology  
5 (17%) “No”  
1 (4%) Directly related to recognizing others’ disorientation  
22 (79%) Not related to recognizing others’ disorientation |

3. (I) What did you learn when talking with your classmates about teaching?

<table>
<thead>
<tr>
<th>Responses</th>
<th>Details</th>
</tr>
</thead>
</table>
| 6         | Value of input from others  
Enhanced understanding of content  
Opened doors to others’ feelings, experiences, and ideas  
Opportunity to make connections  
Sense of community, support  
6 (100%) Directly related to recognition of others’ disorientation  
0 (0%) Not related to recognition of others’ disorientation |

4. (I) Did you feel as though your thoughts about your practice were much the same as your classmates”? Why?

<table>
<thead>
<tr>
<th>Responses</th>
<th>Details</th>
</tr>
</thead>
</table>
| 6         | Sense of community, support  
Value of input from others  
Opened doors to others’ feelings, experiences, and ideas  
5 (83%) Directly related to recognition of others’ disorientation  
1 (17%) Not related to recognition of others’ disorientation |
Most teachers who responded to the survey (23 or 76%), and every interviewed subject, believe that OPD courses provide opportunity to make connections with people or ideas. “I loved being able to connect with other teachers,” said one middle school teacher. This teacher valued the personal connections she made, enjoying the occasions when she would find someone in a course that she remembered from a previous class, and the happiness that would bring. Teachers described a developing a sense of camaraderie during their courses, finding that several of their own challenges were faced by many others. Making connections with others helped teachers recognize thoughts or ideas in others that were similar to their own. Interaction with classmates enhanced understanding of both concepts and general human experience. One respondent “developed a much better understanding and empathy toward” students with ADHD as a result of the OPD she had taken. Another teacher began to understand for the first time why some teachers were reluctant to use technology in the classroom.

Interaction with their peers was highly valued by the interview participants. They felt interaction created a sense of community within the course, at the same time as it enhanced their
understanding of the course content. Discussion board forums provided opportunities to understand other people’s perspectives and situations, often times giving teachers reassurance that “I’m not alone.” One teacher explained her sense of the ease of communication in the online environment, “I think sometimes not having to be face-to-face that it’s easier to share your ideas when they’re not always traditional. That’s a good thing about being online.” She felt somewhat anonymous in the online environment, and therefore freer to take risks with the ideas she shared. Sharing personal feelings and experiences draws people together, building relationships.

Teachers who take OPD courses come to count on their fellow classmates not only for ideas relative to teaching, but also for better understanding of the course content. One high school teacher who responded to the survey explained that when she was having trouble understanding a concept in a course, a classmate who was a kindergarten teacher was able to break it down for her, making it clearer. The appreciation of different perspectives of teachers from different backgrounds and grade levels was a recurrent theme relative to discourse with others. An interview subject described how valuable she found the interaction with others in the class: “The teacher gave us all the stuff we needed, her lectures, videos, readings, but the discussion from all the teachers that were doing the same thing I was doing, all interested in technology and what they had tried, was really good.” This was a common reaction to peer interaction. Several respondents commented on the many ways classmates helped one another.

Teachers who had taken several different online courses noticed the difference when a discussion board was not quite as effective in helping participants understand. One teacher noted that in one class she took, “we had a huge class of teachers from all over, even one from Taiwan. One teacher would give a suggestion, this is what I do, and another would say, you know, I tried this product, it didn’t work well. So it was just everyone helping each other.” That experience
was much different from another course she took: “it was a much smaller class, and there wasn’t as much sharing… only two people were really sharing.” The teacher believed she had learned something from each course, but considered the more populated course “fabulous.” Teachers responding to the survey wrote about learning not just from the instructor, but from the teachers in the class as well, who “brought amazing ideas and insights” to the course.

Not everyone believed they learned much from the interaction with others in the class. One teacher considered the discussion forums to be a good support network, since teachers would complement her on the lessons and activities she created, but she felt writing her responses left her little time to reflect on others’ entries, and she didn’t gain much from others’ suggestions.

Overall, most of the teachers in this study believed that OPD can provide a way for teachers to connect with one another on different levels. It can help them make connections with other teachers, enhance understanding of course concepts, and open doors to others’ feelings and ideas. It also provides a valuable resource: a place to find others who share common feelings, and who also can suggest new methods for teaching and learning. A teacher summed it up when she said she felt inspired by the “supportive network” she found in her online courses: “Connecting with other passionate people who think outside the box has been so inspiring, and it has let me feel more comfortable with the way I see things – that I don’t have to see it like everybody else, and my students appreciate it so much.”

**New ideas developed.** Most of the teachers in the survey and interviews responded that they had developed new ideas based on the online professional development (OPD) courses they had taken. Nineteen responses from the survey and 7 of the interview responses related to new
ideas, particularly in the areas of implementing new instructional technology strategies and new methodologies for the classroom. Questions 1, 2, 3, 6, and 7, and interview questions 2, 5, and 6 elicited responses relevant to developing new ideas, either through the course content or through online discourse with fellow classmates. Table 7 lists the eight questions, the number of responses, and the ways in which the responses reflected developing new ideas.

Table 7
*Questions Relating to Developing New Ideas*

<table>
<thead>
<tr>
<th>Questions</th>
<th>Number of Responses</th>
<th>Relation to Developing New Ideas</th>
</tr>
</thead>
</table>
| 1. (S) During your online professional development (OPD) course, were you surprised by anything you learned? In other words, did you experience an “aha!” moment? Please explain your “aha!” moment. | 28 Responses total  
11 (39%) “No”  
2 (7%) Directly related to new ideas developed  
15 (54%) Not related to new ideas developed | Integrating instructional technology |
| 2. (S) Did anything strike you as contrary to your experience? For example, ideas that were presented, or instructional design? | 28 Responses  
15 (54%) “No”  
1 (7%) Directly related to new ideas developed  
11 (39%) Not related to new ideas developed | Integrating instructional technology |
| 3. (S) Did discussion with your classmates, either asynchronously (via a discussion board) or synchronously (online together), help you clarify anything you were learning? | 28 Responses  
6 (21%) “No”  
6 (21%) Directly related to new ideas developed  
16 (58%) Not related to new ideas developed | Integrating instructional technology |
6. (S) What ideas came to you as a result of discourse with your classmates, if any?

<table>
<thead>
<tr>
<th>Responses</th>
<th>Directly related to new ideas developed</th>
<th>Not related to new ideas developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>8 (30%) “none”</td>
<td>12 (44%)</td>
</tr>
</tbody>
</table>

Integrating instructional technology, other classroom strategies (i.e.: stations)

7. (S) Please summarize how this course has changed your teaching practice. Do you feel your experience in this course has caused a significant change in your practice?

<table>
<thead>
<tr>
<th>Responses</th>
<th>Directly related to new ideas developed</th>
<th>Not related to new ideas developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>7 (26%)</td>
<td>20 (71%)</td>
</tr>
</tbody>
</table>

Integrating instructional technology, other classroom strategies, (i.e.: hands-on lessons)

2. (I) Please tell me how you may have re-evaluated your practice based on new information from one of your OPD courses.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Directly related to developing new ideas</th>
<th>Not directly related to developing new ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3 (50%)</td>
<td>3 (50%)</td>
</tr>
</tbody>
</table>

Integrating instructional technology
Interdisciplinary connections

5. (I) Did you come up with new ideas about classroom strategies due to those conversations? Please explain.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Directly related to developing new ideas</th>
<th>Not directly related to developing new ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>4 (67%)</td>
<td>2 (33%)</td>
</tr>
</tbody>
</table>

Integrating instructional technology
New methodologies

6. (I) Did you develop a plan to implement any changes in your practice? Please elaborate.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Directly related to developing new ideas</th>
<th>Not directly related to developing new ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1 (17%)</td>
<td>5 (83%)</td>
</tr>
</tbody>
</table>

New methodologies

S = Survey  I = Interviews
New ideas ranged from listing new apps or online resources that teachers planned to use to taking whole lesson plan ideas from other teachers and adjusting them to fit their own grade levels and classrooms. The culture of sharing lessons and ideas was common in the OPD course environments. Most of the teachers in the survey and in the interviews reported that they received ideas from their OPD courses that were helpful. Several teachers commented on the gift of permission classmates gave one another to use lessons or ideas they had come up with. The camaraderie within the class led teachers to talk about similar lessons, and to share or suggest ways to enhance the curriculum. One anomaly was a teacher who stated she had not learned much from her classmates, but that she felt she was able to give them ideas to use.

One school librarian was so motivated by the course she took on integrating video into the curriculum, she set up an appointment with her school principal and technology integration specialist to see if it’s something the school could implement school-wide, so that individual students could replay videos of main ideas when a concept is unclear. The librarian is concerned about her school because “we are an old fashioned Catholic school where the teacher teaches from in front of the room, and that has to change. That’s a big change.”

A math teacher discussed a course she took that inspired her to create an interdisciplinary lesson. She had taken a course about using literature in the mathematics classroom. “The book that all our seniors were reading was 19 Minutes [by Jodi Piccoult, about a school shooting]. And I found a cool math application in there when they do statistics on happiness research…it’s a real data site, and you can really go in there and look at stuff.” She was able to relate what the students were doing in English class to statistics using this connection.
Teachers cited many areas in which fellow students inspired new ideas for their classrooms. Discourse in the discussion boards helped one teacher think “about different ways to do things based on the feedback, or the reflective things that other teachers in the class said.” Another teacher discussed an idea she had received from someone in a class about website development to include a picture of herself on the website. She described her students’ fascination with the picture she posted, and the many questions and discussions it inspired. “It becomes a point of entry, and it’s just a simple picture.”

“I think people who take these courses want to improve, and they’re creative, and they’re good people to know,” said one teacher who credited her classmates with giving her ideas for her classroom even though they were not teachers in her subject area. The others’ perspectives opened doors to new course designs and activities for her. A sense of solidarity and trust existed for some teachers based on the interaction with classmates: “Because we were all teachers, I felt that I was able to get good information or ideas from the conversations.” Even those few teachers who didn’t feel the discussion board made things clearer for them felt the discussions “gave us different ideas we could use.”

