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Impacts of Cohort Membership on Teacher Candidates in an Alternative Certification Program

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IMPACTS OF COHORT MEMBERSHIP ON TEACHER CANDIDATES IN AN
ALTERNATIVE CERTIFICATION PROGRAM

by

Katherine Eaton

A dissertation submitted to the Graduate College
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
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Katherine Eaton, Ph.D.

Western Michigan University, 2018

Post baccalaureate teacher education programs are an effective way to increase the teaching pool with candidates who are content experts (Beijaard et al. 2004; Brantlinger, A., & Smith, B., 2013; Zeichner, K. M., & Schulte, A. K., 2001; Schultz, K., & Ravitch, S. M. 2013; Humphrey et al., 2008). Many of these programs utilize a cohort model design where students progress through the program together as a group (Maher, M. A. 2005; Jorissen, K. T., 2002; Ross et al., 2006; Mandzuk, D. et al., 2005). In his book, *Deep Knowledge* (2013), Larkin describes the complex nature of preparing candidates for teaching and calls on the need for research to consider how the nature of thinking like a teacher develops so we can optimize our teacher education programs.

Studies in cohort model research are dominated by data collected after program completion and aimed at only the time during coursework. Additionally, there is a lack of data that extends cohort benefits achieved during coursework to their internship experiences. (Maher, M. A. 2005; Ross et al., 2006; Knorr, R. 2012; Beck, C., & Kosnik, C., 2001). Warhurst, R. P. (2006) discusses cohort design as “learning as belonging” and how the dynamics of participating in a cohort over time means that there is an inevitable component of co-constructing knowledge and forming a community of

practice within that group. He further states that the cohort community creates an intrinsic component and that learning becomes inevitable by simply participating in the group. If cohort literature is considering the development of communities of practice and co-construction of knowledge during coursework, the lack of data collected outside of coursework is a major oversight. The research in this study is to look beyond coursework and see how cohort membership impacts teacher education candidates. Focus group data was collected three times during a year-long internship and alternative certification program

The data collected during the focus group interviews was transcribed and coded for analysis to look deeper into the impact of cohort membership during an alternative certification teacher education program. The theoretical framework was a community practice lens, including Wenger's Community of Practice dimensions: joint enterprise, mutual engagement, and shared repertoire. Wenger (1998) states that the presence of the three dimensions demonstrates active participation in a shared learning process. Data analysis demonstrates that cohort membership can have benefits for teacher candidates beyond their coursework, particularly during their internships. There is additional time to reflect together within a common goal. The shared knowledge creates a much richer space to understand professional expectations and strategies than if candidates were participating individually. Looking forward it will be important to see how cohort membership is impacted among new cohorts.

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CHAPTER 1: INTRODUCTION

In his book, *Deep Knowledge* (2013), Larkin describes the complex nature of preparing candidates for teaching. He calls on the need for research to consider how the nature of thinking like a teacher develops so we can optimize our teacher education programs. There is a diverse approach to teacher education that include traditional undergraduate programs and a variety of alternative pathway programs. There is a consensus in the literature that post baccalaureate teacher education programs are an effective way to increase the teaching pool with candidates who are content experts (Beijaard et al. 2004; Beijaard et al. 2000; Brantlinger, A., & Smith, B., 2013; Zeichner, K. M., & Schulte, A. K., 2001; Schultz, K., & Ravitch, S. M. 2013; Humphrey et al., 2008). Many alternative pathways programs utilize a cohort model design where students progress through a program of study together as a group.

Studies in cohort model research are dominated by data collected after program completion and aimed at only the time during coursework. Additionally, there is a lack of data that extends cohort benefits achieved during coursework to their internship experiences. (Maher, M. A. 2005; Ross et al., 2006; Knorr, R. 2012; Beck, C., & Kosnik, C., 2001). Warhurst, R. P. (2006) discusses cohort design as “learning as belonging.” Participating in a cohort over time means that there is an inevitable component of co-constructing knowledge and forming a community of practice within that group. Warhurst, R.P. (2006) further states that the cohort community creates an intrinsic component of learning that becomes inevitable simply by participating in the group. Additionally, the cohort literature concurs that students attribute familiarity with each

other as a way for their conversations to go deeper than they did in other non-cohort coursework. The trust shapes their participation in the learning community and creates opportunities to reach out when help is needed (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012). For this study, focus group data was collected multiple times during an alternative certification program with a concurrent year-long internship to gain a deeper understanding of the community of practice within the program cohort.

Statement of Problem

The literature describes the relational and academic benefits of a cohort model teacher education program. However, most studies stop collecting data at the end of coursework. We want to understand how a cohort model program impacts the development of teacher education candidates professional practice throughout teacher education programs, including internships.

Theoretical Framework

To understand the dynamics of how cohort membership impacts teacher education candidates a community of practice lens was selected. Wenger (1998) discusses a community of practice in a participatory way in that participants explore a shared goal together while learning from each other. He posits that the community is bound by the shared experience and therefore negotiate together what is meaningful during the process. The Wenger (1998) community of practice lens includes Warhurst, R. P.'s (2006) "learning as belonging" concept. Together both descriptions of

communities of practice, support the idea that learning is inevitable through participation in a cohort community.

