

TEACHERS AS LEARNERS: IMPACTS OF GRADUATE TEACHERS EDUCATION  
PROGRAMS' FEATURES ON IN-SERVICE TEACHERS' PRACTICES

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**Title**

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EDUCATION PROGRAMS' FEATURES ON IN-SERVICE TEACHERS'  
PRACTICES

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University's regulations and meets the accepted standards for the degree of

**MASTER OF SCIENCE**

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## **ABSTRACT**

Significant research efforts have addressed the need for pursuing graduate teacher education to improve in-service teachers' teaching practices. On contrary, empirical knowledge about the impacts of structural and process features of graduate teacher education on in-service teachers' teaching practices is underdeveloped. This proposed study was designed to contribute to an empirically driven knowledge about the degree to which graduate teacher education programs support in-service teachers' classroom needs and guide them diligently to deal with professional challenges. Mixed methodology approach including survey questionnaire (quantitative) and interview (qualitative) was used, and 34 in-service from 15 different teacher education programs of five different Upper Midwest states responded to the survey questionnaire. However, only two teachers participated in the interview process. Quantitative data from survey questionnaire revealed that most teacher participants perceived that graduate teacher education program had positive impact on their teaching practices.

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# **1. INTRODUCTION, STATEMENT OF PROBLEM, PURPOSE OF STUDY**

## **1.1. Introduction**

The purpose of education as a means to improve student learning and achievement is at the forefront of the past and current educational reform initiatives. However, the success of such reform initiatives largely depends on teachers' competency and teaching practices, which has direct impact on students learning outcomes. Therefore, concerns related to improving teachers' performance through continuing education came into force with the advent of the educational reform movements. Beginning with the half century old Elementary and Secondary Education Act (ESEA, 1965) and continuing with further revisions and additions such as The National Educational Goals 2000 (1994), The No Child Left Behind (NCLB, 2001) Act, and most recently The Every Student Succeeds Act (ESSA, 2015), significant attempts have been made to design new policy instruments and strategies for school reform (U.S. Dept. of Education, 2016). However, even after making some notable improvements in several areas, significant gaps still exist between the goals and the actual outcomes of these policy changes. Competing political priorities may be responsible for some of these repeated attempts to rectify the educational system in the United States, but the main reason the overall goals was not attained is the dilemma policy makers face about how and where to invest and prioritize resources as a part of a concrete, coherent, and systemic reform effort (Cohen, 1995). Vital aspects of education, such as "curriculum and assessment, teacher's preparation and professional lives, school organization and management, technology, and parental and community involvement" (Goertz, Floden, & O'Day, 1995, p. i) have been targeted in reform initiatives. However, a few resources have been dedicated to the creation of effective in-service teachers' professional development programs. To make real progress towards these reform goals, policy makers need to invest in in-service teacher

education programs with coherent and effective structural (i.e. total credit hours, type of courses offered, course delivery format, collaborative learning, degree requirement) and process features (i.e. active learning, content focus, feedback, instructional strategies) that actually prepare in-service teachers to successfully translate reform initiatives, resulting in real impacts on student learning and achievement (Timperley & Anton-Lee, 2008).

## **1.2. Statement of the Problem**

For the last few decades, one of the major public outcries about education standards entails dissatisfaction with teacher preparedness. Education reforms call schools to embrace the Common Core State Standards and the high-stakes testing to invigorate student performance rate, resulting in enforcing the importance of professional development on teachers as a means of providing high-quality teaching (Borko, 2004; Colbert, Brown, Choi, & Thomas, 2008; Desimone, 2009; Stotko, Beaty-O’Ferrall, & Yerkes, 2005). In addition to this demand of producing high quality teachers, there is another trend of emphasizing teachers’ accountability by linking teacher professional development with students’ learning outcomes. Teachers’ effectiveness has become a concerning issue in the face of meeting challenges of a contemporary society, as are rapid socio-economic changes and technological progresses (Hallinan & Khmelkov, 2001). These new demands impose teachers to adopt new learning approaches to convey materials in a productive and effective way. Therefore, engaging in-service teachers in continuous professional training is needed to keep them informed about contemporary teaching theories and practices. This professional requirement for teachers is similar to the clinical practice of medical professionals where changes in the practice are considered as inevitable outcomes of the applied training methods and the newly gained insights. However, this generates confusion about whether and how teacher education makes a positive impact on the instructional



practices of teachers, both as they enter the workforce and as in-service teachers (Darling-Hammond, Chung, & Frelow, 2002). Currently teachers face multiple challenges in their classrooms, including meeting students' different learning needs, ensuring cultural inclusion, coping with the newest educational policies, or executing reform initiatives. In addition, the rapid advancement in the fields of information and communication technology forces teachers to keep up with the demands of a new, multicultural, and technologically savvy generation of learners. The growing public mistrust about teachers' competency and preparedness make these challenges even more complex. This creates a situation in which a teacher can easily be overwhelmed and discouraged. The result for schools and school districts is an increasing teacher attrition rate that is difficult to reverse. Initiatives for school reform have sought to alleviate consistent and ongoing needs of teachers and students at all levels. Maintaining lower pupil-teacher ratio in the public schools is one major focus of public educational reform initiatives, and without addressing issues associated with teacher attrition, it is impossible to create a qualified future teaching population (Hussar & Bailey, 2007). Making teachers more prepared, equipped, and competent through continuing teacher education is probably the most promising approach to address current and future educational challenges. However, there are significant disagreements about how teachers should acquire new knowledge or hone skills, and why some strategies are more effective than others (Hammerness et al., 2005).

Teaching is an intellectually demanding and cognitively stimulating career, and teachers often struggle with its ever-changing demands, no matter how flexible or self-motivated they are. The recent trend in education reforms calls for high quality teaching, requiring teachers to build knowledge and skills that are relevant to current time and specific to their classroom practice (Cohen, 1995; Darling-Hammond, 2008). The journey for teachers' professional learning begins

with pre-service education and advances with in-service trainings. There is no doubt about the importance of professional development programs on teacher and student learning, but the main dilemma is based on two factors: 1) how to measure the effectiveness of teacher education programs, and 2) how to determine whether or not teachers' knowledge gained from teacher education programs have any real impact on teaching practices. The research questions of this proposed study have been derived from the aforementioned dilemma associated with screening and judging the effectiveness of in-service teacher's professional development program.

There is a lack of empirical support in identifying, differentiating, and establishing connections between teacher development program outcomes and variables that influence teachers' learning and teaching practice (Badgett et al., 2013). A number of researchers have aimed to measure the impact of pre-service teacher education on student achievement, yet very few have attempted to find the relationship between in-service teachers' education and how it shapes teaching practice (Badgett et al., 2013; Darling-Hammond, 2010; Dee & Cohodes, 2008).

In addition, the professional development programs available for in-service teachers vary widely in structural and process features, such as duration, course modules, training activities, and more. Due to such extreme variations in program features, it is difficult to compare and prove with empirical evidence whether or not these structural and process features have any considerable impact on teaching practices.

Graduate teacher education programs are the most recognized and widely available professional training available to in-service teachers that deal with teaching practice and scholarship of teaching (Darling-Hammond, 2010). However, past research found it difficult to justify graduate teacher education's role to help in improving in-service teachers' teaching practice (Badgett et al., 2013; Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Darling-

Hammond, 2006). The purpose for improving teaching competency through pursuing professional development is to have a positive influence on student learning and accomplishments. Such goals cannot be achieved unless in-service teachers successfully transform learning from graduate teacher education program into their classroom practices. However, finding empirical evidence about the positive impact of graduate teacher education on student learning is difficult and complex. Hence, an obvious challenge for education researchers is to identify how graduate degree programs support in-service teachers' professional attainments, nurture intellectual abilities to sustain passion while keeping the organic nature of the profession intact.