Teachers expect to be exposed to new ideas and to learn something new from their OPD courses, so aren’t always surprised when they do come up with new ideas. For example, to the question about how the course had changed teaching practice (question 7), one teacher responded, “I didn’t expect it to make a major change in the way I do things – I was just looking for some adjunct tools and resources, and that’s what I got out of it.”

Overall, 19 teachers who responded to the survey, and all of the interviewed teachers believed that they developed new ideas either about integrating technology or about ways to
change classroom practice in a different way, based on their experience in the OPD courses they completed. By far the most responses about new ideas were related to integrating instructional technology in the classroom, which is not surprising, since most of the courses taken by survey respondents were on that topic.

**Plans to implement changes.** A small number of survey responses (8 or 26%) related to plans for implementing changes due to the OPD experience, but a high number (5 or 83%) of the interview responses indicated plans for change. This discrepancy may be attributed to the survey questions themselves, which may not have been clear, or it may be that in the interview environment, the question was clearer. The survey report states that 25 of the 30 teachers answered question 8, which asked about plans to implement learning, and 11 of those either said “no” or referred the reader back to previous questions. One survey respondent wrote, “See question 7. (Sorry, I have to get a move on here, and I’ve tried to be descriptive.),” indicating that the survey was taking up a lot of her time, and she was doing her best to answer all the questions fully. It also indicated that she felt questions 7 and 8 were similar in nature.

Survey questions 7 and 8 elicited responses relevant to planning for implementation. Some survey respondents reported receiving inspiration for changing their practice from the course, and others developed plans in collaboration with other teachers in their OPD courses. The interview questions about planning to implement new ideas based on the OPD, and actually having made those changes in the classroom, received very similar responses. Table 8 lists the questions, the number of responses, and the areas of study in which teachers plan to implement their ideas. In each case, the changes made were in the area of integrating technology.
Table 8  
*Questions Related to Planning to Implement New Ideas*

<table>
<thead>
<tr>
<th>Questions</th>
<th>Number of Responses</th>
<th>Areas In Which Teachers Plan to Implement New Ideas</th>
</tr>
</thead>
</table>
| 7. (S) Please summarize how this course has changed your teaching practice. Do you feel your experience in this course has caused a significant change in your practice? | 28 Responses  
5 (18%) “No”  
7 (25%) Directly related to planning to implement  
16 (57%) Not related to planning to implement | Integrating instructional technology, other classroom strategies, (i.e.: hands-on lessons, instructional techniques) |
| 8. (S) Have you planned or implemented any changes in your classroom as a result of this course? Please explain. | 25 Responses  
8 (32%) “No”  
1 (4%) Directly related to planning to implement  
16 (64%) Not related to planning to implement | Integrating instructional technology |
| 5. (I) Did you come up with new ideas about classroom strategies due to those conversations? Please talk about that. | 6 Responses  
1 (17%) Directly related to planning to implement  
5 (83%) Not directly related to planning to implement | Integrating instructional technology |
| 6. (I) Did you develop a plan to implement any changes in your classroom practice? Please explain. | 6 Responses  
3 (50%) Directly related to planning to implement | Integrating instructional technology  
Reconsidered practice (formative assessments) |
All teachers interviewed had already embedded some of what they learned into practice, and planned to use other elements of courses in future versions of the classes they teach. “I can see really some great things I’m going to do,” said the art teacher. She has already made her classes more technology-based because of the ideas she has taken from her OPD courses.

During the interviews, teachers indicated that they planned to implement changes they had just learned about in recent courses, but they hadn’t yet had time to do so. Several planned to use the summer months to work on changes within their curricula. One interviewed teacher, a librarian, wanted to work with her principal and instructional technology specialist over the summer to try to integrate technology (specifically, multimedia) in all grades within their school.
She believed her private school was doing a disservice to the students by not using current technological tools or methodologies.

While one teacher wrote, “for a variety of reasons I don’t really use the tool [from the OPD] actively in my classroom on a regular basis,” eight others noted specific changes they planned to make based on the courses they took. For example, one teacher planned to incorporate Prezi presentations into her curriculum, and another intends to use the summer months to integrate what she learned about incorporating short videos into her curriculum. A teacher who learned how to implement Google Classroom was looking forward to becoming closer to being paperless in her teaching by switching to an audio commenting format for grading her students’ papers.

Teachers took their ideas back to their schools and districts, sharing what they had learned. A survey respondent who took an OPD course on gaming in education developed a badging system to mark mastery of specific concepts and piloted it at her school. She was pleased with the results, but the group she teaches with “ultimately wasn’t ready to adopt it course-wide, so we readjusted. Making adjustments to practice is what we do, so I wasn’t disheartened.” She continues to find ways to use what she learned to improve learning for her students.

Some teachers were able to implement the ideas gained from their OPD courses right away, but others needed some time. One librarian who plans to “reevaluate how we present the whole curriculum” at her school, explained how many elements need to be considered in technology integration. “You have to look for the standards, you have to see where the learning
is... you aren’t just sitting back understanding how it works, but how will it work with my students, in my class, with my content.”

In summary, more of the interviewed subjects discussed having made plans for implementing new ideas based on their OPD experiences than did surveyed teachers. Questions about new ideas, plans to implement new ideas, and actions taken related to those ideas may have been confusing for some survey participants.

**Action taken/ changes made.** Mezirow believed that the final phase of transformative learning, taking action based on new ideas was the difference between learning and transformative learning. Actually making the transfer from understanding a concept to making a change in practice is the key to transformative learning (Mezirow, 2000). This important phase of transformative learning was reflected with a high number of responses in both the survey and the interviews. Teachers responded to 5 different survey questions by referring to changes made in their classrooms at a high level of 34 responses. Five of the 6 interviewed teachers had made changes based on their OPD experiences. All actions taken related to either instructional technology integration or to new classroom strategies. Table 9 lists the questions, the number of responses, and the areas in which changes were made.

Table 9
***Questions Related to Taking Action, or Changing Teaching Practice***

<table>
<thead>
<tr>
<th>Questions</th>
<th>Number of Responses</th>
<th>Areas of Action or Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (S) During your online professional development (OPD) course, were you</td>
<td>28 Responses</td>
<td>Integrating instructional technology</td>
</tr>
<tr>
<td>surprised by anything you learned? In other words, did you experience an</td>
<td>11 (39%) “No”</td>
<td></td>
</tr>
<tr>
<td>“aha!”</td>
<td>2 (7%) Directly related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Responses</td>
<td>Integrated Technology</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>5. (S) In what ways were you able to make the course fit your needs?</td>
<td>28 Responses</td>
<td>Integrating instructional technology</td>
</tr>
<tr>
<td></td>
<td>0 (0%) “no”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (4%) Directly related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>27 (96%) Not related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td>6. (S) What ideas came to you as a result of discourse with your classmates, if any?</td>
<td>27 Responses</td>
<td>Integrating instructional technology</td>
</tr>
<tr>
<td></td>
<td>8 (29%) “none”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (4%) Directly related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 (67%) Not related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td>7. (S) Please summarize how this course has changed your teaching practice. Do you feel your experience in this course has caused a significant change in your practice?</td>
<td>28 Responses</td>
<td>Integrating instructional technology</td>
</tr>
<tr>
<td></td>
<td>5 (18%) “No”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 (61%) Directly related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 (21%) Not related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td>8. (S) Have you planned or implemented any changes in your classroom as a result of this course? Please explain.</td>
<td>25 Responses</td>
<td>Integrating instructional technology, better understanding of others’ perspectives</td>
</tr>
<tr>
<td></td>
<td>8 (32%) “No”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 (52%) Directly related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (16%) Not related to action, or a change in practice</td>
<td></td>
</tr>
<tr>
<td>1. (I) Please tell me about a time during one of your OPD courses when something you had always believed to be true was brought into question.</td>
<td>6 Responses</td>
<td>Integrating instructional technology</td>
</tr>
<tr>
<td></td>
<td>5 (83%) Directly related to making changes in practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (17%) Not directly related to making changes in practice</td>
<td></td>
</tr>
</tbody>
</table>
2. (I) Please tell me how you may have re-evaluated your practice based on information from one of your OPD courses.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Integrating instructional technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Responses</td>
<td></td>
</tr>
<tr>
<td>3 (50%) Directly related to making changes in practice</td>
<td></td>
</tr>
<tr>
<td>3 (50%) Not directly related to making changes in practice</td>
<td></td>
</tr>
</tbody>
</table>

1. (I) Please tell me about a time during one of your OPD courses when something you had always believed to be true was brought into question.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Integrating instructional technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Responses</td>
<td></td>
</tr>
<tr>
<td>5 (83%) Directly related to making changes in practice</td>
<td></td>
</tr>
<tr>
<td>1 (17%) Not directly related to making changes in practice</td>
<td></td>
</tr>
</tbody>
</table>

S = Survey  I = Interviews

Several teachers had made significant changes in their practice based on the OPD they experienced. One teacher was surprised that she had been able to incorporate so much technology into her teaching: “I now use an online system with them all the time. It’s how I communicate assignments, I put videos on, I link to things I want them to read.” Another teacher described a transformation in her way of teaching. She has made a significant shift from using traditional teaching resources to having students use technology to become more self-directed learners. In addition, because of an OPD assessment course she took, she has a new interactive formative assessment system that keeps her actively moving around the classroom, using sticky notes to give students quick reinforcement or redirection without breaking the momentum of the class.

Four of the surveyed teachers related significant changes they made after taking a course on flipping the classroom, or, incorporating more online lecture and video for students to complete outside of class, and using face-to-face class time for discussion and collaborative
work. This new method of teaching has transformed several teachers’ classrooms, allowing them to focus on collaborative in-class work while students learn the basics online.

A gaming course caused one teacher to change the way she presents some of her content. She created her own game based on the Crusades, in which her students assume identities as different historical figures. The students experience a simulation of the time of the Crusades and what it was like to live at that time, depending on who one was in that social framework. The teacher reported during her interview that this change has transformed her practice as well as the students’ experience in her classroom and what they learn.