Using Wenger's (1998) model of communities of practice as the lens through which to explore cohort membership includes three dimensions: Joint Enterprise, Mutual Engagement and Shared Repertoire. Along with these three dimensions each community will be unique based on what the members have determined is important within the shared learning process. Furthermore, learners need safe spaces to explore and test new ideas so that mindful reflection can happen individually and discussed among trusted peers (Driscoll, 2005). This study uses a descriptive case study design, with the cohort itself as the bounded case, to look deeper into how participation in a cohort impacts knowledge construction during an alternative certification program.

Research Questions

- In what ways does cohort membership impact teacher candidates in an alternative certification program?
- Through Wenger's Community of Practice dimensions, what shared knowledge did the cohort give value to?

Significance of the Study

There is a consensus in the research that the benefits of a cohort model program include emotional support, a sense of belongingness, academic support, and social construction of coursework knowledge. The primary aim in cohort model research is the development of education content knowledge. Most cohort model researchers suggest that cohort model programs are a way to help build skills, which prepare candidates for

participation in future professional learning communities. However, there is a lack of supporting data to support this claim (Knorr, R. 2012; Fairbanks, C. M., & LaGrone, D., 2006; Maher, M. A. 2005; Ross et al., 2006).

The literature shows that cohort models provide an emotional support structure which builds over time as relationships deepen. We are still unsure as to how the conjecture benefits learning beyond coursework and future participation in additional professional learning communities. In addition, cohort data is often collected from students *after* they have completed their coursework, and rarely do researchers look at cohorts *during* internships. This lapse is further emphasized by Ross et al., (2006) who calls on the need for research to better understand connections between cohorts and later participation in professional learning communities within schools. If this body of literature is considering the development of communities of practice and co-construction of knowledge during coursework, the lack of data collected during real time is a major oversight.

Definition of Terms

Cohort

Researchers are unified on defining cohort in the literature as: a collaborative group of students who progress through a series of coursework together and generally complete the program at similar times (Maher, M. A. 2005; Ross et al., 2006). The definition includes Warhurst's (2006) notion of participatory learning within a group.

Alternative Certification

Alternative certification for the current study is defined by that in which candidates do not enter the classroom as teachers of record prior to certification and the program of study combines teaching certification requirements with an internship (O'Connor, E. A. et al., 2011).

Limitations

This research project is situated in the unique context of a Midwestern University alternative certification program and therefore will have limitations for generalizability. However, the exploration of our research questions provides information on how cohort membership impacts candidates in an alternative certification program that may be relevant to other certification programs, researchers, and career change students.

CHAPTER 2: A REVIEW OF THE LITERATURE

Post baccalaureate teacher education programs are an effective way to increase the teaching pool with candidates who are content experts (Beijaard et al. 2004; Brantlinger, A., & Smith, B., 2013; Zeichner, K. M., & Schulte, A. K., 2001; Schultz, K., & Ravitch, S. M. 2013; Humphrey et al., 2008). Many of these programs utilize a cohort model design where students progress through the program together as a group (Maher, M. A. 2005; Jorissen, K. T., 2002; Ross et al., 2006; Mandzuk, D. et al., 2005). In his book, *Deep Knowledge* (2013), Larkin describes the complex nature of preparing candidates for teaching and calls on the need for research to consider how the nature of “thinking like a teacher” develops so we can optimize our teacher education programs.

Studies in cohort model research are dominated by data collected after program completion, or by data that is focused only on coursework and not on internships. Additionally, there is a lack of data that examines if the benefits of cohort achieved during coursework extends to students’ internship experiences. (Maher, M. A. 2005; Ross et al., 2006; Knorr, R. 2012; Beck, C., & Kosnik, C., 2001). Warhurst, R. P. (2006) discusses cohort design as “learning as belonging.” The dynamics of participating in a cohort over time means that there is an inevitable component of co-constructing knowledge and forming a community of practice within that group. He further states that the cohort community creates an intrinsic component and that learning becomes inevitable by simply participating in the group. Within this framework, focus group data was collected multiple times during a year-long internship and alternative certification program.

Professional Identity

Challenges when considering professional identity development in teacher education are attributed to the awareness that identity is not fixed but rather influenced by personal, educational, and professional experiences (Beijaard et al., 2004; Beijaard et al., 2000; Beauchamp, C., & Thomas, L. 2009; Luehmann 2007). This sense of identity is further complicated by the idea that it also determines what we choose to know and our willingness to engage in future learning (Cuddapah, J. L., & Clayton, C. D., 2011). In addition to the phenomenon itself, there is not a consensus in the literature as to how professional identity is conceptualized or defined among researchers based on the presence of both a sociological perspective and a cognitive psychological perspective (Beijaard et al., 2004; Beijaard et al., 2000; Beauchamp, C., & Thomas, L. 2009; Luehmann 2007).