### **1.3. Purpose of the Study**

Based on this above stated problem and from the existing knowledge gap, the main research objective for this study was to attain specific understanding about the overall impacts of graduate teacher education programs on advancing in-service teachers' knowledge, and to determine whether such advancement enhances teachers' instructional practice. Exclusion of different independent variables like role of key program features, and teachers' background information may influence the real outcomes of studies intended to evaluate graduate programs impact on participating teachers' practices. Therefore, this proposed study attempted to shed light on the impacts of these variables on teacher learning by evaluating 34 in-service teachers from 15 different graduate teacher education programs of Upper Midwest (North Dakota, South Dakota, Minnesota, Illinois, and Michigan). Almost every school administrator considers it important, as well as challenging, to deem teachers' qualifications while hiring new teachers and choosing an appropriate in-service teacher development program. Based on this premise, I hypothesized that the outcomes of this study are expected to provide information to teachers,

school administrators, and policy makers while they weigh options for selecting appropriate graduate teacher education programs based on the structural and process features in order to enhance the quality of teaching practice and subsequent improvement in student learning experience.

#### **1.4. Context**

Continuing education especially pursuing graduate teacher education reflects high commitments from in-service teachers to their profession. From teachers' perspectives, there are many advantages for pursuing graduate teacher education program such as developing new teaching skills, widening knowledge base, uplifting self-confidence, translating current educational research into practices, and improving job security with better remuneration. With the growing student population and changing demographic, the demands for qualified teachers are rapidly increasing nationwide, especially bilingual and English as a second language teacher (NCES, 2013). Within such context, the challenge for teachers is to keep up with high quality teaching, as well as satisfying diverse students' needs. In-service teacher education programs advocate for helping teachers to build necessary professional skills and confidence to cope with the existing and oncoming uncertain professional challenges. Assessing the impacts of graduate teacher education programs of Upper Midwest of the United States (15 programs were included in this study), especially the role of varying structural and process features on its participant teachers' instructional practices has significant merit. This can help teachers, school administrators, and policy makers to make appropriate decisions regarding the selection of graduate teacher development programs, along with formulating new policies in order to advance in-service teachers' education.

## **1.5. Interventions**

To explore the above-mentioned research purpose and to obtain empirical evidence, this study followed a mixed-methodology approach. The participants were 34 in-service teachers from 15 different North Dakota, South Dakota, Minnesota, Illinois, and Michigan graduate teacher education programs, who were enrolled (during participation in this research) or recently had graduated. This current study focused on teacher participants because their reflections on graduate teacher education experience would provide most valuable information and would help to derive desired conclusions about the research questions. Participants' demographic information and graduate programs' structural and process feature information were collected to determine the impact of these variables on teachers' teaching practices. By assembling, comparing, and fitting all data in an appropriate statistical model, inferences were made about the impact of graduate programs' structural and process features, if any, on teachers' teaching practice.

## **1.6. Research Questions**

The major aim of this research was to build strong empirical evidence about the impacts of graduate teacher education programs' features on teaching practices by investigating the following research questions:

1. What are the key structural and process program features that influence participant teachers' classroom practice in graduate level teacher education?
2. Which structural or process features of graduate teacher education program do in-service teachers perceive help them improve their teaching practice?

The objectives and rationale of this proposed study were derived from existing literature that emphasizes the importance of continuing education for in-service teachers. However, a

majority of past studies did not provide enough empirical evidence to establish a connection between graduate teacher education programs' impacts and improved teaching practices. Even with the lack of such direct empirical evidence, the following review of literature lays out a strong foundation and research-based frameworks about the importance of having graduate teacher education programs for in-service teachers in order to enrich teacher learning, in the interest of improving teaching practice.

## 2. REVIEW OF LITERATURE

Teachers' professional development, including graduate teacher education programs, has been a topic of great interest and debate for the past few decades. To be effective and to have significant impact on teachers' and students' learning, professional development programs need to have clear goals, appropriate planning, measurable outcomes, and continuous assessment (Guskey, 2002). In this context, assessing the impacts of continuing teacher development programs on teachers' learning and practice has sound relevance. Research based on empirical evidence indicate the benefits of teacher development programs, and thus can encourage teachers to consider teacher professional development as process rather than as product: a process that helps teachers learn to perform beyond routine level of understanding and usage or to employ situation appropriate instructional strategies over time; a process of professional growth for enhancing teaching practice and enriching student learning (Baker, Gersten, Dimino, & Griffiths, 2004; Desimone, 2009; Evans, 2002). By carrying out a longitudinal study and using survey data, Schultz, Jones-Walker and Chikkatur (2008) examined how teacher education programs prepared novice urban school teachers to listen, negotiate, and incorporate students' interests in instructional practices. They concluded that the new teachers require special preparation and continuous follow-up supports to build efficient negotiation skills, especially when high stake-testing and standardized curriculum imposes significant time constraints. There are no doubts that teachers need thorough preparation, but without having effective classroom intervention skills such preparation may prove inadequate. After conducting a meta-analysis, John Hattie (2009) proposed that for successful classroom interventions, teachers need to be in an appropriate frame of mind to be able to conceptualize both the purpose of teaching and students' learning simultaneously. Effective professional development programs may be able to prepare

teachers with such an appropriate frame of mind, but the challenge is to find empirical evidence connecting teacher learning with teaching practice.

## **2.1. Impact of Teachers' Professional Development on Teacher Learning and Teaching Practice**

When a teacher engages in a training that focuses and provides the essential supports particular to the teacher's classroom needs, the probability of taking initiatives to improve future practice increases (Abbott, Dunn, & Aberdeen, 2012; Baker et al., 2004; King, 2014). Teacher professional development programs offer teachers access to learn about the latest teaching techniques or potentials skills, and bring effective changes in practice by implementing strategies from the trainings. Through classroom observations and teacher interviews of nine teachers, a study revealed significant improvement in the teachers' instructional practices after completion of the professional development program (Barlow, Frick, Barker, & Phelps, 2014). In another study, in-service teachers worked on the researchers' designed curriculum and developed new training models in fourteen schools in Detroit area; the teachers took active initiatives to modify instruction in order to improve practice and advance students' learning outcome (Fishman, Marx, Best, & Tal, 2003). Selke (2001) proposed that contemporary graduate teacher education programs provide in-service teachers more comprehensive knowledge about teaching, and teachers become more confident to make informed decisions about their practices. She argued that training on action research helps teacher practitioners to consume and produce knowledge more efficiently, and this particular research has a profound role in shaping classroom practices. Another study conducted around the same time by Hallinan and Khmelkov (2001) posited that ongoing in-service training experiences encourage teachers to restructure learning activities or to demonstrate greater willingness for exercising innovative strategies and by doing so, teachers



become active agents in student learning. When professional development allows reasonable time to reflect upon individual learning, it reinforces the newly taught ideas with greater sustainability and ensures mastery of content. A number of other studies confirmed that for effective transformation of theoretical knowledge into instructional practices, teachers need continuous and sustained training support. For example, from a broad metasynthesis review, researchers found strong empirical evidence that continuous mentoring and follow-up coaching to in-service teachers had significant impact on instructional practice and student learning (Dunst, Bruder, & Hamby, 2015). Survey data collected for two years from large numbers of primary and secondary schools of the U.K. also showed that teachers who participated in professional development activities for longer duration were more likely to adapt changes in teaching practice (Boyle, Lamprianou, & Boyle, 2005) than those who did not attend any training.

The increasing demand for technology integration in instruction often challenges teachers' current practices. Based on the findings of comprehensive literature reviews, it was found that programs envisaged technological integration as shifting the focus from mere acquisition of technological knowledge to rationalization in everyday practice that can drive teachers into successful application, resulting in higher professional satisfaction (Karagiorgi & Charalambous, 2006; Lawless & Pellegrino, 2007).

Professional development brings potential changes in teachers' overall outlook and makes practice more inclusive in nature. In a quantitative survey-based study, Male (2011) observed positive changes in in-service teachers' attitudes towards inclusion after completion of 10 weeks of introductory module which was part of a master's program on special and inclusive teacher education. Unlike this result, Koelner and Jacobs (2015) only found moderate impact of

professional development programs on teachers' instruction and student achievement after conducting classroom observations for four years, yet they noted changes in teachers' outlook as better listeners and putting higher value on students' ideas and experiences while making instructional decisions. Such findings strengthen the notion that professional development programs help to improve teachers' perspectives on diversity and aid them in making adjustments in the teaching practices, especially when interacting with a heterogeneous student population.