Trying out new ways to present information to students can lead to surprises teachers don’t anticipate. A librarian in a middle school was very excited about a new method she had found to engage a group of 7th grade students who were “extremely disruptive and rude to teachers and guest speakers.” Through her OPD course, she had discovered a tool for making short videos that she used to teach procedures for searching the online catalog, looking for articles in online databases, and how to create a Works Cited page. When the students entered the computer lab, “I ran the little 5-minute video ... and even the most disruptive class of kids sat and listened. It was very, very interesting.”

A special education teacher who completed OPD courses in apps for education and special education noted, “I have been able to increase opportunities for students to learn via different types of apps.” Another teacher summed up her OPD experience by writing, “the classes that I have completed have kept me inspired, thinking and up to date with technology. Even this week my students made webpages for our class, and today made mini-documentaries to display learning.”
A few teachers implemented some of what the OPD courses provided, but did not feel their practice had changed significantly. One commented, “I can say that I have perhaps used class experience to improve content delivery in some ways.” Overall, however, teachers reported in the survey that they had taken action and made changes in their teaching practice based on their OPD learning experience. The changes were primarily related to integrating technology into their classrooms, including completely changing practice from a classroom utilizing some technology to becoming a flipped classroom, where technology is fully integrated. In addition, teachers made changes relative to reaching out to families, conducting formative assessments, and implementing project-based learning.

**Findings from surveys & interviews related to Smith Criteria.** Several questions from the survey and interviews revealed teachers’ thoughts about the design of their OPD courses that align to the three Smith (2012) criteria for transformative online professional development. For that reason, the two datasets were further analyzed and coded in relation to learner-centered design, student interaction, and opportunities for self-reflection. The resulting analysis is included in this section, which presents the findings in relation to both the six goals of this program review (Mezirow phases), and to the Smith criteria.

Figure 4 is an area chart that shows how the two datasets correlated. In the interview data, six teachers were interviewed, therefore, any score of 5 or above is considered high response. The survey had 30 respondents; a response rate of 1-15 is considered low, 15-25 is considered high, and a rate of 26 or higher is very high. Again, it is possible to have more responses than 6 in the interviews and more than 30 in the survey responses, because some people responded to particular criteria more than once.
The highest number of responses in the survey were for having taken action, for learner-centered design, and for student interaction. While all of the interview responses were high, the highest was for recognition of others’ disorientation through discourse. Student interaction and recognition of others’ disorientation through discourse both relate to social interaction within the course, in these cases, taking place entirely online. Interaction in the courses occurred through the discussion board forums, in which teachers connected at first in response to a prompt from the instructor; in commenting on one another’s posts, they developed stronger connections.

The high level of responses to having taken action/made changes, and to learner-centered design can be related, since teachers believed the courses were designed for them to be successful, and the success they experienced in the OPD courses led them to take actions toward change within their teaching practice.
The lower number of survey responses to critical self-assessment, plans to implement ideas, and self-reflection may be due to the survey questions themselves, which may not have been worded in a way to elicit those responses. Interview responses to those criteria were high.

In summary, there was particularly strong response (15 or more responses in the survey, 5 or more in the interviews) in both the survey and the interviews to these criteria: disorienting dilemma, recognition of others’ disorientation, action/changed practice, new ideas developed, student interaction and learner-centered design. Overall, the interviewed subjects’ responses indicate that the six Mezirow phases and the three Smith criteria were all present in the OPD courses they took. The survey responses indicate that most of the Mezirow phases and Smith criteria were present in the OPD courses involved in this study. Three of the Mezirow phases (disorienting dilemma, recognition of others’ disorientation, and action/changed practice) received high levels of response in both the survey and the interviews. Two others (critical self-assessment, development of new ideas) were reflected by more than a third of survey respondents.

**Findings from the Document Review.** More than half of the OPD courses in this study met the Smith (2012) criteria for transformative professional development. Figure 5 illustrates the high percentage of OPD courses in the study that included elements related to the three Smith criteria for transformative online professional development (learner-centered, student interaction, and self-reflection).
Of the 23 courses offered during the two year period of 2014-2015, 19 courses (76%) had learner-centered elements in the course design, such as using technological tools to enhance teachers’ current and anticipated lessons, projects designed for use in teachers’ specific classrooms, setting personal goals for the course, and creating assessments that will be immediately usable in the teachers’ classrooms.

Twenty-three courses (100%) had a focus on student interaction. Those courses featured discussion board requirements such as weekly posts and responses, partner activities, a weekly class blog, collaborative activities, virtual meetings, learning communities, and sharing best practices, ideas, and strategies online.

Fourteen courses (56%) had opportunities for self-reflection. These were assigned reflections on how teachers might use what they have learned in their own classrooms, reflections on the course as a whole, reflections on personal teaching and learning styles, and/or
weekly private reflections. The document review data reflect a strong alignment of the 2014-2015 course syllabi to Smith’s criteria for transformative online professional development.

**Comparison of the three datasets in relation to the Smith criteria.** The syllabi were compared to the survey and interview datasets in relation to the Smith (2012) criteria for transformative online professional development. Specifically, the data relevant to learner-centered design, student interaction, and self-reflection were analyzed. The Mezirow phases are not included in this comparison, since these reflect human responses to learning. Figure 6 shows the three datasets and the ways in which these compare to the Smith criteria.

*Figure 6*
*Syllabi, Survey, and Interview Data In Relation to Smith Criteria*
Figure 6 illustrates the high correspondence of student interaction and learner-centered design in all three datasets. This section will explain the correspondence between the three datasets each in turn, beginning with learner-centered design.

Learner-centered design, that is, having end products directly applicable to teachers’ needs, flexible access, short duration, and challenging content, was evident in all three datasets. Nineteen of the 23 syllabi included projects that teachers could undertake which would be immediately usable in their classrooms, asynchronous discussions that could be completed at the teachers’ convenience, and subject matter that was of interest to the teachers (all on integrating technology in the curriculum). Nearly all of the surveyed teachers (27 of 30) responded positively to the learner-centered design of the OPD courses, several concluding that the online feature made it possible for them to take the courses, since they needed to be at home for one reason or another. The same was true for interviewed teachers; 5 of the 6 teachers believed the OPD courses they took were designed for them to be successful. Responses related to flexibility of access, the short duration of the OPD courses, the low cost, and the direct applicability to their teaching.

Being able to access the courses from anywhere at any time was very important to most teachers. Some teachers have young children, and can only study in the evenings after they are asleep. Some teachers have aging parents who need their care, and need to be able to access courses at different times during the day. One teacher who lives in the western part of the state said in her interview that if the courses hadn’t been completely online, she would not have been able to take any of them. In the interviews, every teacher agreed that the course was designed in a way that they could be successful. The courses they took were well organized, the assignments related to their own practice, and the amount of work was manageable. The short time frame of
4-6 weeks was also a feature the teachers appreciated, since it is difficult for them to find time during the school year or during the summer to take longer courses.

Looking at student interaction within the OPD courses, all 23 of the syllabi required online discussion of some type, whether through discussion board forums, partner activities, or blogs (see Appendix H for the course listings with the Smith Criteria). A very high level of response came from the survey on this topic, with 39 responses discussing student interaction. Interviewed teachers also asserted that student interaction was very important to their OPD learning experiences. Student interaction received the most positive responses in the survey, with 39 responses. There are more responses than survey participants, which indicates that some people commented on the value of social interaction more than one time. There were three different survey questions that elicited responses to this topic. Five of the 6 interviewed teachers responded favorably to student interaction, calling it their “favorite” part of OPD, and the source for new ideas and varied perspectives.

It is evident in Figure 6 that more than half of the 23 syllabi (14 or 56%) included options for self-reflection, and the interviewed teachers (5) believed self-reflection was part of the OPD courses, but survey respondents did not specifically discuss self-reflection (3 responses). That discrepancy may be related to the lack of a survey question specifically asking about self-reflection. This element of the Smith criteria for transformative online professional development is the one area in which the survey and interview responses do not align. There was no survey question directly related to self-reflection, although the questions relative to recognizing others’ disorientation did lead respondents to discuss self-reflective thinking. There were only 3 survey responses that related to self-reflection, but the interview responses in this area were high, with 5 responses. Responses considered relevant related to new understanding of others’ perspectives
and situations in comparison to one’s own. There was one interview question that asked specifically about reflection assignments, and how they helped teachers. Teachers responded that reflecting back on the courses they take helped them to summarize and consolidate concepts, and to envision ways in which they would use their new learning in their classrooms.

The syllabi and interview responses were high in all three areas of the Smith criteria. The survey responses were high in learner-centered design and student interaction. Taken together, it may be said that more than half of the OPD courses in this study met the Smith criteria for transformative professional development.

**Emerging Themes and Key Findings**

The purpose of the research was to investigate the perspectives of teachers about the impact of online professional development on their classroom practice. Keeping in mind the research question, how do preK-12 teachers perceive the impact of one-credit online professional development (OPD) courses on classroom instructional strategies?, several patterns, or themes, emerged during data analysis. These include technology integration, new perspectives, learning community, and reconsidered practice. Since most of the courses taken by the survey and interview subjects were related to integrating instructional technology into the classroom, these themes are not surprising.

Technology integration was a common theme, as the teachers in this program evaluation were all learning to integrate instructional technology tools in various ways. Teachers were surprised to find themselves “on board” with using technology in the classroom, “wowed” by the way Google Classroom can transform teaching, and proud of their accomplishments in implementing their learning.
The theme of new perspectives was also prevalent. Discussion board conversations led to discoveries. For example, teachers were surprised to learn about school situations much different from their own, giving them a new outlook on their own challenges at the same time as appreciating difficulties others face. Also, having teachers in the course from many different grade levels and subject areas provided participants with “eye-opening” ideas, such as the concept that a kindergarten “centers” method could also work at the high school level.

Thinking of the OPD environment as a learning community was another common theme that emerged from the data. For several teachers, the course provided a support network where they could try out new thoughts and concepts. Learning about methods that were working in other districts encouraged teachers to try them out in their own situations. Several teachers spoke about a boost in confidence levels after their OPD experience, saying that the support they received for their ideas made them feel they could implement something completely different in their classrooms.