Defining Professional Identity

The area of professional identity development in teacher education is challenged by the wide variance of definitions present in the literature. A widely-cited article about professional identity provides an overview table that illustrates the lack of consistency in how researchers define the phenomenon (Beijaard et al., 2004). The table included nine studies around professional identity, of which only six had explicit definitions listed in their research. Researchers however, do agree that professional identity development is a fluid entity, impacted by both personal and professional aspects (Beijaard et al., 2004; Beijaard et al., 2000; Beauchamp, C., & Thomas, L. 2009; Luehmann 2007; Izadinia, M. 2014). Post baccalaureate teacher candidates participating in alternative pathways

teacher education programs have an additional layer to their professional identity. Teacher candidates entering education careers with a degree and other professional experiences are reconciling their previous identities with new experiences and skill development (Williams 2010). The predominant themes in professional identity development are understanding the influences and tensions present throughout a student's experience in a teacher education program and strategies for characterizing identity development.

Influences and Tensions

A general understanding in the literature is that teacher candidates are entering coursework with basic core identities that they are reconciling with new experiences and knowledge. These pre-service teachers are also building their new identities in very public ways with peers and via field experiences (Beijaard et al., 2004; Beijaard et al., 2000; Beauchamp, C., & Thomas, L. 2009; Luehmann 2007). In addition to integrating new experiences, other factors that contribute to professional identity in the literature are: personal viewpoints, family life, outside influences, and situational obstacles. How teacher candidates balance these components is a major part of professional identity research.

It is important for teacher educators and mentors to understand the factors that influence professional identity, so that proper support is provided, particularly during times of transitions (Pillen et al., 2013; Izadinia, M. 2014, and Beauchamp, C., & Thomas, L. 2009). Even though there seems to be a consensus in the literature regarding tensions, researchers are not in agreement with how to categorize variations

within them. Not only are the teacher candidates' values, beliefs, and perceptions contributing factors to tensions but their mentors' qualities are as well, which makes it difficult for teacher candidates to identify and resolve problems in developing a professional identity (Pillen et al., 2013; Izadinia, M. 2014, and Beauchamp, C., & Thomas, L. 2009). An example would be a classroom situation where the candidate wants an active learning environment but they are placed in a classroom where the mentor feels that lecture is the best strategy. It results in conflicted viewpoints on how students learn and what good classroom teaching looks like (Pillen et al., 2013).

A highly-cited study (Pillen et al., 2013), used semi-structured interviews to examine thirteen professional identity tensions in beginning teachers. Upon completion of the interviews the tensions were categorized into three themes: changing roles from student to teacher, conflicts between desired and actual support, and conflicts within learning to teach. The tension that occurred with the highest frequency was in Theme 1 and was connected to the beginning teacher tension of transitioning from a student-teacher role to having more authority with lead teaching. Pillen et al. (2013) created six teacher profiles based on their interviews, and they noticed some shifts among these profiles during periods of transition. The researchers caution against making claims using the profiles, considering the low number of respondents. However, they suggest a possible strategy is to use the profiles to resolve professional identity tensions during student teaching.

Professional Identity Summary

Researchers have provided insight on the importance of identifying professional identity components and different strategies with which to illustrate some of the mechanisms present during the process. There is agreement among researchers that identity is a fluid concept, with both conceptual and sociological influences. The many variables present in professional identity development result in an absence of a unified classification schemes or strategies with which to cohesively identify these influences.

While the literature has provided insight into the “what” of professional identity and the components to consider, it is still not clear on “how” the concepts of identity translate into practice (Madden & Wiebe 2015). Researchers are still seeking to better understand how concepts of identity are influenced when assimilating into new professional learning communities. There is also a need to look deeper into trends across both traditional programs and alternative pathways to see how the components of identity development vary, if at all (Friedrichsen et al., 2008).

Alternative Pathways in Teacher Education

In 2000, a federal mandate called for a nationwide effort to recruit and retain Math and Science teachers. Astronaut John Glenn was the commission's chairman and addressed then Secretary of Education Richard W. Riley stating a sense of urgency to address the directive in the report. No Child Left Behind quickly followed in 2001 which led to an increase in post baccalaureate alternative pathway teacher certification programs (Hoff, D.L. 2000).

The National Center for Education reported that by 2010 approximately 500,000 teachers had been certified through alternative routes (Feistritzer, C. E., & Haar, C. K., 2010). Alternative certification programs help address the need for highly-qualified teachers in high needs schools, increase teacher pools, and act to attract candidates with strong content backgrounds. (Brantlinger, A., & Smith, B., 2013; Zeichner, K. M., & Schulte, A. K., 2001; Jorissen, K. T., 2002). Programs in California and New York account for a quarter of the AP literature over the last 20 years, and the major target audience of AP research is policy makers (ERIC search May 10, 2017). Critics of alternative pathways programs, however, are concerned with the focus on cookie cutter techniques versus theoretical understanding of classroom practices (Brantlinger, A., & Smith, B., 2013; Zeichner, K. M., & Schulte, A. K., 2001; and Jorissen, K. T., 2002).