One important concept embedded deeply in teaching practice is inquiry-based learning. Teachers need to be inquisitive and reflective to make the teaching practice a highly skillful profession. By conducting open and close ended surveys, interviews, and classroom observations, researchers showed that the problem-centered or inquiry-based teacher development programs endow teachers with increasing preparedness while implementing the new state standard-based teaching strategies (Lehman, George, Buchanan, & Rush, 2006; Paik, Zhang, Lundeberg, Eberhardt, Shin, & Zheng, 2011; Powell-Moman & Brown-Schild, 2011). In addition, teachers' ability to be inclusive and to be patient with diverse learners is also essential for effective instruction. Variation in teacher professional program structures may contribute to teachers' learning experiences, thus effecting instructional strategies. This is evident in the research of Tanase and Levitt (2011), who interviewed seven teachers (four Chinese teachers were exposed to more traditionalist teacher education, and three U.S. teachers were exposed more to constructivist teacher education) and irrespective of differences in the training program design. All the participant teachers agreed that graduate teacher training significantly influenced their teaching skills, and they stated that without being confident, teachers might not effectively deliver the learning in practice. Having deep knowledge of a content does not equip a teacher

with necessary skills to make it accessible to students. More importantly, present study material with context can help students to make sense of the taught material. Continuing professional development for an extended period, simultaneously allowing ample time to integrate learned content and newly accomplished instructional tactics into practices eventually enhanced teacher's effectiveness, thus raising professional confidence (Stevens, To, Harris, & Dwyer, 2008).

## **2.2. Role of Teacher Professional Development Program Variables on its Outcome**

Several researchers studied various features of professional development programs during research design in order to properly evaluate such programs' impacts on student achievement (Gusky, 2003) and to gain insight about the challenges that impact fidelity of implementation (Wayne, Yoon, Zhu, Cronen, & Garet, 2008). Researchers used surveys of teacher activity data as part of national evaluation of the Eisenhower Professional Development Program initiative to understand the most effective structural features with greater impact on teachers' knowledge and skills. The study found that intensive and sustained professional development programs that focused on content knowledge, active learning, and integrated training in classroom practices had most significant impact on teachers' knowledge and instructional practices (Garet, Porter, Desimone, Birman, & Yoon, 2001). Collaboration among teacher participants during professional development encouraged teachers to take an inquiry-based learning stance and to become more determined in applying the problem-solving skills to enrich students' learning experiences (Abbott et al., 2012; Ingvarson, Meiers, & Beavis, 2005; Snow-Gerono, 2005). Desimone, Porter, Garet, Yoon, and Birman (2002) also connected collaborate approach in stipulating effective instruction. Teachers engaged students more in team-work after attending programs that value experiencing group work as an active component

in the intellectual endeavor (Colbert et al., 2008). A heuristic approach and objective specific learning enabled the teacher to assist students in developing a more sophisticated expertise for comprehending complex conceptual ideas, as well as strengthening their critical thinking (McNeill & Knight, 2013). Collective and active learning became key components in many advanced professional development programs because exchanging dialogues between teacher participants potentially clears misconceptions and develops a deep understanding of the subject. Desimone et al. (2002) conducted a longitudinal study to evaluate the effect of different professional development program features (structural and core features) on teachers' instruction in mathematics and science. The data collected through surveys showed collective learning along with active learning opportunities in professional development had most significant impact to bring changes in teachers' classroom practices. Similarly, Ingvarson et al. (2005) compiled survey reports from four separate studies under the Australian Government Quality Teacher Program, and the data revealed professional development programs that provided teachers' opportunity to have collaborative examination of students' work and fostered research-based knowledge development impacted teaching practices most significantly. A program that gives prominence to the core reflection of the in-service practitioners inspires them to promote the core qualities of students in shaping and achieving the learning goals (Korthagen, 2004).

Based on these above research findings, this proposed study aimed to find empirical evidence on impact of different graduate teachers' education programs and their key features on teachers' practices using following research design and methods.

### **3. RESEARCH DESIGN, DATA COLLECTION, DATA ANALYSIS**

#### **3.1. Methodological Approach**

This study followed a mixed methodology approach: close-ended teacher survey and open-ended teacher interview. Hong (2010) cites Creswell (2003) in identifying that the mixed-method can be used as a “qualitative dominant concurrent triangulation strategy,” (p. 1535) in which the quantitative data complements the qualitative data. For this study’s context, the use of mixed-methodology was for triangulation purpose (Hendricks, 2013) to provide validity by corroborating and integrating findings. In addition, the study followed a research framework based on the concept of phenomenological approach. Such an approach is best suited with this research because it was aimed to reveal not only what teachers experienced, but also explain how they perceived their own learning (Colbert et al., 2008; Patton, 2002; Snow-Gerono, 2005). Using a sample of 34 in-service teachers, the survey investigated how graduate teacher education program features might have impacted in-service teachers’ teaching practices. Qualitative data was added to this statistical framework via in-depth, semi-structured teacher interviews conducted over telephone. However, only two open-ended interview data were included in the current study.

#### **3.2. Research Questions Addressed**

1. What are the key structural and process program features that influence participant teachers’ classroom practice in graduate level teacher education?
2. Which structural or process features of graduate teacher education program do in-service teachers perceive help them improve their teaching practice?

### **3.3. Research Participants, Selection Criteria, and Contact Process**

**3.3.1. Participants.** In-service teachers are primary beneficiaries of this research; therefore, engaging and incorporating their voices in the research was essential to ensure the research validity. Lampert (2010) stated professional institutions are all about the “practice and practitioners” (p. 23). This justifies soliciting information from teachers either enrolled during the data collection of this current study or recently graduated from a master’s degree program for licensed teachers. Collecting data from both enrolled or recently graduated teacher increase neutrality and confirmability because the participants had either partial or full experience of the graduate study, thus ensured teacher reflection would demonstrate the impact of graduate study on teaching practices. The teacher participants of this research were 34 in-service teachers from 15 different graduate teacher education programs of North Dakota, South Dakota, Minnesota, Illinois, and Michigan. The participants included teachers who were enrolled in graduate teacher education program (during data collection) or recently had graduated from the following 15 programs: North Dakota State University, University of North Dakota, Valley City State University, Mayville State University, University of Mary, Minot State University, University of Jamestown, Minnesota State University Moorhead, Bethel University, Concordia University St. Paul, Concordia University Chicago, Concordia University Ann. Arbor, Saint Cloud State University, University of South Dakota, and South Dakota State University.

**3.3.2. Selection Criteria.** The inclusion criteria for the current research were to have 34 in-service teachers from elementary, middle, and high schools (4<sup>th</sup> - 12<sup>th</sup> grades) who were either enrolled in time of the study or have participated in graduate teacher education programs. In addition, the participant teachers were needed to be fluent in English in order to understand to give consent to participate in the teacher surveys, teacher interviews. Participant selection was

also based on availability, and participation was voluntary. By following the criteria, the aim was to reach a diverse population, as well as to make the research inclusive in nature in order to simulate the larger societal configuration. This variability assured that the proposed research has potential to be replicated in other settings with different participants, which would confirm higher applicability and consistency.

**3.3.3. Contact Process.** Invitation letters were sent to 17 graduate program coordinators requesting they send a message to their graduate teacher education students. Out of 17, two programs declined to participate due to conflict of interests. Informed consent was garnered as part of the survey process. At the end of surveys, participants were asked if they would be willing to participate in a semi-structured interview later. Out of initial 34 participants, two participants agreed and completed the interview process. All research participants were provided with written descriptions of the research procedures, expectations for its participants, and the probable research-related consequences prior to implementation of any research procedure.