Teachers who participated in the OPD courses found themselves reconsidering their practice, and making changes. The biggest changes in practice may have been those related to flipping the classroom, but for some teachers, smaller changes can also be significant, such as simply learning to implement formative assessments on-the-go, using sticky notes. A change that small changed one teacher’s teaching methodology as much as flipping the classroom had for others. Also, changes that developed were not restricted to just the teacher who took the OPD courses: one librarian has transformed not only her library curriculum by integrating technology, but also has influenced many of the teachers in her building by helping them do the same. Another librarian, working in a school struggling to meet 21st century students’ needs, plans to
help her principal integrate multimedia across all grade levels, which will impact her entire school.

Taken together with the data from the syllabi, which indicate that majority of the courses reviewed for this program evaluation featured course design elements that foster transformative learning in an online environment (R. O. Smith, 2012), the survey and interview data indicate that the OPD courses taken by the teachers in this evaluation project were designed in a way that could lead to transformative learning, and led teachers to experience most of the Mezirow phases of transformative learning.

Summary

The purpose of this chapter was to report and discuss the findings from the data collection process. Five themes and five key findings emerged from the triangulation of the three datasets in this goals-based program evaluation. Each of them will be discussed in greater detail in the next chapter.

Finding 1: Online professional development (OPD) concerning integrating instructional technology assisted teachers to change beliefs about instructional technology.

Finding 2: Online professional development courses provide opportunities to connect with other teachers, build relationships, and learn about others’ situations and points of view.

Finding 3: Teachers believe that OPD courses provide a sense of community and support for learning.
Finding 4: Online professional development courses can cause significant changes in classroom practice.

Finding 5: Online professional development (OPD) courses related to integrating technology in the classroom have the potential to be transformative learning experiences for the teachers participating.
Chapter 5: Discussion of Research Findings

The problem of practice identified for this goals-based program evaluation was a lack of effective professional development for teachers in this age of rapid change in the field of education. This program evaluation was intended to address whether online professional development (OPD) courses for educators can be effective enough to be transformative in terms of teachers’ classroom practice. The purpose of this program evaluation was to determine whether teachers who completed online professional development courses believed that the courses caused them to change their classroom practice in some significant way.

Transformative learning theory was used as the guiding lens to study the research question: How do preK-12 teachers perceive the impact of one-credit online professional development (OPD) courses on classroom instructional strategies? The datasets included a document review of course syllabi, a survey, and interviews. This final chapter begins with a discussion of the themes and major findings in relation to the research question, then discusses those findings in relation to the theoretical framework and literature review. Finally, the implications of the findings for online professional development for teachers and recommendations for future research are presented.

Major Findings from the Research in Relation to the Research Question

Themes that emerged from triangulation of the syllabi, survey, and interview data included technology integration, new perspectives, learning community, and reconsidered practice. Five key findings emerged from those data that will be presented in this section. The research question, how do preK-12 teachers perceive the impact of one-credit online professional
development (OPD) courses on classroom instructional strategies?, is answered by the data collected for this study.

Finding 1: Online professional development (OPD) concerning integrating instructional technology assisted teachers to change beliefs about instructional technology.

Teachers who participated in this study perceived their OPD experiences as having impact on their feelings about integrating technology into their curriculum, as well as learning in an online environment. Some who were skeptical about whether technology tools would work in their particular setting were surprised to find resources and methods that could transform their classrooms. Those teachers could even become leaders in technology integration in their schools. Others who doubted their abilities to succeed in an online learning environment discovered they could not only learn, but could be successful in that setting.

Finding 2: Online professional development courses provide opportunities to connect with other teachers, build relationships, and learn about others’ situations and points of view.

Most of the teachers who participated in this study believed that OPD can provide a way for teachers to connect with one another on different levels. It can help them make connections with other teachers, enhance understanding of course concepts, and open doors to others’ feelings and ideas. It also provides a valuable resource: a place to find others who share common feelings, and who also can suggest new methods for teaching and learning. Synchronous and asynchronous discussion forums including teachers from different grades, regions, and types of school, can raise the level of understanding between and among teachers.
Finding 3: Teachers believe that OPD courses provide a sense of community and support for learning.

Interaction and collaboration between participants can contribute to the transformative quality of an OPD experience. Peer interaction provides answers to questions about course content participants were struggling with, and can be a resource when the learning management system is mystifying. The teachers in this program evaluation believe that the input of their peers was as important for their learning experience, if not more important, than the input of the instructor. One teacher commented that the instructor provided the resources, but the teachers provided the conversation and support that enhanced the course content.

Finding 4: Online professional development courses can cause significant changes in classroom practice.

More than half of the surveyed teachers, and all of the interviewed teachers believed that OPD can effect significant change in classroom strategies and practice. Teachers discussed shifting their own mindsets, suddenly understanding the students’ perspective, and finding different ways to approach curriculum, based on their experiences in the OPD environment. While some methodological changes were small, and others were more overarching, the impact those changes had on the teachers’ internal attitudes toward teaching were in some cases immeasurable. Simply trying a new tool for formative assessment made one teacher feel liberated; she was freed from the front of the classroom and able to mingle among the student tables. Flipping a classroom environment was probably the most significant of the changes made by participating teachers.
Finding 5: Online professional development (OPD) courses related to integrating technology in the classroom have the potential to be transformative learning experiences for the teachers participating.

“I think the most significant impact these classes have had is to help me continue evolving my practice – maybe not a full 180, but continual growth.” – Survey Respondent

The analysis of the course syllabi revealed that most of the courses had the three features required for transformative online professional development in that these courses were learner-centered, included student interaction, and provided opportunities for self-reflection (R. O. Smith, 2012). Most participants believed the OPD courses were designed to suit their needs both personal and professional, and that the courses helped them change their teaching practice in some way. The fact that most of the courses aligned with Smith’s transformative OPD criteria, and were transformative to some extent for most participants indicates that designing OPD courses with adult learning characteristics and transformative learning elements in mind can lead to transformative learning experiences for the teachers participating.

The researcher believes the data supports the claim that teachers who participated in the OPD professional development courses at the small state university involved in this study believe OPD courses can be transformative for classroom practice. Each of the findings and the themes that emerged from the program evaluation will be discussed in relation to the theoretical framework and to the literature review in the next sections.

Findings in Relation to the Theoretical Framework

This program evaluation was informed by the work of Jack Mezirow (Mezirow, 1990, 2000, 2012; Mezirow & Taylor, 2009), who was responsible for the first American version of
transformative learning theory known today. Transformative learning theory was the lens used to evaluate the meaning teachers took from the online professional development (OPD) program for teachers offered by a small state university in eastern Massachusetts.

The phases of transformative learning have changed over time, numbering anywhere from 4 to 10 phases, as different theorists worked with Mezirow’s ideas. For this program evaluation, six phases were used. Phase one is a disorienting dilemma, meaning an experience that belies one’s assumptions about what is true, which is followed by self-examination, or the understanding that one has unconscious assumptions of what is true. A critical assessment of assumptions, or the process of recognizing the sources of one’s assumptions, and the consequences of unquestioned adherence to these assumptions is followed by recognition that others also have such assumptions and beliefs. The exploration of possibilities, by “engaging in discourse, where evidence is weighed, arguments assessed, alternative perspectives explored, and knowledge constructed by consensus” (Cranton, 2002, p. 66) is next, and planning and executing a course of action based on new self-knowledge and understanding completes the process. To simplify, this is the list of phases: disorienting dilemma, critical self-assessment, recognition of others’ disorientation, new ideas and relationships developed, planning for change based on learning, and taking action.

Four of the five findings from the research relate to what teachers perceive as the impact of OPD courses on their classroom practice. Teachers believe the OPD courses help them better understand instructional technology, provide opportunities to connect with other teachers, build relationships, and learn about others’ situations and points of view, provide a sense of community and support for learning, and can cause significant changes in their classroom
practice. Table 10 lists these four findings and the transformative learning phases to which they are related. Each finding will be discussed in relation to those phases.

Table 10

Four Findings from Survey & Interviews, and Mezirow Phases to Which These Relate

<table>
<thead>
<tr>
<th>Findings</th>
<th>Disorienting dilemma</th>
<th>Critical self-assessment</th>
<th>Recognition of others’ disorientation</th>
<th>New ideas &amp; relationships developed</th>
<th>Planning for change based on learning</th>
<th>Taking action, changing practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: OPD on integrating technology assists teachers to change beliefs about instructional technology</td>
<td>✓</td>
<td></td>
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<tr>
<td>2: OPD provides opportunities to connect with other teachers, build relationships, and learn about others’ situations and points of view</td>
<td></td>
<td>✓ ✓</td>
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<tr>
<td>3: OPD provides a</td>
<td>✓ ✓ ✓</td>
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</tbody>
</table>
Theme 1: Technology integration. Teachers who participated in this program evaluation provided responses related to educational technology in different areas. Some were nervous about participating in an online course because they felt unsure of the technology, some were surprised about their excitement after learning how to use different types of technology in the classroom, and a few were surprised by their own levels of comfort and skill in the area of technology integration.

Finding 1: Online professional development (OPD) concerning integrating instructional technology assisted teachers to change beliefs about instructional technology. This finding is grounded in Mezirow’s (2000) transformative learning theory in the phase, disorienting dilemma. A disorienting dilemma occurs when a learner encounters an idea that is significantly different from his or her own long-held beliefs and self-understanding (Mezirow, 2000). Transformations of long-held assumptions can cause discomfort and stress in the learner, as well as strong emotions, which may limit the way he or she perceives information, feels about an experience, and acts in certain situations (Brookfield, 1986; Kreber, 2012; Mezirow, 1990, 2012).
A significant majority (84%) of the teachers who participated in this program evaluation felt surprised, shocked, and confused by ideas and experiences they had in their OPD courses, and those emotions helped them better absorb the new information they were learning. Survey responses and interview data both support this finding. Concepts that elicited a sense of disorientation ranged from learning about the vast disparity in levels of technology implementations in different districts to finding out that first graders are experiencing cyber bullying on their cell phones, and to confronting their own conceptions about online learning. Each of these disorienting dilemmas led teachers to new learning, and in many cases to new ways of thinking and to changes in practice. Professional development that challenges teachers’ assumptions about teaching and learning can be transformative (Cranton & King, 2003).