The prevailing issue within alternative certification literature is a lack of consistency in how programs are classified in the research. Classification challenges contribute to muddled arguments both for and against alternative models in teacher education (Zeichner, K. M., & Schulte, A. K., 2001; Schultz, K., & Ravitch, S. M. 2013; Chin 2007). There are two main categories used in the literature: alternative certification programs and alternative routes to certification. The wording of these may seem insignificant however further exploration reveals important differences. For purposes of this literature review the following distinctions will be utilized. First, the term alternative routes to certification (ARC) will follow the idea that candidates are employed as teachers of record while enrolled in a teacher preparation program but before certification requirements are achieved (Chin 2007). Also included are emergency

permits and programs classified as early-entry programs that are typically associated with recruitment models such as Teach for America. This is the dominant structure for programs in New York and California, which are the prevailing states present in the literature (Zeichner, K. M., & Schulte, A. K., 2001; Schultz, K., & Ravitch, S. M. 2013; Humphrey et al., 2008). Secondly, the programs classified as Alternative Certification (AC) include designs in which candidates do not enter the classroom as teachers of record prior to certification (O'Connor, E. A. et al., 2011). The programs within AC models are generally partnerships with Universities and local school districts which focus on strong pedagogical backgrounds and more traditional internship structures. The predominant design in AC models are MAT programs which combine teaching certification requirements, coursework towards Master's degrees, and classroom internships (O'Connor, E. A. et al., 2011). Lastly, for general themes common among all definitions the term alternative pathways (AP) will be utilized. The distinction is unique to this literature review and may differ from how authors have defined their programs in the research. It is necessary to accurately compare trends within alternative pathways literature because the variables which impact teacher candidates in the two scenarios are likely different.

Program Model Impacts

Brantlinger, A., & Smith, B. (2013) do not disguise their criticism of ARC programs and claim that they are efficient ways to supply teachers to high needs schools at the expense of pedagogy and teacher autonomy. The researchers are not alone with that concern as other critics call out the lack of teacher preparation and

limited exposure to theoretical underpinnings of teaching strategies, particularly in multicultural settings prevalent in high need urban schools (Zeichner, K. M., & Schulte, A. K., 2001; Jorissen, K. T., 2002). The absence of any theoretical understanding of pedagogy results in a lack of ability to evaluate effectiveness of techniques and ability to determine alternative ways to approach lesson objectives. (Brantlinger, A., & Smith, B., 2013). The ARC programs which are considered a service model, such as Teach for America, provide teachers with, on average, a 6-week training program before being in front of their own classroom. Here, candidates are in a learn as you go model and were less likely than their AC counterparts to remain in classrooms long term (Jorissen, K. T., 2002; Zeichner, K. M., & Schulte, A. K., 2001). Additionally, there are AC programs which run as partnerships between universities and local school districts with the hopes that the districts will retain the candidates when their certification is complete. These partnership programs tend to have mentorship components built in and contribute to longer retention of AC completers. The internship experiences present in AC models place candidates in classrooms with a certified teacher, the length of which varies from six weeks to a full school year (Jorissen, K. T., 2002; Cooperman, S., 2000).

Conclusions in Alternative Pathways Literature

Data themes present in alternative pathways literature are primarily focused on design of program models, retention data, and statistics illustrating quantities of candidates prepared through alternative pathways (U.S. Department of Education, (2015); Brantlinger, A., & Smith, B., 2013; Zeichner, K. M., & Schulte, A. K., 2001; Jorissen, K. T., 2002). With such a focus on these components there is an oversight in

the literature about the lived experience of candidates entering the classroom through AP programs. Additionally, the predominant sources of data are through experiential narratives from interviews occurring after, rather than during, program completion. (Jorissen, K. T., 2002).

Alternative certification literature has shown that the primary target audiences for research are policy stakeholders. Researchers agree that AP candidates are placed in higher needs schools at a higher rate than traditionally certified teachers. The trend is connected to alternative certification candidates filling an immediate need for teachers and the need for these positions tends to be concentrated in urban settings (Brantlinger, A., & Smith, B., 2013; Jorissen, K. T., 2002; Zeichner, K. M., & Schulte, A. K., 2001). There is a large variance between programs in the number of education courses students have before becoming a teacher of record, though most programs do have some type of mentorship built in. The prevailing issues within alternative pathways literature are a lack of consistency in how programs are classified, the diverse ways programs prepare candidates for the classroom, and the dominance of data being reported around retention statistics rather than participants themselves.

Within AP research, there remains a lack of consensus on how teachers themselves are experiencing the variation in programs. With such large numbers of teachers being certified through AP structures there is a lack of data in the literature from full year internship programs. There is a need to further understand how teacher thinking develops so that teacher education programs can better prepare teachers participating in AP programs for longevity in the field (Larkin, D. B., 2013).