### **3.4. Data Collection**

**3.4.1. Participants' Demographics and Program Information.** Several past research studies have found that the research participants' background variables as well as the program features have an influence on teachers' professional development program outcome (Desimone et al., 2002; Wayne et al., 2008). Therefore, without acknowledging such information this experiment's outcomes will be confounded and may put a limitation for making judgments on effectiveness of graduate teacher education programs. Information about programs' structural and process features such as program time span, type of core courses, nature of course activities (e.g. group work activities, reflective assignments etc.), and course modules that earlier researchers have found important were collected through the survey questionnaire. Additionally,

teacher participants' demographic information like age, gender, and years of work experience were also obtained through survey questionnaire. This information helped to answer research question that whether or not the background variables have any influence on participant teachers' teaching practice.

**3.4.2. Teacher Survey and Interview.** Teacher survey questions (Appendix A) elicited information related to graduate program's structural or process features that assumingly have impacts on teachers' practices or on the program's outcomes (Desimone, Garet, Birman, Porter, & Yoon, 2003). Surveys contained close-ended questions related to 1) participants background variables, 2) graduate program structural features and 3) identifying association, if any, between the graduate program features (structure and process) and subsequent changes in the participant teacher's instructional practice. Previous research by Boyle et al. (2005) measured the impact of professional development programs on teaching strategies by administering four different categorized survey questions and emphasized on both qualitative and quantitative questions. Based on their research findings and administered methodologies, the survey questions of the current research were constructed. Furthermore, the survey questions related to important structural and process features of the graduate teacher education program were constructed based on the outcomes of other research, which have focused on the impact of different program variables on teaching outcomes (Garet et al. 2001; Ingvarson, Meiers, & Beavis, 2005). These researchers suggested the positive impacts of collaborative learning, field experience, community learning, and use of media on teaching practices. In the present study, the framework (participant's background variables, categories, four-point scale) of survey questionnaire focused on various aspects of graduate teacher education program's process features (i.e. active learning, content focus, feedback, instructional strategies). The structural features (i.e. total credit hours,



type of courses offered, course delivery format, collaborative learning, thesis/non-thesis requirement) and were developed based on the research strategies employed by Garet et al. (2001) and Ingvarson et al. (2005). The close-ended survey data helped to investigate the role of key program and process features of a graduate teacher education program's influence on in-service teachers' teaching practices.

The interview questionnaire was an alternative version of the survey questionnaire and was intended to elaborate participants' perceptions of graduate learning, as well as to improve the validity and reliability of the proposed study. The interview reaffirmed and cross-examined the findings from the survey questionnaire through use of triangulation method. The open-ended questions of the interview were designed based on the objectives and primary research questions of this study, especially to find out the impact of different program features on teaching practices. The basic outlines of the interview questions were generated based on the qualitative research approach adopted by Ross, McDougall, and Hogaboam-Gray (2002) and Goodell, Parker, and Butler Kahle (2000). In open-ended interview questions the scope to understand the impact of program features on teaching practices has been extended and expanded, as participant teachers had greater freedom to answer the questions according to their judgments. In this current research, 34 in-service teachers participated in close-ended survey questionnaire. However, only two participated in open ended interview (Appendix B). Even with the limited number of participants, the interview process helped to answer both research questions about what process or structure features would have most influence on participants' teaching practice.

### **3.5. Timeline for Data Collection**

The duration of this proposed research was four months. In March 2017, the researcher applied for North Dakota State University IRB approval. Upon receiving the approval (March,

2017), the researcher contacted graduate program coordinators of 17 different graduate education programs in North Dakota, South Dakota, Minnesota, Illinois, and Michigan. The survey and interviews were conducted between April 2017- July 2017, and data were collected and analyzed by August 2017.

### **3.6. Data Analysis**

**3.6.1. Quantitative Data (Survey) Analysis:** For background variables and graduate program feature variables, the total number of respondents was summed and percentage was calculated. Responses on graduate program features from teacher surveys were collected using different rating scales (strongly disagree, disagree, agree and strongly agree). The Likert's scale responses were converted in quantitative forms (strongly disagree=1, disagree=2, agree=3, and strongly agree=4) and frequency, percentage, mean, variance, and standard deviation were calculated (Desimone et al., 2003). The other survey responses on structural and process features of graduate program were collected as binary data (present/absent and yes/no), and frequency and percentage were calculated.

**3.6.2. Qualitative Data (Interview) Analysis:** The interviews were transcribed. The transcripts were coded in the form of short phrases or words, under different concepts such as “student assessment”, “transforming knowledge”, “advancing teaching practices”, “collaborative learning”, “motivation”, “confidence” and “feedback” (Abbott et al., 2012; Colbert et al., 2008). In the close-ended survey questionnaire, 34 participants responded, while only two participants voluntarily agreed to be participated in the interview process.. Pseudonym were given to the two participants of the interview process as Thomas and Beth. Interview data were coded in different phrases under multiple themes and categories, and each transcript was read several times. According to Strauss and Corbin (1990) labeling concepts as “phenomena” help to

“examine and ask questions about those phenomena” (p. 62). It is also important to find a relationship between different concepts for deduction of qualitative information. Based on the guideline provided by Strauss and Corbin (1990), phrases and quotes were highlighted in each reading to focus on major responses and to find the important concepts about the impact of graduate teacher education program and its features on teaching practices. Following that similar concepts were grouped together and placed under different categories to understand the impact of different process and structural features of graduate teacher education program on participants teaching practices.

## 4. FINDINGS

### 4.1. Background Variables of Participants

The purpose of this mixed-methodology study was to find the impact of different structural and process features of graduate education program on participant teachers' teaching practices. Several previous studies (Wayne et al., 2008; Desimone et al., 2002) have reported that background variables of teacher participants have significant influence on their research outcomes. Based on that previous findings and rationale, background information of 34 in-service teacher participants was collected through survey questionnaire and presented in Table 1. Among survey respondents, 26 (76%) were female and 8 (24%) were male. The ages of the participants ranged from 20-30 to over 50 years old with the highest percentage in the 20-30 years age group (50%), followed by 31-40 years (29.4%), 41-50 years (14.7 %), and above 50 years (5.9%). In this study, 23.5% participants were teaching at elementary level, while 67.7 % at middle schools, and 8.8% at K-12. Information on the major subject area that participants were teaching in the schools was also collected and most of the participants of this research were teaching science (27.6%), mathematics (20.7%), social science (10.4%), English language and arts (6.9%), physical education (6.9%), and other (27.5%) subjects such as agricultural education and family and consumer science. In general, constant professional support is required to reduce teacher attrition rate, especially to retain beginner teachers in the profession (Avalos, 2011). In this study, most of the respondents had less than 5 years (47.1%) of teaching experience followed by 6-10 years (32.3%), while only 8.8% had 11-15 years and 11.8% had over 16 years of teaching experience. The information regarding school settings of the participant teachers were also collected, and were almost evenly divided between rural (45.7%) and urban (37.1%) school settings with only 11.4 % from suburban schools.

Table 1

*Background and graduate program variables of the participants (N= 34)*

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b><i>Sex</i></b>		
Male	8	24
Female	26	76
<b><i>Age of Participants</i></b>		
Between 20-30 years	17	50.0
Between 31-40 years	10	29.40
Between 41-50 years	5	14.7
Above 50 years	2	5.9
<b><i>Levels of Teaching</i></b>		
Elementary	8	23.5
Middle School	23	67.7
K-12	3	8.8
<b><i>Subject Area of Teaching</i></b>		
English Language/Art	2	6.86
Math	6	20.69
Physical Education	2	6.93
Science	8	27.59
Social Science	3	10.38
Other	8	27.55
<b><i>Years of Teaching Experience</i></b>		
Less than 5 years	16	47.1
6-10 years	11	32.3
11-15 years	3	8.8
Over 16 years	4	11.8
<b><i>School Setting</i></b>		
Rural	16	45.1
Suburban	4	11.8
Urban	13	38.2
No Response	1	2.9
<b><i>Status of graduate program</i></b>		
Completed	6	17.6
Currently Enrolled	28	82.4
<b><i>Number of credits completed (N=28)</i></b>		
More than 18 credits	14	50.0
10-18 credits	5	17.86
0-9 credits	9	32.14
<b><i>Number of Online course (N=33)</i></b>		
0-4	13	39.4
4-10	11	33.3
More than 10 or all	10	30.3