Some teachers who participated in the research expressed unease about undertaking a course that was entirely online, having to learn how to navigate in a learning management system at the same time as being a productive member of a class. They worried about the technological platform and whether it would work with their computer system, and they worried about feeling isolated. With one notable exception, the teachers who expressed these concerns found that they were able to be successful and felt they had benefitted from the courses they took. The exception was a person whose computer system was not compatible with the applications used in the course, which made her unable to complete any of the assignments.

The results of this program evaluation indicate that teachers believe OPD can change their understanding of, and comfort level with educational technology, whether it is related to their own professional learning, or to their work with students in the classroom.
**Theme 2: New perspectives.** Interaction with fellow classmates led teachers to develop new perspectives as a result of their OPD experiences. Discovering differences between school and district environments, as well as finding out about personal and professional struggles their classmates faced helped teachers see their own situations from a new angle.

Finding 2: Online professional development provides opportunities to connect with other teachers, build relationships, and learn about others’ situations and points of view, is grounded in two transformative learning phases, critical self-assessment and recognition of others’ disorientation. A critical self-assessment of assumptions is the process of recognizing the sources of one’s assumptions, and the consequences of unquestioned adherence to these assumptions (Cranton, 2002; Mezirow, 2012).

Critical self-assessment, or the process of addressing long-held beliefs and assumptions, in the case of online teacher professional development, requires engagement in self-reflection to address a disorienting dilemma, or a situation where personal expectations and experiences do not match (Lee & Brett, 2015; Mezirow, 1990). Discourse among teachers in OPD courses facilitates self-reflection, and allows teachers to weigh their own perspectives against others’. Teachers from both the survey and the interviews reported that discourse with classmates via the discussion board helped them change mindsets. Discoveries such as realizing that social media is truly students’ preferred and chosen method of communication made teachers question their long-practiced strategies for communicating with students, eventually changing their practice entirely.

Recognizing others’ disorientation, or becoming aware of differences and similarities in others’ assumptions, requires in-depth discourse (Mezirow, 1990). The discomfort teachers may
feel in the online learning environment may be relieved by acknowledgement of others with similar anxieties. References to classmates’ different backgrounds and various grade levels were frequent in both the survey and interviews. Teachers valued the exposure they had to others’ experiences and feelings, and many commented in both the survey and in interviews on the new ideas these new points of view provided.

Discussion forum posts also led to teachers’ recognition of others’ sense of disorientation. In this phase of transformative learning, teachers rationalize their new perceptions through discussion, being exposed to other perspectives, and leading to a deeper understanding of others’ points of view (Mezirow, 2012). It is one way to understand others’ situations and beliefs in contrast with their own. Both survey and interview respondents’ responses support this finding, but the interview sessions with some teachers initiated self-reflection that brought the value of discourse to light. These teachers already knew that the discussion forums were helpful to them, but when questioned about why that might be the case, they thought more deeply about the differences they discovered and the impact of that discovery on their own perspectives.

The results of this program evaluation suggest that teachers can and do experience a high level of interaction through online discussion boards, leading to a sense of support, a new perspective of others’ situations, and a new sense of self-confidence in their teaching.

**Theme 3: Learning community.** The online discussion aspect of the OPD courses served purposes beyond the discovery of new perspectives. Survey and interview participants remarked on the value of discussion for clarification of difficult concepts, expansion of ideas, and developing strategies for the classroom. Revelations made by teachers about their own
schools and districts, as well as about their ideas about teaching, students, and learning, all help the class as a whole feel more connected, and more secure about sharing their own thoughts.

Finding 3: Online professional development provides a sense of community and support for learning. As in Finding 2, this is grounded in transformative learning phases of critical self-assessment and recognition of others’ disorientation, as well as the phase developing new ideas and relationships. The emotional and professional support teachers experienced through the discussion board was described in Finding 2; this finding relates to how the interaction with others led to better understanding of OPD course concepts.

Teachers felt a sense of support from their fellow classmates, and in some ways, were more comfortable in the online environment as compared with a face-to-face setting when talking about instructional ideas that might be “different.” A transformative learning environment provides opportunities for learners to reflect upon their habits of mind critically, in light of new or disruptive ideas, both individually and in discourse with others. A sense of being part of a community can give teachers the support they need to confront their own views about teaching and learning, and to begin making changes based on their new learning.

Teachers reported that the online discussion board was helpful in relation to learning the course content. Trying out new ideas for classroom strategies with other teachers brought both suggestions and praise that teachers could use to improve their ideas before bringing them into the classroom. Classmates provided clarification of difficult concepts, and assisted with technological issues. Surveyed teachers described times when several different classmates worked together to help another who was struggling. This sense of connection and community
gave teachers confidence not only to ask for help, but to pursue using the new knowledge upon their return to school.

As one reframes assumptions as a result of the earlier phases of transformative learning, the new insights lead to ideas for change as well as new roles and relationships (Mezirow, 2012). Teachers trying new technology integration strategies in the classroom will find themselves in new classroom roles as they release the role of lecturer and become more a facilitator of learning. An example of this phenomenon is the interviewed teacher who used her new knowledge of gaming to flip her classroom, becoming a facilitator of learning instead of a direct conveyor of learning for her students. Her new strategies allowed the students to become more self-directed as well as creators of knowledge, as she supported their research, evaluation, and creation of projects.

The results of this goals-based program evaluation indicate that teachers feel they are a part of a learning community when they participate in online professional development courses. Discourse experienced in the discussion forums leads to a sense of support and trust, which makes it possible to be more open about asking questions and offering assistance.

**Theme 4: Reconsidered practice.** Nearly all the teachers surveyed and interviewed believe that their classroom practice has changed as a result of the OPD courses they have taken. All the teachers surveyed and interviewed had participated in at least one course that was related to integrating educational technology into the classroom. In some cases, teachers made significant changes, and in others, they made changes they considered a first step of several they plan to take in transforming their classroom practice.
Finding 4: Online professional development can cause significant changes in classroom practice, and is grounded in transformative learning theory phases planning to make changes, and taking action. According to Mezirow, taking action is necessary to make transformative learning experiences complete. New perspectives and concepts are transformative when one not only identifies the new awareness, but begins to live and work based on those new perspectives (Mezirow, 1990, 2000, 2012).

A transformative learning experience includes the learner making a reflective decision to act on new insight gained, and developing a plan to take that action (Mezirow, 2012). It may take time to put the plan into action, but developing a plan is the first step in taking action. If no change is actually made in practice, regardless of the self-assessment and new levels of understanding, transformation has not taken place. A transformative learning experience includes an “informed and reflective decision to act” on new insights, and may occur immediately, or may take place over time (Mezirow, 2012, p. 87).

A significant majority of teachers from the survey and the interviews responded that they had indeed made changes in their classroom practice based on their OPD learning experiences. Many of those changes were significant, such as flipping the classroom, developing simulations for student understanding, proposing new school-wide curricular changes, creating new websites, initiating project-based learning, or shifting to student self-directed learning. Smaller changes include converting to the use of online assignments and digital communication, implementing new applications for particular lessons, and incorporating blogs in the curriculum. Interviewed teachers went into some depth when discussing the changes they were proud of, including new gaming strategies, assessment tools, writing projects, and online communication practices.
These teachers clearly felt the OPD courses they had taken led them to change their classroom practice.

When triangulated with the data from the surveys and interviews, the analysis of the syllabi leads to Finding 5: Online professional development (OPD) courses related to integrating technology in the classroom have the potential to be transformative learning experiences for participating teachers. The document review revealed that the course syllabi evaluated for this project were compatible with transformative online professional development, based on the Smith (2012) criteria.

The three criteria identified by Smith (2012) as course design features fostering transformative learning in an online environment include a learner-centered design, opportunities for student interaction, and required self-reflection. Most of the syllabi analyzed for this program review included all three features, with the lowest level of inclusion, self-reflection, present in 56% of the syllabi. Self-reflection elements included reflection assignments during the course, or summative reflections at the end of the course. Some assignments were journal entries, others were reflective essays.

Learner-centered design (76%) and student interaction (92%) both were highly present in the syllabi examined. Learner-centered features of the OPD course syllabi analyzed for this program review included assignments and projects directly relevant for teachers’ classrooms, a choice of projects based on individual teachers’ needs, and the convenience for teachers of the asynchronous online learning environment. Student interaction activities were based primarily on discussion board forums but also in rare online group activities. Triangulating these data, and keeping in mind teachers’ sense of community and collaboration that participants described in
both the survey responses and interviews, one can conclude that the analyzed course designs could have contributed to the transformative changes teachers experienced.

In summary, the findings of this program evaluation suggest that OPD in instructional technology integration, when designed to meet the needs of adult learners (learner-centered, promoting student interaction, and including self-reflection), can be a transformative learning experience for the teachers participating. It can provide opportunities for teachers to build relationships, develop new perspectives, and to create new learning opportunities for their own students.

**Findings in Relation to the Literature Review**

In this section, the findings of this program evaluation will be related to the literature. The literature review in Chapter 2 focused on adult learning, transformative learning, and online professional development. The conclusion of the literature review was that online professional development can be transformative if it is designed with adult learning characteristics in mind. This section will present the findings in relation to adult learning characteristics and transformative learning, since online professional development is interwoven through both topics in this program evaluation.

**Adult learning.** The findings of this program evaluation are consistent with the literature on adult learning, as teachers expressed the importance of convenience, opportunities for relationship building, collaboration, self-directed learning, and topics pertinent for their current situations. All three datasets support the value of course design aligned to adult learning characteristics as described by Malcolm Knowles (M.S. Knowles, 1970; M. S. Knowles, 1980; Malcolm S. Knowles et al., 2005), Stephen Brookfield (Brookfield, 1986), Dirkx (Dirkx, 2006),
This section will present five elements of adult learning in relation to the findings. Those elements include habits of mind that impact adults’ attitudes toward learning, the need for convenience in the learning environment, the need for immediate relevance, the value of discourse for building relationships and enhancing meaning, and adults’ preference for self-directed learning. All five of the findings reflect these five principles of adult learning theory, as these were identified by teachers in the datasets analyzed for this project.