Cohort Model Programs in Teacher Education

The Danforth Foundation in the mid-1980's provided grants to universities with a goal of improving educational programs by utilizing cohort models found traditionally in medical or law schools. The predominant purpose in cohort literature is to better understand how cohorts develop in teacher education programs to maximize the benefits to candidates and universities (Ross et al., 2006). Researchers are unified on defining cohort in the literature as: a collaborative group of students who progress through a program of study together and generally complete the program at similar times (Maher, M. A. 2005; Ross et al., 2006).

The main purpose for utilizing cohort models is to create supportive learning environments. Additionally, many studies refer to a cohort model solution to support faculty with advance course planning and scheduling, in that rigid course schedules are in place for each cohort at the beginning of their program (Knorr, R. 2012, Beck, C., & Kosnik, C., 2001). Cohort model programs enhance interpersonal connections, a sense of belonging, and more risk taking in terms of expressing opinions (Ross et al., 2006). Additionally, cohort model programs are common in alternative pathways teacher education programs (Maher, M. A. 2005; Jorissen, K. T., 2002; Ross et al., 2006; Mandzuk, D. et al., 2005). The overall weakness in cohort literature is the lack of structured research methodologies for data collection (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012).

Co-Construction of Knowledge

Warhurst, R. P. (2006) expands on cohort design as “learning as belonging” in which he discusses how the dynamics of participating in a cohort over time means that there is an inevitable component of co-constructing knowledge and forming a community of practice within that group. He further states that the cohort community creates an intrinsic component and that learning becomes inevitable by simply participating in the group.

The idea of co-construction of knowledge takes on another component within cohort literature. Researchers claim another learning advantage in cohorts is attributed to how well the members know each other. The familiarity creates more opportunities for receiving peer feedback and active listening of other points of views which may have an impact on how students’ overall knowledge is shaped (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012).

Building Learning Communities

The theme of shared learning is further expanded with the idea that cohorts build a community that is supportive, rather than competitive, and they are united by a common goal (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012). Students attribute familiarity with each other as a way for their conversations to go deeper than they did in other non-cohort coursework. The trust shapes students’ participation in the learning community and creates opportunities to reach out when help is needed (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012).

The literature is still unclear as to how trust may or may not impact participation in future learning communities outside of the cohort.

Like professional identity literature there are some attempts at classifying members of the cohort. Maher, M. A. (2004) describes three roles that develop during observations of cohorts: the “nurturer,” “taskmaster,” and “tension breaker.” These roles further support the idea that “we are all in this together” sense of belongingness rather than competition. Researchers claim that a community environment enhances student learning (Maher, M. A. 2005; Ross et al., 2006). Cohorts bring other advantages to learning, such as an academic focus among the group and emotional benefits that allow students to feel safe and take more risks with expressing ideas (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012).

Summary of Cohort Literature

A primary criticism for cohorts in the literature is that they can reinforce confusion or discourage buy in to program components (Beck, C., & Kosnik, C., 2001). Overall, cohort research is complicated by small sample sizes and the unique development of culture within each group. Studies in cohort model research are dominated by data collected after program completion and aimed at only the time during coursework. Additionally, there is a lack of data that extends beyond coursework and into internship experiences. (Maher, M. A. 2005; Ross et al., 2006; Knorr, R. 2012; Beck, C., & Kosnik, C., 2001).

There is a consensus in the research that the benefits of a cohort model program include emotional support, a sense of belongingness, academic support, and social

construction of coursework knowledge. The primary aim in cohort research is the development of education content knowledge, which leaves a gap in understanding how cohorts impact the growth of professional identities as teachers (Maher, M. A. 2005). Many researchers claim a connection between cohort model programs and building skills which prepare candidates for participation in future professional learning communities however, there is a lack of supporting data to illustrate a link (Knorr, R. 2012; Fairbanks, C. M., & LaGrone, D., 2006; Maher, M. A. 2005; Ross et al., 2006).

The literature illustrates how cohort models provide an emotional support structure which builds over time as relationships deepen. There is a lack of understanding how the cohort impacts candidates during their internships, or in their future teaching. The lapse is further emphasized by Ross et al., (2006) who calls on the need for research to better understand connections between cohorts and later participation in professional learning communities within schools. If cohort literature is considering the development of communities of practice and co-construction of knowledge during coursework, the lack of data collected outside of coursework is a major oversight.

Next Steps

With the increase in use of alternative pathways to teaching it is important to go beyond informing policy. The literature review provided more insight into the complicated phenomenon of teacher candidate identity development through the lens of three areas: professional identity, alternative pathways in teacher education programs, and cohort model programs. There are many variables to keep in mind when attempting

to contribute additional research to professional identity development within a cohort model teacher education program. It is evident that there needs to be a deeper understanding of connections between the belongingness found in cohort models and impact on communities of practice.