Table 1. *Background and graduate program variables of the participants (N= 34) (continued)*

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b><i>Graduate Program Requirement (N=33)</i></b>		
With Thesis	23	69.7
Non-Thesis/Practicum	9	27.3
Other (Internship)	1	3.0

The majorities (82.4%) of the participants of this study were enrolled in the graduate teacher education program during the survey, and 17.6% had completed their graduate teacher education program degree requirements. Among participants who were enrolled in graduate teacher education program during data collection, about 50% had completed more than 18 hours course credits of graduate teacher education program requirements, while 17.8% completed 10-18 credits, and 32.1% completed only 0-9 credits. Currently, most of the graduate teacher education programs offer significant numbers of online courses to help in-service teachers pursuing higher education without disrupting their professional teaching commitments (Allen & Seaman, 2013). Among participants, 30.3% took more than 10 online credits, 33.3% took 4-10 online credits, and 39.4% took 0-4 online credits. Many education policy makers have highlighted the importance of thesis requirements in graduate education programs to improve overall learning and teaching practices of in-service teachers (Darling-Hammond, 2006). In this study, the majority of participants (69.7%) were enrolled in graduate program, opted for thesis requirement, while only 27.3% were from non-thesis/practicum requirement.

#### **4.2. Graduate Program Features Variable and Teachers Learning**

For in-service teachers, the major goal for pursuing higher education such as graduate teacher education program is for improving their overall teaching practices and to advance career goals (Cohen, 1995; Darling-Hammond, 2008). Therefore, understanding the influence of graduate teacher education program on participant teachers teaching practices has significant

merit. In the survey questionnaire, teacher participants were asked about the influence of graduate teacher education program on their learning and teaching practices by responding whether they strongly agree, agree, disagree, or strongly disagree about the changes they noticed (Table 2). Among participants, the majority (75%) agreed that graduate teacher education program identified and supported areas where teaching needed improvement, and 12.5% strongly agreed, and 12.5% disagreed. Similarly, 64.5% agreed and 29% strongly agreed that graduate teacher education program enabled them to challenge their current teaching practices, and 6.4% disagreed. The survey questionnaire of the current study also included the characteristics of the curriculum of the graduate teacher education program.

The majority of participants either agreed (67.7%) or strongly agreed (25.8%) that learning activities of graduate teacher education program were inquiry based and reflective, while 6.4% disagreed. As the demographic of the student population of most schools in the United States is changing rapidly, knowledge for teaching and working with diverse student populations is becoming an important yardstick (Gay, 2010). In this current study, 48.4% of respondents agreed and 25.8% strongly agreed that their graduate teacher education program helped them to improve their interactions with diverse student population.

However, 22.6% disagreed, and 3.2% strongly disagreed in their response to this survey question. Self-evaluation is also an important skill for professional growth and development including teaching profession (Ozga, 2009). In the current study, most participants either agreed (70.9%) or strongly agreed (25.8%) that graduate education program helped them to evaluate the strengths and weaknesses of their current teaching method. Developing own beliefs for classroom teaching is important (Tillema, 2000), and 58.0% participants of this survey agreed and 38.7% strongly agreed that their graduate teacher education program motivated them to

investigate, modify, and generate own beliefs about classroom teaching, however only 3.2% disagreed.

Table 2

*Impact of graduate teacher education program features on teachers' learning*

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>	<b>Mean (<math>\mu</math>)</b>	<b>Variance (<math>\sigma^2</math>)</b>	<b>Standard Deviation (<math>\sigma</math>)</b>
<b><i>Identified and supported areas where teaching needed improvement</i></b>					
Strongly Agree	4	12.5	3	0.25	0.5
Agree	24	75.0			
Disagree	4	12.5			
Strongly Disagree	0	0			
<b><i>Provided with information that challenged assumption about present practice</i></b>					
Strongly Agree	9	29.03	3.22	0.30	0.55
Agree	20	64.51			
Disagree	2	6.45			
Strongly Disagree	0	0			
<b><i>Learning activities are inquiry based and reflective</i></b>					
Strongly Agree	8	25.80	3.19	0.28	0.53
Agree	21	67.74			
Disagree	2	6.46			
Strongly Disagree	0	0			
<b><i>Increased knowledge about working diverse student population</i></b>					
Strongly Agree	8	25.80	2.96	0.61	0.78
Agree	15	48.38			
Disagree	7	22.58			
Strongly Disagree	1	3.22			
<b><i>Helped to evaluate the strength and weakness of current teaching method</i></b>					
Strongly Agree	8	25.80	3.22	0.23	0.49
Agree	22	70.97			
Disagree	1	3.23			
Strongly Disagree	0	0			



Table 2. *Impact of graduate teacher education program features on teachers' learning*

(continued)

Variable	Frequency (n)	Percentage (%)	Mean ( $\mu$ )	Variance ( $\sigma^2$ )	Standard Deviation ( $\sigma$ )
<b><i>Motivated to investigate, modify, and generate own beliefs about classroom practice</i></b>					
Strongly Agree	12	38.71	3.35	0.29	0.54
Agree	18	58.06			
Disagree	1	3.23			
Strongly Disagree	0	0			
<b><i>Learned to emphasize role to teacher as facilitator and considering students as co-learner</i></b>					
Strongly Agree	8	25.80	3.06	0.44	0.67
Agree	17	54.83			
Disagree	6	19.35			
Strongly Disagree	0	0			
<b><i>Helped to make changes in teaching performances</i></b>					
Strongly Agree	9	29.03	3.29	0.20	0.49
Agree	22	70.97			
Disagree	0	0			
Strongly Disagree	0	0			
<b><i>Helped to improve confidence about teaching</i></b>					
Strongly Agree	9	28.15	3.18	0.34	0.58
Agree	20	62.5			
Disagree	3	9.37			
Strongly Disagree	0	0			

Most of the teacher participants also agreed (54.8%) or strongly agreed (25.8%) that their graduate teacher education program had positive influence and emphasized the role of teacher as facilitator and students as co-learner. However, a considerable number of teacher participants (19.3%) disagreed in their response. Almost all either agreed or strongly agreed (70.9 % and 20.1% respectively) that graduate teacher education program helped them to change their

teaching performances. Similarly, a majority agreed (62.5%) and strongly agreed (28.1%) that not only just teaching method but also their confidence improved after completing or enrolling in graduate teacher education program. The survey responses of this study showed that overall graduate teacher education programs had a positive influence on in-service teachers teaching practices and towards shaping their teaching philosophies.

#### **4.3. Graduate Teacher Education Program Features**

One major aim of this current study was to identify important features of graduate teacher education program that have significant impact on in-service teachers' teaching practices. In a close-ended survey questionnaire, participant teachers were asked to identify the features of their respective graduate teacher education program by responding either "present" or "absent" for each feature (Table 3). The majority of participants identified that their respective graduate teacher education program had a sense of community (72%), field based learning experience (65.6%), knowledge of educational media (72%), collaborative learning (90.6%), active student participation (96.8%), adapted instruction to student needs (81.2%), research based instruction (93.7%), monitoring of student progress (90.6%), and verbal and written feedback (100%) from faculty advisor. The majority (54.8%) responded that learning about ethnically diverse student was present in their graduate teacher education program however, 45.2% participants also responded that this feature was absent.

#### **4.4. Skills Taught in Graduate Teacher Education Program**

It is important to develop new skill sets or improve existing skills in any profession, and the teaching profession is not an exception to this (Borko, 2004; Colbert et al., 2008). Graduate teacher education programs must assist in-service teachers to hone skills and be up to date with current teaching theories and practices (Desimone, 2009). In this current study, participants were

asked to respond by “yes” or “no” to different teaching skills they perceived to be acquired from their respective graduate teacher education program (Table 4).