Teachers’ habits of mind, or mental models that are based on years of life experience, can support or undermine new learning experiences (Brookfield, 1986; Green & Ballard, 2011; Malcolm S. Knowles et al., 2005). Teachers in this program evaluation pointed to online learning as a new experience for some of them, for which they felt unprepared. Predispositions toward learning management systems, and the belief that any online course would be isolating set some of the participants up for astonishment when they found themselves learning comfortably in an online environment. Teaching practice itself can be considered a mental model, especially for experienced teachers whose practice has not changed considerably. Several surveyed teachers acknowledged a concern about learning to use new technologies in the classroom, and the impact that might have on their teaching. “Unlearning” past practices is difficult both intellectually and emotionally (Dede & Countryman, 2007), a disorienting dilemma that must be overcome for transformative learning to take place.

The asynchronous nature of OPD allows teachers to participate at their own convenience at the same time as it provides teachers time to reflect on others’ input before they respond,
leading to deeper thinking and more relevant input (Chen, Chen, & Tsai, 2009; Dede, 2006). Teachers with family responsibilities who are caring for younger or older family members, teachers with second jobs, and teachers who live a distance from the educational institution offering OPD, uniformly identified online learning as the only way they could have pursued professional development. The ability to access the course 24 hours a day, and to converse virtually with classmates on an asynchronous basis removed any pressure teachers might have felt about being “present” at certain times that might be impossible for them. One interviewed teacher found that she worked best at 3:00 am, when her children, pets, and her spouse were all fast asleep.

Adult learners need learning to be relevant; teachers need to be able to take what they have learned directly back to the classroom to improve student learning. The findings of this program evaluation, based on both the survey and interview datasets, indicate that nearly every teacher had taken what they had learned back to the classroom, and had changed their practice in some way due to the OPD learning experience. The document review revealed that the courses were designed to be learner-centered, giving teachers the opportunity to make assignments relevant to their own work. Surveyed teachers cited new ideas they gained from others in their classes, as well as pointing to new applications and techniques they had been able to integrate. Interviewed teachers went into depth describing ways in which they had taken new ideas back to the classroom, including tools they had used to flip their classrooms, ways in which they had implemented simulation software to engage their students more fully in learning, and new ideas they developed for communicating with both students and their families.

The findings of this program review strongly support the value of discourse in online professional development. Nearly every teacher pointed to online discussion with their
classmates as being key to their participation, learning, and growth. This aligns with the work of Lawler (2003; Lawler & King, 2000), Beavers (2009), Brookfield (2006), Harasim (2012), Mezirow (1990, 2000), (Doubler & Paget, 2006), and Taylor (2009), as well as the National Academies Teacher Advisory Council’s Committee on Enhancing Professional Development for Teachers (Dede & Countryman, 2007). The responses of both survey and interview participants indicated teachers felt engaged in courses in which they participated in online discussions. Discourse with classmates provided teachers with opportunities to build relationships, develop new points of view, and to explore new ideas in the safety of the online environment. Participants expressed a sense of community and support for their own learning, as well as support for their students’ learning as a result of online interaction with their classmates.

Teachers in this program evaluation enjoyed the fact that they could direct their learning toward their own professional or personal needs. Course designs that were learner-centered allowed teachers to be self-directed and in control of their own learning, a vital element in adult learning (Dede, 2006; M. S. Knowles, 1980; Summerville & Johnson, 2006; Vanides, 2007). In most of the OPD courses in this study, teachers had the opportunity to make the assignments relevant to their own situations, and to take part at their own pace. Interviewed teachers described in detail how they specifically applied their learning to their classrooms, and even planned to integrate their learning school-wide, in two cases. For example, both librarians who were interviewed planned to make building-wide changes based on their OPD experiences, including implementing video clips in the curriculum in order to provide students with online resources they can access when needed, outside of class time.

In summary, the findings of this program evaluation are consistent with the literature on adult learning. The tenets of adult learning theory are powerfully reflected in all three datasets.
The syllabi reflect Smith’s (2012) three elements for transformative online professional development, learner-centered design, interaction among participants, and opportunities for self-reflection. Each of those elements is incorporated in adult learning theory. The survey and interview data indicate that teachers experienced shifts in mindsets, enjoyed the convenience of online learning, found the learning to be relevant for their immediate professional needs, developed new relationships through discourse, and appreciated the opportunity to be self-directed in their learning.

**Transformative learning.** Transformative learning occurs when one critically reflects on one’s long-held assumptions and makes changes in practice based on new perspectives resulting from discourse with others and the construction of new meaning. The results of this study support the literature on transformative learning as described by Jack Mezirow over the course of approximately 40 years, and as extrapolated to online professional development by researchers such as Regina Smith (R. O. Smith, 2012), Patricia Cranton (2002, 2006, 2010; Cranton & King, 2003; Cranton & Taylor, 2012), John Dirkx (2006), Naomi Boyer (Boyer et al., 2006), and Peter Keegan (2011).

While there is little empirical literature on fostering transformative learning in an online environment, Regina Smith identified learner-centered course design, student interaction, and opportunities for self-reflection as key elements for transformative OPD (2012). The findings of this program evaluation, specifically the document review of syllabi from the education technology-integration courses, strongly support Smith’s claim. More than half of the courses included those three elements, and teachers attributed their changes in practice to the courses they completed.
Teachers participating in OPD related to technology integration may experience conflicting perspectives on teaching practice. Lee and Brett (2015) found that teachers can transform their perspectives through self-reflective learning to resolve conflicting perspectives related to educational technology. For example, a teacher who is accustomed to using technology every day in her classroom may believe that all teachers should do the same, but in discussion with her classmates may find that many teachers have neither the training nor the resources to do so. That was the case with one of the teachers in this program evaluation. She had experienced a disorienting dilemma when she was confronted by a different perspective, and her own perspective changed as a result of self-reflection and discourse with others.

The findings of this program evaluation are consistent with the literature on both transformative learning and transformative online professional development in that Mezirow’ six phases of transformative learning (disorienting dilemma, critical self-assessment, recognition of others’ disorientation, new ideas from learning, planning for change, taking action/changing practice) and Smith’s three components of transformative OPD (learner-centered design, student interaction, self-reflection) were all present in this study. Table 10 (p. 121) illustrates that each of the first four findings reflects at least one of the six Mezirow phases. Table 11 incorporates the Smith criteria and the fifth finding from this study, demonstrating that all elements related to transformative online professional development were present in this program evaluation.
Table 11

*Mezirow Phases and Smith Criteria as Reflected in Findings*

<table>
<thead>
<tr>
<th>Findings</th>
<th>Disorienting dilemma</th>
<th>Critical self-assessment</th>
<th>Recognition of others’ disorientation</th>
<th>New ideas &amp; relationships developed</th>
<th>Planning for change based on learning</th>
<th>Taking action, changing practice</th>
<th>Learner-centered</th>
<th>Student interaction</th>
<th>Self-reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: OPD on integrating technology assists teachers to change beliefs about instructional technology</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2: OPD provides opportunities to connect with other teachers, build relationships, and learn about others’ situations and points of view</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3: OPD provides a sense of community and support for learning</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>4: OPD can cause</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Finding 5 of this program evaluation is, online professional development (OPD) courses related to integrating technology in the classroom have the potential to be transformative learning experiences for teachers participating. This finding is consistent with Lee and Brett’s (2015) conclusion that implementing new instructional technologies, and adapting to new, digital teaching environments can lead to a transformation of perspective. This program evaluation focused on courses related to integrating instructional technology because of the hypothesized likelihood that educational technology courses are more likely to inspire a change in practice. In fact, a majority of the teachers who participated in the survey and interviews made small or significant changes in practice based on their OPD learning experiences. It could be asked whether teachers who are ready to make a significant change in practice are more likely to undertake an OPD course in integrating technology, but that is for another study.

### Implications of Findings for Online Professional Development for Teachers

The research question for this program evaluation is: How do preK-12 teachers perceive the impact of online professional development (OPD) courses on classroom instructional
strategies? The research indicates that teachers believe OPD can indeed change classroom practice. The first finding of this study affirms that teachers believe OPD on instructional technology can help change their perspectives on technology. This assertion is supported by the teachers’ reports of initial trepidation in the face of taking an online course that was replaced by an excitement about learning in a new, digital, environment. In addition, teachers who worried about implementing instructional technology tools in the classroom found they were able to devise new lessons that incorporated digital applications easily for both teacher and students. The implication of this finding for online teacher professional development is that when designing OPD that is designed to help teachers integrate technology in the classroom institutions should take into consideration the needs of adult learners and the elements of transformative online learning.

The second finding, that OPD can help teachers connect with other teachers, build relationships, and develop new perspectives, is supported by the evidence that online discourse among teachers in an OPD course can foster a sense of trust and companionship, which makes sharing feelings about teaching and learning easier. In the same way, evidence from this study supports the third finding, that OPD can provide a sense of community and support for learning. Teachers sharing their experiences, both positive and negative, professional and personal, leads to discourse that can result in professional growth. Finding ways to foster deep discourse in an online environment will help institutions create more transformative learning experiences for teachers.

The fourth finding is that OPD concerning the integration of technology can cause teachers to make significant changes in classroom practice. The courses analyzed for this program review are selected by teachers, not required by school districts. Teachers take OPD
related to technology integration because they want to improve their practice through the use of technology. It is not surprising then, that the data revealed changes in practice after OPD courses on technology integration. Teachers valued courses that helped them find ways to integrate technology directly into their own classrooms, with their own students. Institutions designing OPD in technology integration should try to make the courses adaptable to all grade levels and disciplines.

Finally, the fifth finding is that OPD related to integrating technology in the classroom has the potential to be transformative for participating teachers. Changing practice through technology integration is not necessarily a transformative learning experience. As noted, teachers take these courses hoping to find resources they can integrate; new strategies are expected. It is the teacher who enters the course not expecting to be successful because she is nervous about learning in an online environment, or who can’t see how a technology tool could ever be integrated into her curriculum, or who expects to feel isolated in the course and unable to find help or friendship – that is the person for whom these courses can be transformative. If OPD is designed to foster relationship building and exploration of new ideas in a safe environment, and if it provides teachers with time to critically reflect on learning, OPD can be transformative.