CHAPTER 3: METHODOLOGY

Aim of the Study

The literature describes in depth the relational and academic benefits of a cohort model teacher education during coursework. However, we still do not understand how cohort membership impacts teacher candidates beyond coursework. The goal of this study is to expand the understanding of cohort membership during a post baccalaureate alternative certification teacher education program, inclusive of candidates' internships.

Theoretical Framework

Warhurst, R. P. (2006) defines cohort design as “learning as belonging.” The dynamics of participating in a cohort over time means that there is an inevitable component of co-constructing knowledge and forming a community of practice within that group. Additionally, the cohort literature indicates that students attribute familiarity with each other as a way for their conversations to go deeper than they did in other, non-cohort, coursework. In a cohort, trust shapes student participation in the learning community and creates opportunities to reach out when help is needed (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012).

Wenger (1998) defines communities of practice as members who actively participate in a shared learning process. Communities are defined by knowledge that is co-constructed and therefore results in richer ideas than one might have individually, outside of a community. There are three dimensions within a community of practice: joint enterprise, mutual engagement, and shared repertoire. Along with the three dimensions, each community will be unique to what the members have determined is

important within the shared learning process. The central framework of our data analysis is Wenger's idea around members in a community of practice co-constructing knowledge and determining together what learning is valuable.

The study is a descriptive case study design, with the cohort itself as the bounded case, to look deeper into how participation in a cohort impacts knowledge construction during a post baccalaureate alternative certification program.

Research Questions

- In what ways does cohort membership impact teacher candidates in an alternative certification program?
- Through Wenger's Community of Practice dimensions, what shared knowledge did the cohort give value to?

Study Design

Participants

The study includes candidates at a Midwestern University enrolled in a national teaching fellowship program that prepares STEM professionals for careers in teaching secondary math and/or science in high needs schools. The post baccalaureate alternative certification program allows students to complete coursework towards a master's degree in secondary education while participating in a yearlong internship. The fellowship is cohort based in that candidates begin the program at the same time and progress through the same program of study together. Support continues after coursework completion for an additional three years through classroom support and professional development opportunities with current and previous teaching fellows.

Eleven members of one cohort were recruited, it was desirable but not necessary to have all students participate. Informed consent was obtained during the summer of their initial coursework, prior to their internships. Teacher candidates notified the investigator of their interest in participating in the study by signing the consent document. If a candidate did not want to participate, they alerted the investigator by withholding their signature on the consent document.

Data Collection

To gain a deeper understanding of the impact of cohort membership on teacher candidates during the program three focus group interviews were conducted. The timing for each interview was based on key points in the internship: October, before lead teaching; April, during lead teaching; and June, at the end of the internship. Each focus group interview took place on campus during the participants' field seminar course. A study room, separate from the seminar classroom, was set up to record audio and video for purposes of transcribing. The student investigator and the participants were the only individuals present, seminar instructors did not participate in the focus group interviews. The interviewer and participants were seated around one table with the audio recorder in the middle. The focus group questions were copied and placed around the table so the participants could refer to them as needed. The interviews were moderated by the student investigator but participants were encouraged to interact with each other as opposed to the interviewer directly. Transitions between the questions were generally guided by the student investigator when discussions veered away from program components or if there was a break in the conversation to indicate that the

participants were ready to move on. There were a few occasions when the participants themselves moved on to the next question and it was allowed by the student investigator. The rationale behind that strategy was it allowed opportunities for participants to show what discussions and ideas they found valuable. The interviews lasted between 30-45 minutes.

The following focus group questions were asked during each session:

1. At this point in the program how prepared do you feel to teach in your content area?
2. In what ways, if any, do you feel your STEM backgrounds are impacting your teaching?
3. What are some pros and cons regarding lesson planning? How comfortable are you identifying and including appropriate standards during lesson planning?
4. What advice would you give to future teacher candidates?
5. Have there been any surprises that you have encountered during this current period that you would like to share?

Data Analysis

For this qualitative, exploratory case study the cohort itself is the bounded case. Emergent, descriptive coding was used during data analysis to identify patterns in the data. The unit of analysis for the case study was a topic fragment, defined as a discussion fragment around one topic that ends when a new topic begins. Focus group transcripts were analyzed for topic fragments among cohort members. Fragments that included or were in direct response to the interviewer were eliminated before coding.

The remaining topic fragments were annotated for initial categories and grouped together into emergent codes. The codes were arranged into frequency charts and tables to identify trends in the cohort data by date and overall totals. With the frequencies of each code identified, the data was analyzed using Wenger's (1998) three dimensions: joint enterprise, mutual engagement, and shared repertoire. Through this lens, we have a deeper understanding of what the cohort gave value to during this process.

Position of the Researcher

My background in education includes almost 20 years as a teacher, instructional coach, professional development leader, and field supervisor for pre-service teacher interns. It is important to note that I became the Graduate Assistant for the teaching fellowship at the beginning of the cohort's program of study. My responsibilities included co-teaching the science methods and field seminar classes, field supervision during candidates' internships, and participation in Saturday professional development sessions. It was important to consider my role as a participant observer in the data collection strategies and maximize opportunities for teacher candidates to express their ideas in their own words. There was a level of trust established in my position with the candidates that would not have been present with an interviewer that they did not know.