Table 3

*Graduate teacher education program features*

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b><i>A Sense of community</i></b>		
Present	23	72
Absent	9	28
<b><i>Field based learning experience</i></b>		
Present	21	65.6
Absent	11	34.4
<b><i>Educational media</i></b>		
Present	23	72
Absent	9	28
<b><i>Collaborative learning</i></b>		
Present	29	90.6
Absent	3	9.4
<b><i>Active student participation</i></b>		
Present	31	96.8
Absent	1	3.2
<b><i>Adapting instruction to student needs</i></b>		
Present	26	81.2
Absent	6	18.06
<b><i>Ethnically diverse students</i></b>		
Present	17	54.8
Absent	14	45.2
<b><i>Research based instruction</i></b>		
Present	30	93.7
Absent	2	6.7
<b><i>Monitoring of student progress</i></b>		
Present	29	90.6
Absent	3	8.4
<b><i>Verbal or written feedback from faculty advisor</i></b>		
Present	32	100.0
Absent	0	0

Table 4

*Skills taught in graduate teacher education program*

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b><i>Planning engaging lessons</i></b>		
Yes	24	75
No	8	25
<b><i>Designing lessons for diverse learners</i></b>		
Yes	24	75
No	8	25
<b><i>Teaching higher order thinking</i></b>		
Yes	27	84.4
No	5	15.6
<b><i>Using educational technology</i></b>		
Yes	26	81.2
No	6	18.8
<b><i>Building on prior knowledge</i></b>		
Yes	29	90.6
No	3	8.4
<b><i>Supporting problem solving and critical thinking skills</i></b>		
Yes	29	90.6
No	3	8.4
<b><i>Identifying instructional strategies based on student learning</i></b>		
Yes	28	87.5
No	4	12.5
<b><i>Facilitating group learning activities</i></b>		
Yes	28	87.5
No	4	12.5
<b><i>Providing verbal and written feedback</i></b>		
Yes	26	81.2
No	6	18.8
<b><i>Managing diverse student population</i></b>		
Yes	26	81.2
No	6	18.8

The majority of participants responded “yes” to skills such as planning engaging lessons (75%), designing lessons for diverse learners (75%), teaching higher order thinking (84.4%), using educational technology (81.2%), building on prior knowledge (90.6%), supporting problem

solving and critical thinking (90.6%), identifying instructional strategies based on student learning (87.5%), facilitating group learning activities (87.5%), providing verbal and written feedback (81.2%), and managing diverse student population (81.2%). These skills are important to advance teaching competency and to achieve professional goals for in-service teachers (Teekens, 2003). The survey data from this study revealed that a majority of graduate programs have a focus on these above mentioned skills and have a positive influence on teacher participants' overall learning.

#### **4.5. Qualitative Data (Interview)**

Themes from the two interviews were based on repetitive responses. They were labeled “student assessment”, “transforming knowledge”, “advancing teaching practices”, “collaborative learning” “motivation” “confidence” and “feedback” to transcribe the interviews. The information obtained from interview process was limited; however, the responses to open-ended questions by the two participants (Thomas and Beth) about the impact of graduate teacher education program on their teaching practices were corroborated with the quantitative survey data of 34 respondents. Both participants identified that graduate teachers education program helped them to improve student assessment and transform their overall teaching practices. When asked about the major impact of graduate teacher education program on their teaching practices, Thomas responded, “the biggest takeaway from graduate student education program was to know how to assess student learning and how to design effective assessment plan.” Thomas also emphasized that in general the program helped to improve his curriculum design by making more “prudent lesson plans.” Having better classroom management strategy is essential to create better learning environment and to improve effectiveness of teaching and learning (Clunies-Ross, Little, & Kienhuis, 2008). Thomas acknowledged that graduate teacher education program,

especially learning about educational psychology immensely helped to improve overall classroom management and stated that “choosing appropriate consequences for student action based on my understanding of adolescence development is very effective.” According to Thomas, the main learning was to understand why students react or behave in certain ways and improved understanding about the root cause of students’ behavior.

Both respondents also acknowledged that having research-based and collaborative learning is important to advance and improve their current teaching practices. Beth emphasized that graduate teacher education program not only facilitated collaborative learning, but also helped her to understand “precision partnership” for building effective and objective-based collaborations with peers to advance student learning. It is widely accepted that promoting critical or higher order thinking of students by facilitating active learning is an effective teaching strategy (Dam & Volman, 2004; Walker, 2003). Thomas highlighted that graduate teacher education program helped to design lesson plans that would promote higher order thinking and mentioned “learned better lesson planning to make students think critically without directly prompting them” while Beth stated “curriculum planning and learning about student assessment is very helpful.” Both participants also emphasized that their overall confidence with teaching improved after pursuing graduate teacher education program and advanced their knowledge on different teaching methods. Teacher participants also perceived that interacting with other students from graduate teacher education program was very helpful and widened their general views of education and teaching practices. Beth stated that “interactions with peers helped to have better understanding on what other teachers are doing and what going on in education nationwide” and also helped “to reflect more on teaching and student success.” When asked about the impact of different structural and process features of graduate teacher education

program, Beth responded, “learning about current educational tools such as teaching management software is very helpful”. The other important takeaway of graduate teacher education program that both Thomas and Beth acknowledged was “learning about managing diverse student population”. Beth specifically emphasized that “it helped to understand the cultural and ethnic background of the student population” and to “incorporate that learning in classroom management”. Both participants also acknowledged that graduate teacher education program helped them to “master in contextualizing content and to use it effectively in the classroom” and also to reflect on “why student need to learn a specific content.” Overall Thomas and Beth agreed that graduate teacher education program improved their well-rounded knowledge about education and teaching practices as Beth mentioned “gave me well-rounded better perspective of educational field”. Furthermore, Beth also stated about the purpose of pursuing graduate teacher education program as “I needed to continue study and research and graduate teacher education provided that opportunity.” However, about the limitation, Beth said that graduate teacher education program should also help to learn about “how to work with parents and to bring them in the process of learning”.

## **5. DISCUSSION, LIMITATIONS, CONCLUSION**

### **5.1. Discussion**

Professional development programs such as graduate teacher education program foster formal and informal learning of in-service teachers and provide necessary tools to improve overall teaching practices (Karagiorgi & Symeou, 2008; Maaranen, 2010). Teaching as a profession requires continuous learning and improving existing skills, especially to cope with changing student demography, technological advancements, and new pedagogic theories and practices (Desimone, 2009; Hallinan & Khmelkov, 2001). However, due to the lack of significant empirical evidences, sufficient resources have not been diverted towards in-service teachers' professional development programs (Darling-Hammond et al., 2002). Therefore, understanding and evaluating the impact of graduate teacher education program to improve in-service teachers teaching practices has sound relevance (Hammerness et al., 2005). Based on such needs to have more empirical evidence to determine the impact of graduate teacher education program on in-service teachers teaching practices, this current study used a mixed methodology (quantitative and qualitative) approach to obtain a more comprehensive understanding about different process and structural features that might have a positive influence on improving teaching practices.

The majority of participants of this study were female, less than 40 years of age, and taught in a middle school. One of the objectives of this study was to include a diverse teacher population that would match the gender and age of teachers nationally and, therefore, have had relevance to replicate this research in other U.S. states. The higher percentage of female teachers less than 40 years of age found in this current survey approximately matches the national average on gender proportions of teacher and teacher age group distribution (NCES, 2013). Previous



studies highlighted that lack of enough teaching experience might influence mastery of the content as well as overall teaching efficacy (Hoy & Spero, 2005). However, they also reported that participating in teacher preparation programs in early career had a positive impact on improving teaching efficacy and practices (Hoy & Spero, 2005). Additionally, the majority of participants in this study had less than 10 years of teaching experience. Pursuing graduate teacher education program in early career might have positive influence on improving instructional efficiency especially when consistent supports are required to build confidence (Schultz et al., 2008). Therefore, receiving professional supports and motivation from graduate teacher education programs might have a positive influence in the teaching practices of most participants of the current study. Furthermore, most of the participants were enrolled in a graduate teacher education program during data collection and had partially completed their degree requirement. The partial completion of the degree of majority participants of this study might have a confounding effect towards research outcomes, as they might not be able to fully comprehend the influence of graduate teacher education program on their teaching practices.