The implications of these findings for institutions providing OPD for teachers include promoting online course design that is focused on learners’ needs, is centered on in-depth student discourse, and includes required self-reflective assignments. Self-direction allows students to be independent learners, engagement with others provides a broad palette of perspectives, and reflection offers the opportunity to think critically about learning, all of which produce a condition conducive to transformative learning.
Limitations and Recommendations for Future Studies

This program evaluation is part of a body of literature on transformative online professional development for teachers. It was conducted at a small public university in Massachusetts, and included survey responses from 30 teachers who had participated in online professional development related to integrating educational technology. The results may not be representative of other online professional development programs at other institutions, as the small sample of participants was from one institution. In addition, as a few teachers noted in the survey, teachers take OPD courses because they want to improve as teachers, and hope to find new ideas to bring back to their classrooms. They may not consider changes in practice to be significant or a transformation of practice, since change was what they had planned.

Further research on ways in which transformative learning can be fostered in an online environment is needed. As most of the literature on transformative OPD for teachers is conceptual rather than empirical, more empirical studies are called for. It would be very helpful to conduct a study on the persistence of change in teaching practice after a transformative learning experience; that is, how successful are teachers’ transformations once they return to their school environments, where change may or may not be welcome or supported by colleagues and/or administrators.

Conclusion

There is a need for effective online professional development for teachers. Particularly in the area of technology integration, change happens quickly, and teachers need to learn about new tools and strategies to meet the needs of their students. The purpose of this research was to determine how teachers perceive online professional development affects classroom practice.
Through analysis of data from a document review of course syllabi, a survey, and interviews, the researcher has concluded that teachers believe online professional development does indeed affect their practice, and in some cases causes significant change within their classrooms.

The research findings provide support for institutions of higher education where online professional development (OPD) courses for teachers are developed. Teachers believe OPD concerning integrating instructional technology assists teachers to change beliefs about instructional technology. Online professional development courses provide opportunities to connect with other teachers, build relationships, and learn about others’ situations and points of view. Teachers feel OPD courses provide a sense of community and support for learning. Teachers believe OPD courses can cause significant changes in the classroom. Finally, OPD courses related to integrating technology in the classroom have the potential to be transformative learning experiences for teachers. Each of these findings is an indicator of transformative learning. Institutions developing OPD courses should emphasize the value of learner-centered course design, promote student discourse and interaction, and require students to engage in self-reflection. Online professional development courses featuring those elements can be transformative for the class participants.

It is the hope of the researcher that this program evaluation will inspire institutions of higher education and instructors of online professional development to design courses that will engage teachers deeply, make them think critically, and reflect deliberately. Perhaps teachers who undergo a transformative online learning experience will be driven to help their students experience the same phenomenon.
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Appendix A
Invitation to participate in the study

Request for Participants to Participate in the Study

As a teacher who has taken courses in the Framingham State University Continuing Education Department’s Online Professional Development Program, you have been selected to participate in a survey designed to evaluate whether that professional development has made an impact on your classroom practice. This survey is being conducted as part of an Education Doctorate program in Curriculum from Northeastern University.

The survey is part of a study designed to evaluate whether online professional development can lead to transformative learning experiences, changing teaching practice in the classroom. Your part in the study will be to take a survey intended to take less than 30 minutes of your time. The survey will have both multiple choice and open-response questions.

If you agree to participate in the survey, you will be able to withdraw at any time. Your responses will be anonymous, as will the University. There will be an option for you to be contacted for a more in-depth interview following the survey. A question within the survey will describe the interview process, and will ask whether you choose to be further interviewed. Your confidentiality will be protected regardless of whether you agree to be interviewed; I will need your contact information in order to conduct the online interview, but that information will not be shared.

Data collected from this survey will be carefully protected, visible only to the researcher, and maintained in a secure location for five years after the study is complete. Both the University and the survey participants will remain anonymous in the study.

Thank you very much for your participation. Please [click here] to proceed to the survey and the informed consent. Please email me if you have any questions.

Sincerely, Kim Cochrane
cochrane.k@husky.neu.edu
Appendix B
Informed Consent Form for Interviewees

Dr. Margaret Dougherty, Principal Investigator

Kim Cochrane, Doctor of Education Student in the College of Professional Studies at Northeastern University

Title of Project: Transformative Learning in an Online Environment: A Qualitative Study of Online Professional Development

You are invited to be interviewed as part of a study of online professional development for teachers. This form will tell you about the study and the interview process. You do not need to participate in the interview process if you choose not to, and you are able to withdraw from the interview at any time.

You are being asked to be interviewed because you have participated in online professional development in the past year, and you teach in the range of preK-12.

The purpose of this research is to gather information about how teachers perceive the impact of online professional development on professional practice.

If you agree to be interviewed, the interview will take place online, via Blackboard Collaborate. Your answers will be recorded for transcription purposes only. The entire interview should take less than an hour of your time.

The researcher will transcribe your answers and will send you a copy to review for accuracy within two weeks. You will be asked to review the responses and affirm that they truly reflect your interview.

There is no foreseeable risk or discomfort anticipated for you in this process. In addition, there is no benefit for you as an interviewee other than the satisfaction of knowing you are contributing to the knowledge base about online professional development for teachers.

Your answers will be entirely confidential. Only the researcher will have access to your name and contact information, and all of your answers will be securely stored. The information you provide will be aggregated with that of the other interviewees. Any mention of your responses in the report on this project will not refer to you in any way. You will remain anonymous, as will your school and school district, throughout the entire process.

All information gathered from the interview process will be held in secure files until they are destroyed in three years’ time. They will be used only for the present study.
If you agree to be interviewed, you may still discontinue your participation in the interview at any time. Your participation is entirely voluntary. You may refuse to answer any question.

If you have any questions about any of this information before, during, or after the interview process, you may contact:

   Kim Cochrane, Doctor of Education Student, 11 Hillside Road, Fitchburg, MA 01420, 978-273-5040, Cochrane.k@husky.neu.edu.

   Dr. Margaret Dougherty, m.dougherty@neu.edu

________________________________________________________________________
Research Participant (signature) Date

________________________________________________________________________
Research Participant (printed)

________________________________________________________________________
Researcher obtaining consent (signature) Date

________________________________________________________________________
Researcher obtaining consent (printed)
## Appendix C
### Table Showing Course Titles and Enrollment by Semester

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Sprg 2014</th>
<th>Sum 2014</th>
<th>Fall 2014</th>
<th>Jan 2015</th>
<th>Sprg 2015</th>
<th>Sum 2015</th>
<th>Fall 2015</th>
<th>Total Enrollment by Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistive Technology &amp; Accessible Instruction</td>
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<td></td>
</tr>
<tr>
<td>Creating Assessments Using Online Tools</td>
<td>14</td>
<td>11</td>
<td>15</td>
<td></td>
<td>5</td>
<td></td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Creating iMovies with Students</td>
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<td>11</td>
</tr>
<tr>
<td>Creating Meaningful Learning with iPads</td>
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<td></td>
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<td>8</td>
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<td>28</td>
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<tr>
<td>Creating Quick Response (QR) Codes for the Classroom</td>
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<td>Creative Tools for the MAC</td>
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<td>Google Earth Across the Curriculum</td>
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<td>Integrating Educational Videos into the Curriculum</td>
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<td>Integrating Mobile Devices into English and History/Social Studies</td>
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<td>iPad for Special Educators</td>
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<td>Total enrollment by semester</td>
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</tbody>
</table>
Appendix D
Survey Questions

1. During your online professional development (OPD) course, were you surprised by anything you learned? In other words, did you experience an “aha!” moment? Please explain your “aha!” moment.

2. Did anything strike you as contrary to your experience? For example, ideas that were presented, or instructional design?

3. Did discussion with your classmates, either asynchronously or synchronously, help you clarify anything you were learning? Please explain.

4. How was the course design suited to your personal or professional needs?

5. In what ways were you able to make the course fit your needs?

6. What ideas came to you as a result of discourse with your classmates, if any?

7. Please summarize how this course has changed your teaching practice. Do you feel your experience in this course has caused a significant change in your practice?

8. Have you planned or implemented any changes in your classroom practice as a result of this course? Please explain.

9. How many OPD courses have you taken at the university?
   a. 1-3
   b. 4-6
   c. More than 6

10. What grade level do you teach?
    a. PreK-2
    b. 3-5
    c. 6-8
11. How many years have you been teaching?
   a. 1-5 years
   b. 6-10 years
   c. More than 10 years

12. In which of the following areas have you taken courses in our online program?
   a. Literacy/English Language Arts
   b. Technology
   c. Special Education
   d. Instructional Strategies
   e. Nutrition and Health
   f. Content Area: Math
   g. Content Area: Science
   h. Content Area: Social Studies
   i. Other (please specify)

13. Are you willing to be interviewed further for the purposes of this study? If yes, please include your first name, email address, and phone number. You will remain anonymous throughout the survey/interview process, and will be able to withdraw at any time.
### Appendix E

**Survey Questions in Relation to Mezirow Phases and Smith Criteria**

<table>
<thead>
<tr>
<th>Mezirow’s Phases</th>
<th>Survey Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disorienting Dilemma</td>
<td>During your OPD course, were you surprised by something you learned?</td>
</tr>
<tr>
<td>Critical Self-Assessment</td>
<td>What practical skills or knowledge do you feel you have gained through our courses?</td>
</tr>
<tr>
<td>Recognition Through Discourse</td>
<td>Did discussion with your classmates, either asynchronously or synchronously, help you clarify anything you were learning? Please explain.</td>
</tr>
<tr>
<td>New Ideas in Response</td>
<td>What did you like about our course(s)/program?</td>
</tr>
<tr>
<td></td>
<td>What ideas came to you as a result of discourse with your classmates, if any?</td>
</tr>
<tr>
<td>Plan for Implementation</td>
<td>Have you planned to implement any changes in your classroom practice as a result of this course?</td>
</tr>
<tr>
<td>Changed Practice</td>
<td>Please explain how you have already changed your practice as a result of the OPD course?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Smith’s Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner-centered</td>
<td>How was the course suited to your own professional needs?</td>
</tr>
</tbody>
</table>
In what ways were you able to make this course meet your needs?

**Student Interaction**

Did discussion with your classmates, either asynchronously or synchronously, help you clarify anything you were learning?