Limitations

This research project was situated in the unique context of a Midwestern University alternative certification program and therefore will have limitations for generalizability. However, the exploration of our research questions provides

information on how cohort membership impacts alternative certification candidates during their internships in high needs schools. This information can be relevant to other certification programs, researchers, career change students, and teacher educators.

CHAPTER 4: DATA ANALYSIS AND RESULTS

This descriptive case study provides a deeper understanding of what cohort membership looked like across the internship year for 11 participants in an alternative certification teacher education program. Yin (2003) defines a case study as that which: "investigates a contemporary phenomenon within its real-life context" (p. 13). The case is bound by the cohort itself as one community of practice with which to observe. The unit of analysis was a topic fragment, where one fragment is defined as a conversation piece around one topic with one or more speakers. The data analysis illustrates how cohort members interacted with each other during three focus group interviews throughout their year-long internship. The data was analyzed to answer the following research questions:

- In what ways does cohort membership impact teacher candidates in an alternative certification program?
- Through Wenger's Community of Practice dimensions, what shared knowledge did the cohort give value to?

There is an increasing number of alternative certification program options, many of which utilize a cohort model (Brantlinger, A., & Smith, B., 2013; Jorissen, K. T., 2002; Zeichner, K. M., & Schulte, A. K., 2001). The focus group format was selected to gain a deeper understanding of cohort membership and how candidates co-construct knowledge. Warhurst, R. P. (2006) discusses cohort design as "learning as belonging" and how the dynamics of participating in a cohort over time means that there is an inevitable component of co-constructing knowledge and forming a community of

practice within that group. He further states that the cohort community creates an intrinsic component and that learning becomes inevitable by simply participating in the group.

Data Analysis and Results

Over the candidates' 10-month internship, three focus group interviews were conducted: October-before lead teaching, April-during lead teaching, and June-after lead teaching. Emergent, descriptive, heuristic coding was used during data analysis to identify patterns in the data. Focus group transcripts were analyzed for topic fragments among cohort members and eliminating fragments that included or were in direct response to the interviewer. The remaining topic fragments were annotated for initial categories and grouped together into emergent codes. Ten codes were identified during analysis: shared experiences, challenges, peer advice, validation, content standards, camaraderie, classroom organization, professional identity, solicit, and withdraw. The complete codebook is in Appendix B but an excerpt is below for reference:

Table 1: Excerpt from Codebook

Code	Criteria for Inclusion	Example
Advice	Providing Ideas Direct advice to cohort member Suggestions But not a response to interview question	Maci: Use rubrics, it makes grading so much easier. Sean: Get to know the security guards.
Camaraderie	Accountable to group norms Identifying a group need Joking together Modeling after each other Knowing each other But not soliciting advice	Emma: I've got binders and stuff and started acting like Sierra. Matt: Just something on a broad base I think is what we need.

The next step in data analysis was looking deeper into the code occurrences from each focus group interview to identify patterns across the cohort. When the codes were ranked in order of frequency, three codes appeared consistently in the top four: challenges, validation, and shared experiences. It was interesting to see how the fourth code varied by time of year. In October, it was solicit; in April, it was professional identity; and in June, it was camaraderie. This code trend provided insight into how the cohort priorities shifted throughout their internship. In October, when they are beginning to apply their coursework to school settings they are asking each other questions and comparing internship experiences. Below are examples of solicit from the October focus group interview:

Sean: Have you been to one of the Academy meetings?

Ethan: Yes.

Sean: That happened on Thursday for me.

Emma: People were talking about the math program, where they gotta bring college tutors into the school

Matt: Oh, that's cool, was that at the assembly meeting?

Emma: Do you ask for feedback?

Matt: Oh yeah. I'm like, "What, how do you think I did?" "Oh, good!"

Sean: What are you guys' staff meetings like?

Maci: I've only had one. The next one I'll tell you on Monday, cause we're going over the juniors' ACT scores, and they were ...from my understanding, pretty abysmal.

From the above examples, you see evidence of how they are curious about each other's experiences and comparing mentor experiences during October.

Looking at the April focus group interviews, professional identity was the highest frequency code and it was the only time it showed up in the top four. This is significant because the interview took place during the lead teaching phase of their internships and

their mentors were stepping back. Here are some examples of what professional identity codes took place during April:

Ivy: I think I feel a lot more prepared than I did in October. But I think, there's always that reflective piece or the what, how can I do this better still. And especially being a perfectionist I always feel like I'm not quite there

Maci: I actually like it when experiments fail. I don't care if the students whine at me, because I'm so used to failing at experiments. I'm like no, this is an important part of science: screwing it and not having things come up the way it should and figuring out why. That's more important than any content that I'm gonna teach you.