Many studies and reports emphasized the importance of action research and other research-based learning activities for in-service teachers to have better knowledge and preparation about contemporary teaching methods (Hine, 2013; Stringer, 2014). The majority of participants responded that they opted for the thesis option in their graduate teacher education program, and both interview participants acknowledged that conducting research helped them to widen their views on contemporary teaching methods. In this study, participants also perceived that graduate teacher education program instructions were mostly research based and emphasized field based learning activities. However, the participants' response toward field based learning activities was lower than other features. This might be due to lack of identification by the

participants that field based learning or contextualization were embedded in different learning process of graduate teacher education programs. Benefits of research and field-based experiences to improve teaching practices and subsequent improvement of student performances were reported previously (Borko et al., 1997; Putnam & Borko, 2000). Therefore, based on the findings of the current study, we can assume that research and field-based learning experiences and opting a thesis as part of the degree requirement could have a positive influence on their teaching practices and that would eventually enhance student learning outcomes (Darling-Hammond & Youngs, 2002; Putnam & Borko, 2000). Research and problem-based learning help to re-examine the efficacy of current teaching practices consistently and motivate in-service teachers to make adjustments in instructional practices (Freeman, 2002).

On the survey questionnaire, the majority of participants acknowledged that pursuing graduate teacher education program had a positive influence on their overall learning and improved their teaching practices. Abbott et al. (2012) previously emphasized that pursuing graduate teacher education is essential to advance future classroom practices, especially to enhance critical thinking and to investigate their own teaching methods. In this study, most participants perceived that their graduate teacher education program had a positive influence on their teaching practices and helped them to identify the “strengths and weaknesses of current teaching practices.” Similarly most participants agreed that their teacher education program “identified and supported areas where teaching needed improvement” and provided them with information that “challenged assumption about present practice.” Earlier research suggested that self-evaluation and reflection of current practices is an important criteria to make necessary changes in teaching practices, especially for facilitating student learning (Capizzi, Wehby, & Sandmel, 2010; Sutherland & Wehby, 2001). In-service teachers require constant support and

necessary tools to take active initiatives for changing their teaching practices, and most professional development programs, including teacher education programs, are intended to provide such supports (Baker et al., 2004; Fishman et al., 2003; King, 2014). The current study reaffirmed that graduate teacher education programs provided those necessary tools and increased confidence in the participants for critically reflecting on their current instructional practices to make necessary changes. Interview data also confirmed this finding, as Thomas and Beth both mentioned that their graduate teacher education program helped them to make changes such as developing more effective student assessment plan, designing prudent lesson plans, and developing effective classroom intervention strategies. Therefore, both survey and interview data indicated that most participants perceived that they were able to translate their learning from their graduate teacher education program into their teaching practices especially for designing classroom lessons and classroom management plans. Willingness to make changes in teaching practices has a broader impact of improving overall instructional practices and ability to adapt quickly to new teaching methods and technologies (Vescio, Ross, & Adams, 2008). Ultimately, desire to make changes in teaching practices comes from the goal to have a positive influence on student learning and achievement (William, Lee, Harrison, & Black, 2004).

Teachers also make changes or modifications in their existing teaching practices from the belief that it is going to improve student learning and behavior (Thoonen, Slegers, Oort, Peetsma, & Geijsel, 2011). This research suggested that graduate teacher education programs had a positive influence on teacher participants that can lead to better student learning outcomes. The positive responses of the participants of this current study to “the adapting instruction to student needs” and “identifying instructional strategies based on student learning” also supported the above statement, as most participants perceived that graduate teacher education program

helped them to modify instruction based on student needs. Adjusting teaching style to provide different levels of support and to reflect the needs of students is essential to foster student learning and achieving Common Core Standards of districts and states (Levy, 2008). Previous studies emphasized that “differentiated pacing on instruction based on both the content and the characteristics of the learners” is closely associated with student achievement (Louis, Dretzke, & Wahlstrom, 2010). Therefore, graduate teacher education programs that enable teachers to adapt and change instruction according to student needs might have positive impact on both student learning and student achievement.

Adapting changes to instructional practices, especially to integrate new teaching methods also requires confidence about teaching, self-efficacy beliefs and building own classroom beliefs (Ertmer & Ottenbreit-Leftwich, 2010; Wang, Ertmer, & Newby, 2004). In this study most participants perceived that their graduate teacher education program helped them to build “confidence about teaching” and supported “to generate own beliefs about classroom practice.” To show competence in teaching skills, the mastery of content is not sufficient and required significant confidence to contextualize and deliver the content in effective forms (Onafowara, 2005). Therefore, building strong confidence about teaching practices can help in-service teachers to advance their career goals.

The inquiry-based and reflective learning of graduate teacher education programs also had an effective and positive impact on the majority of in-service teacher participants’ perceptions of their teaching practices. To maintain professional growth teachers’ need to be inquisitive and reflective about their teaching practices (Healey, 2005). As inquiry and problem-based learning is “learner-centered,” it provides significant supports to the learner (Savery, 2015). In the context of the present study, the supports addressed professional needs of the

participant teachers. Perceiving positive influence of inquiry and reflective learning from graduate teacher education program also can help in-service teachers to apply such learner-centered approaches to their own teaching methods. Previous research also observed that inquiry-based teacher development programs enhanced preparedness of teachers, which had a positive influence during implementing new teaching strategies (Paik et al., 2011). Therefore, findings of this current study indicate that pursuing graduate teacher education program might have relevance for improving in-service teachers' preparedness while implementing new state standards in their instruction.

Most teacher participants in this current study also believed that “teachers act as facilitator and students are co-learner”. They also perceived that their graduate teacher education program encouraged them to plan more “engaging lessons” and to have “active student participation in the learning activities”. Previous research noted that professional development programs helped teachers to value students' ideas and experiences when making instructional decisions (Koelner and Jacobs, 2015). Similarly, improved attitude of teachers to involve students in instructional practices was observed after completion of 10 weeks of introductory graduate course (Male, 2011). The findings of the current study about in-service teachers' perception about the influence of graduate teacher education programs to improve student inclusion in instructional practices corroborated previous observations. High degree of cooperation between teachers and students is essential to create coherent and effective learning environment (Solis, Vaughn, Swanson, & Mcculley, 2012). Involving students in teaching practices creates a better classroom environment, which facilitates student learning and achievement. One of the major challenge in-service teachers face in the classroom, especially beginner teachers', is to build better cooperation with the students (Wubbels & Brekemans,

2005). Learning necessary tools from graduate teacher education programs to improve overall classroom environment has significant relevance both for advancing instructional efficiency and promoting student learning.

Previous researchers have also identified the positive impact of collaborative learning on teaching practices (Abbott et al., 2012; Ingvarson, Meiers, & Beavis, 2005; Snow-Gerono, 2005). The findings of the current study suggested that most participants perceived that their respective graduate teacher education program encouraged “collaborative learning” and helped them to develop a “sense of community” in the classroom. Collaborative learning can promote inquiry-based learning stance and help to implement effective instructional strategies (Desimone et al., 2002; Snow-Gerono, 2005). Experiencing group work in collaborative learning is an active component of intellectual endeavor (Colbert et al., 2008) and one interview participant, Beth, acknowledged that interacting with other peers of graduate teacher education program during group-work activities has had a profound impact on teaching practices. Teachers would also be more willing to implement group and collaborative activities in their own classrooms after experiencing valuable and positive impact of collaborative learning from graduate teacher education program. Such effective instructional strategies of encouraging collaborative learning can enrich students’ overall learning experiences and can help them to build effective social and communication skills (Ingvarson, Meiers, & Beavis, 2005).