**Self-reflection**

What ideas came to you as a result of discourse with your classmates, if any?

**Other Questions**

How many OPD courses have you taken at the University?

1-3, 4-6, more than 7

What grade level do you teach?

Prek-2, 3-5, 6-8, 9-12

How many years have you been teaching?

1-5 years, 6-10 years, more than 10 years

In which of the following areas have you taken courses in our online program? Select as many as appropriate.

- Education Technology
- Literacy/English Language Arts
- Instructional Strategies
- Special Education
- Nutrition & Health
- Content Area: Math
- Content Area: Science
- Content Area: Social Studies
- Other (please specify)

Are you willing to be interviewed further for the purposes of this study? If yes, please include your first name, email address and phone number.

You will remain anonymous throughout the survey/interview process.
Appendix F
Interview Questions Aligned to Mezirow’s Phases and Smith’s Criteria

*Interview Questions Aligned to Mezirow’s Phases and Smith’s Criteria*

<table>
<thead>
<tr>
<th>Mezirow’s Phases</th>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disorienting Dilemma</td>
<td>Please tell me about a time during one of your OPD courses when something you had always believed to be true was brought into question.</td>
</tr>
<tr>
<td>Critical Self-Assessment</td>
<td>Please tell me how you may have re-evaluated your practice based on new information from one of your OPD courses.</td>
</tr>
<tr>
<td>Recognition Through Discourse</td>
<td>What did you learn when talking with your classmates about teaching?</td>
</tr>
<tr>
<td></td>
<td>Did you feel as though your thoughts about your practice were much the same as your classmates? Why?</td>
</tr>
<tr>
<td>New Ideas in Response</td>
<td>Did you come up with new ideas about classroom strategies due to those conversations? Please talk about that.</td>
</tr>
<tr>
<td>Plan for Implementation</td>
<td>Did you develop a plan to implement any changes in your classroom practice? Please explain.</td>
</tr>
<tr>
<td>Changed Practice</td>
<td>Did you actually make those changes in your practice? Please elaborate.</td>
</tr>
<tr>
<td><strong>Smith’s Criteria</strong></td>
<td><strong>Was there anything about the course design that made you feel it was designed for you to be successful?</strong></td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Learner Centered Pedagogy</td>
<td>In what ways were the discussion sessions and group activities helpful?</td>
</tr>
<tr>
<td>Student Interaction</td>
<td>How did the reflection assignments help you?</td>
</tr>
</tbody>
</table>
## Appendix G

### Mezirow Phases Used in Interview Data Analysis and the Number of Teachers Who Experienced Each Criterion

<table>
<thead>
<tr>
<th>Mezirow Phases/Goals of Program Evaluation</th>
<th>Interview Questions Related to Phases</th>
<th>Number of Teachers Who Experienced Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1: Surprised by Content</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>DD2: Upset by lack of connection to prior learning/beliefs</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>DD3: Disbelief; refusal to accept new concepts</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>CSA1: OPD can change teachers’ value system and world view</td>
<td>2, 6</td>
<td>2</td>
</tr>
<tr>
<td>CSA2: Reconsidered Practice</td>
<td>1, 2, 4</td>
<td>3</td>
</tr>
<tr>
<td>CSA3: New view of colleagues’ perspective</td>
<td>2, 3</td>
<td>1</td>
</tr>
<tr>
<td>ROD1: OPD courses provide opportunity to make connections</td>
<td>3, 9</td>
<td>2</td>
</tr>
<tr>
<td>ROD2: Interaction with peers enhanced understanding</td>
<td>3, 9</td>
<td>4</td>
</tr>
<tr>
<td>ROD3: Discussion opened doors to others’ feelings, experiences, and ideas</td>
<td>3, 4, 9</td>
<td>6</td>
</tr>
<tr>
<td>ROD4: Value of input from others</td>
<td>3, 4, 9</td>
<td>5</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td>Concepts</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>NID1:</td>
<td>New ideas based on concepts learned in course</td>
<td>2, 5, 6</td>
</tr>
<tr>
<td>NID2:</td>
<td>New ideas based on concepts from discussion with classmates</td>
<td>5</td>
</tr>
<tr>
<td>PII1:</td>
<td>Inspiration for changed practice from course</td>
<td>2, 5, 6, 10</td>
</tr>
<tr>
<td>PII2:</td>
<td>Plans developed in collaboration with others in class</td>
<td>0</td>
</tr>
<tr>
<td>A/CP:</td>
<td>Changed practice</td>
<td>1, 2, 6, 7</td>
</tr>
</tbody>
</table>

## Online Professional Development Courses from Which Syllabi Were Analyzed, and the Smith Criteria Met

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Learner-Centered</th>
<th>Student Interaction</th>
<th>Self-Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Google Tools in the Classroom</td>
<td>Design and implement an action plan for using iPads in the classroom</td>
<td>Discussion board: Weekly post and response</td>
<td>Reflection on how sample lessons and activities could be implemented in class</td>
</tr>
<tr>
<td>Crafting Meaningful Learning with iPads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Get a Blog!</td>
<td>Set personal goals for course that will help in the classroom</td>
<td>Discussion board: Weekly post and response; partner activity</td>
<td>Reflection assignment in the final module</td>
</tr>
<tr>
<td>Edmodo: Creating a Connected Classroom</td>
<td>Using the Edmodo tool to enhance current and anticipated lessons</td>
<td>Discussion board: Weekly post and response</td>
<td>Weekly reflections</td>
</tr>
<tr>
<td>Using Technology to Help Students Demonstrate Understanding</td>
<td>Integrating technologies to support your students, reshape current curriculum units or create new, what do you hope to get from this course</td>
<td>Discussion board: Weekly post and response</td>
<td>Reflection assignment in the final module</td>
</tr>
<tr>
<td>Topic</td>
<td>Activity Description</td>
<td>Discussion Board</td>
<td>Summary</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Integrating iPads into STEM Curriculum</td>
<td></td>
<td>Discussion board: Weekly post and response</td>
<td></td>
</tr>
<tr>
<td>Website Design for Today's Educator</td>
<td>Create website for personal classroom, letters for students and parents</td>
<td>Discussion board: Weekly post and responses</td>
<td></td>
</tr>
<tr>
<td>Designing and Evaluating Virtual Field Trips</td>
<td>Final project a virtual field trip to use in own class</td>
<td>Discussion board: Weekly post and responses</td>
<td></td>
</tr>
<tr>
<td>Creating iMovies with Students</td>
<td>Final project rubric is self-designed, project is designed for use in participant's classroom</td>
<td>Discussion board: Weekly post and response</td>
<td></td>
</tr>
<tr>
<td>Making Technology Count for K-8 Mathematics</td>
<td>Course designed to enhance math instruction for participants' students</td>
<td>Discussion board: Weekly post and response</td>
<td>3-2-1 Reflection</td>
</tr>
<tr>
<td>Special Education: Assistive Technology and Accessible Instructional Materials</td>
<td>Engage in collaborative activities to design best practice strategies; Group activity; Discussion board; Weekly class blog; Optional virtual meetings</td>
<td>Reflections</td>
<td></td>
</tr>
<tr>
<td>Course Title</td>
<td>Description</td>
<td>Activities</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Integrating Educational Video into the Curriculum</td>
<td>Participants design lesson plans and assignments that can be used in the classroom</td>
<td>Online class discussions and sharing sessions</td>
<td></td>
</tr>
<tr>
<td>Connected Classroom in the 21st Century</td>
<td>Course designed to construct a comfort level with emerging technologies and to create a toolbox for their own classroom</td>
<td>Cooperative learning; Weekly discussion board posts and responses</td>
<td></td>
</tr>
<tr>
<td>Google Earth Across the Curriculum</td>
<td>Students define their own and their students' learning preferences, create a learning unit for their personal classroom</td>
<td>Students participate in a learning community, collaborating to design best practice strategies; Reflection assignments in weeks 3 and 4</td>
<td></td>
</tr>
<tr>
<td>New Tools, New Rules: Engaging the Digital Child</td>
<td>Students define their own course goals and learning objectives</td>
<td>Students participate in a learning community, collaborating to design best practice strategies; Weekly discussion board posts and responses</td>
<td></td>
</tr>
<tr>
<td>Powerful Creative Tools for Mac</td>
<td>Goal of final project is to create a project or lesson plan</td>
<td>Self-reflection assignment each week</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Description</td>
<td>Discussions</td>
<td>Reflections</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>There's an App for That! iPads in Education</td>
<td>Participants develop skills to find Apps appropriate for their personal grade levels</td>
<td>Weekly discussion board posts and responses</td>
<td>Two reflections: Week 1 and Week 4</td>
</tr>
<tr>
<td>Leveraging Technology to Create Differentiated Learning Environments</td>
<td>Creating differentiated lesson plans reflecting specific students' needs in the classroom</td>
<td>Weekly discussion board posts and responses</td>
<td>Two reflections: Week 1 and Week 4</td>
</tr>
<tr>
<td>Creating QR Codes for the Classroom</td>
<td>Participants develop strategies and resources for creating QR codes to enhance and expand their existing curriculum</td>
<td>Weekly discussion board posts and responses</td>
<td></td>
</tr>
<tr>
<td>Integrating Mobile Devices into English Language Arts and History/Social Studies Curriculum</td>
<td>One goal of the final project is for participant to outline how he/she will use what was learned in the course in his/her classroom</td>
<td>Sharing and developing of ideas, strategies, and best practices together; Weekly discussion board posts and responses</td>
<td>Two reflections: Week 1 and Week 4</td>
</tr>
<tr>
<td>Prezi: Watch Your Words Come Alive</td>
<td>Upon completion of the course,</td>
<td>Weekly discussion board</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Activity</td>
<td>Posts and Responses</td>
<td>Activity</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Creating Assessments Using Online Tools</td>
<td>Participants take all project files with them to directly apply in their classrooms</td>
<td>posts and responses</td>
<td>Weekly private reflection</td>
</tr>
<tr>
<td>The Flipped Classroom</td>
<td>Creating online assessments appropriate for immediate use in the classroom</td>
<td>Weekly blog post</td>
<td>Reflection</td>
</tr>
</tbody>
</table>