In this current study, when participants were asked about the designing lessons for diverse classroom learners, the majority of participants responded positively. They perceived that their graduate teacher education program had a positive influence in building instructional strategies for diverse learners. Teachers’ interpersonal behavior skill is critical for advancing student learning in multicultural classroom (Brok & Levy, 2005). The student population of the

schools across U.S. is becoming more diverse, and teachers must be better prepared to manage classroom with diverse learners (Groski, Davis, & Reiter, 2012). The results from the current study suggest that pursuing graduate teacher education program can help in-service teachers to build required skills and confidence to manage classrooms with diverse learners. Beth indicated in the interview that her graduate teacher education program helped to understand the background of the students and to design lesson plans according to students' cultural and ethnic origin. In order to plan effective instruction in multicultural classroom and to engage students in active learning, teachers need to be well informed about the ethnic and cultural background of their students.

Another challenge contemporary teachers are facing is effective and judicious integration of technology in the classroom practices (Buabeng-Andoh, 2012; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012). Most participants perceived that graduate teacher education program helped them to learn about the effective use of technologies in the classroom. The main challenge is most contemporary teachers developed their mastery of content without much integration of technologies during their own schooling and higher studies experiences (Ruggiero & Mong, 2015). Technology integration does not always match with the teaching practices, and teachers need special skills to blend them together in instructional practices. Therefore, graduate teacher education programs that help in-service teachers to integrate technology in their classroom practices and to rationalize the proper use of technology have significant impact on learning outcomes of both teachers and students (Karagiorgi & Charalambous, 2006).

In the current study, participants also responded that different skills such as higher order thinking, building prior knowledge, and building critical thinking and problem solving skills improved after participating in their graduate teacher education programs. Schultz, Jones-Walker

and Chikkatur (2008) emphasized the importance of proper training for in-service teachers to improve required skills for building cohesive and coherent instructional strategies. Learning necessary tools from graduate teacher education programs has a positive impact on teaching practices.

Furthermore, identifying the importance of different features of the graduate teacher education program has relevance for developing future strategies to design well-structured graduate teacher education programs. The findings of the current study indicate that most graduate teacher education programs in this study are well rounded and have the necessary features to improve in-service teachers teaching practices. These above-mentioned findings partially answered the research questions of the current study and provided insights on the significance of pursuing graduate teacher education to improve overall teaching practices of in-service teachers. Due to lack of enough qualitative data, the conclusion drawn in the present study is based mostly on quantitative data from the survey questionnaire. Future research with wider in-service teacher population from different teacher education programs and geographical locations along with more qualitative data will be helpful in developing more conclusive statements and inferences. Observing teachers in the classroom following their graduation from teacher education program and inclusion of data related to students' perception about changes in teaching practices could further strengthen the scope and outcomes of this research.

## **5.2. Limitations**

1. Without having baseline data it is difficult to compare changes of teachers' teaching practices upon finishing their graduate teacher education program or to observe significant changes. Due to time constraints and lack of accessibility to previous data, this study could not able to include baseline data. Additionally, most participants were



enrolled and had not yet completed their graduate teacher education program during their participation in this study. 2. This research primarily relied on teachers' reflection and mostly on quantitative data (close-ended questionnaire survey), and thus might have chances for unintentional biases such as in time of responding to one-ended (binary response) survey questions. Inclusion of student survey, containing students' ratings of teacher's performance/practice in the classroom and more qualitative data might have had positive effect on research outcomes.

2. Research on evaluating graduate teacher education programs' features impacts on teachers' practices is subjected to rigorous empirical scrutiny, thus requires a strong conceptual framework-based research design. Conducting a longitudinal study is imperative in order to gain in-depth understanding about how graduate teacher education programs foster teacher learning, and needs continued tuning of data collection and implementation of refined analysis techniques. Measuring instruction at different points over an extended period might have enhanced the chances to capture changes in average teaching practices.
3. Most of the teacher participants had less than 10 years of teaching experience and were less than 40 years of age and from smaller geographical locations (only five states). These factors might have had a confounding effect on overall research outcomes.
4. According to Guskey (2003), to accurately evaluate the effectiveness of professional development program and to clearly define its goal as improving student learning outcomes, researchers must consider and include different indicators of student achievements such as assessment results, portfolio evaluations, or scores from standardized examinations. Such measures were beyond the scope of this study.

### **5.3. Conclusion**

The evaluation process to measure the impacts of graduate teacher education programs on teachers' teaching practices is resource extensive and complex in nature. However, the present study identified the positive influence of graduate teacher education program features such as field-based, collaborative, and inquiry-based learning on in-service teachers' teaching practices. Overall, the current study was able to determine empirically the impact of graduate teacher education programs for improving teaching practices of in-service teachers. More qualitative data would be useful to strengthen the research outcomes. In addition, policy makers and administrators can use the empirical evidences of this research to identify and use resources for advancing graduate teacher education program with ultimate aim to improve student learning. There are always possibilities of having various confounding factors and unwanted interferences in such investigations, which can make the voices of the educational reform skeptics louder. However, if the theoretical framework as well as the design of the research is derived from well-understood principles based on previous research findings, then the impact evaluation eventually becomes a powerful tool (Earley & Porritt, 2014; Zehetmeier, 2015). Building the research skills and theoretical knowledge pertinent to evaluate the impacts of program features of graduate teacher education programs' on students' learning is equally valuable just as acknowledging its significance in the educational reform, hence further research is required to emphasize that need.

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## APPENDIX A. TEACHER SURVEY QUESTIONNAIRE

### Background Variables

Gender	Male/Female
Age of participants	Between 20-30 years/31-40 years/41-50 years/above 50 years
Level of Teaching	Elementary/Middle School/K-12
Subject Area of Teaching	English Language & Art/ Math/ Physical Education/Science/ Social Science/ Other
Years of Teaching Experience	Less than 5 years/6-10 years/11-15 years/ over 16 years
School Settings	Rural/Suburban/Urban/No Response
Status of Graduate Program	Completed/ Currently Enrolled
Number of Credits Completed	More than 18 credits/10-18 credits/0-9 credits
Number of Online Courses	0-4/4-10/More than 10 or all
Graduate Program Requirement	With Thesis/Non-thesis & Practicum/Other(Internship)

Thinking about the graduate teacher education program, indicate how much you agree or disagree with the following aspects of your learning. For each statement, please check the appropriate box.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Identified and supported areas where teaching needed improvement				
Provided with information that challenged my assumptions about present practice				
Learning activities were inquiry based and reflective in nature				
Increased knowledge about working diverse student population				
Helped to evaluate the strength and weakness of current teaching method				
Motivated to investigate, modify and generate own beliefs about classroom practice				
Learned to emphasize role to teacher as facilitator and considering students as co-learner				
Helped to make changes in teaching practices				
Helped to improve confidence about teaching				

Please indicate what features were present in your graduate teacher education program. For each characteristic, please check the appropriate box.

	Present	Absent
A sense of community		
Field Based Learning Experience		
Educational Media		
Collaborative Learning		
Active Student Participation.		
Adapting Instruction to Student Needs		
Ethnically Diverse Students		
Research Based Instruction		
Monitoring of Student Progress		
Verbal or Written Feedback from Faculty Advisor		

Please indicate what skills you perceive that learned in your graduate teacher education program. For each characteristic, please check yes/ no.

	Yes	No
Planning Engaging Lessons		
Designing Lessons for Diverse Learners		
Teaching Higher Order Thinking		
Using Educational Technology		
Building on Prior Knowledge		
Supporting Problem Solving and Critical Thinking Skills		
Identifying Instructional Strategies based on Student Learning		
Facilitating Group Learning Activities		
Providing Verbal and Written Feedback		
Managing Diverse Student Population		

## **APPENDIX B. TEACHER INTERVIEW QUESTIONS**

This is a list of interview questions addressed to teacher participants in the study.

1. What would you say were the most essential learnings that you took away from the graduate teacher education program?
2. How the graduate study caused you to change your current practices or the way you thought about teaching? (If no changes in teaching style, then if there are changes in the focus of learning activities?)
3. Describe how the graduate teacher education program recognized your needs and provided support accordingly? (Provide examples of elements in facilitating the change process, for instance whether online/face to face group discussion helped or not, and why).
4. How experiences from the graduate teacher education program helped in your professional growth (for example- classroom management, student assessment, professional communication skills etc.)?