Emma: I YouTube a lot of videos to see what do they include in their YouTube videos in order to teach people what to do? So, I think about those different things, you know, what would the students need to know? Just with having this experience in teaching and seeing the different type of questions that kids ask, it's like ... It let's me know what else needs to be added into this lesson? What are they missing that needs to be retaught during this lesson?

The participants are shaping their identities as educators during this time and the transcripts illustrate the variety of ways the process is occurring.

Looking at the final interview in June we see that camaraderie entered the top four. This interval was at the end of not just their internships but also the coursework they would take together as a cohort. The excerpts below illustrate their comfort level with each other:

Matt: Let me turn this (cell phone) off.

Sierra: I would think so.

Maci: And then one was, I had a couple people write, "Follow the directions." Because there were like two or three times where I got them with direction questions.

Matt: Like stand in the place where you are, now face north, those kind of directions?

Maci: Exactly.

Brent: Like cardinal ones?

Maci: Yeah.

Emma: After that second trimester, I think I got a hang of it and started ... I've got binders and stuff and started acting like Sierra.

Matt: You just can't.

Maci: You have to be Elsa, you have to let it go.

Brent: Let it go (singing).

Maci: Let it go. (singing) Can you put music notes on the transcription?

In June, they showed that they knew each other well enough to model strategies after one another, joke around, and even sing together.

The data shows that throughout the year-long internship the cohort was comfortable discussing challenges, validating each other's ideas, and finding common ground with shared experiences. Additionally, the cohort moved from soliciting each other's experiences to building their professional identities as teachers and finally highlighting their comfort level as a community.

Table 2: Ranked Frequency of Focus Group Interview Codes

Total		
Challenges	35	20.7%
Validation	32	18.9%
Shared Experiences	26	15.4%
Prof ID	21	12.4%
Camaraderie	18	10.7%
Solicit	14	8.3%
Advice	11	6.5%
Content/Standards	6	3.6%
Classroom Environment	4	2.4%
Withdraw	2	1.2%
	169	

The next step in the data analysis was to look at the frequency of each code to look for patterns across the cohort. The code frequencies were ranked to understand what codes were dominant during the focus group discussions. How students are participating in the cohort and what knowledge they value in their discussions informs both research questions. Looking at the frequency chart we see that the top three codes are challenges, validation, and shared experiences.

The final part of the analysis was to apply Wenger's (1998) community of practice framework. He identified three dimensions: joint enterprise, mutual engagement, and shared repertoire. Joint enterprise is described as a collective understanding of what the community is about and working together. Mutual engagement is how a community of practice functions: establishing norms, expectations, and social capital. Lastly, shared enterprise is about communal resources, shared history, routines, frameworks that define practice (Wenger et al., 2011). The following table shows Wenger's dimensions aligned with the emergent codes from the initial analysis and transcript connections to illustrate connections:

Table 3: Analysis of Codes Through Wenger's Community of Practice Dimensions

Wenger (1988) Dimension	Description (Wenger 2011)	Applicable Emergent Study Codes	Transcript Connections
Joint Enterprise	A collective understanding of what the community is about and working together	Professional Identity-12.4% Validation-18.9% Advice-6.5% Total-37.8%	Member 1: "Use rubrics, it makes grading so much easier." Member 3: "I agree with that...when it comes to content and the fact that you taught it is, you know what the expression is? You know it best when you can teach it." Member 4: "Yeah, exactly." Member 5: "I feel like the more you know, the more that you can teach."
Mutual Engagement	How a community of practice functions: establishing norms, expectations, and social capital	Camaraderie-10.7% Challenges-20.7% Solicit-8.3% Total-39.7%	Member 5: "Let me turn this (cell phone) off." Member 7: "I would think so" Member 3: "Do they act different when it's just you?" Member 4: "No." Member 3: "Their behavior is the same?" Member 4: "Yeah, which is pretty cool."
Shared Repertoire	Communal resources, shared history, routines, frameworks that define practice	Shared Experience-15.4% Content Standards-3.6% Classroom Environment-2.4% Total-21.4%	Member 5: "But if you know what it looks like, you can run through and take a quick glance at it and see, what's something that I am seeing." Member 7: "I spot check.... I'll pick some of the questions if it's like 50 questions and I'll pick three."

Summary of the Findings

The current descriptive case study was designed to develop a deeper understanding of how cohort membership impacts co-construction of knowledge and what interactions in the community of practice showing is valuable. Returning to the work of Warhurst, R. P. (2006), that learning becomes inevitable by simply participating in the group, what learning occurred during the focus group discussions?

Research Question 1

In what ways does cohort membership impact teacher candidates in an alternative certification program? We learned from the literature that there needs to be an element of trust present to share challenges and expose weaknesses to the group (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012). In the frequency chart, we see that challenges occurred most often across the three focus groups. This data demonstrates that there is a level of trust among the participants and they feel safe sharing challenges and weaknesses within their community of practice.

Researchers claim another learning advantage within cohorts is attributed to how well they know each other. The familiarity creates more opportunities for receiving peer feedback and active listening of other points of views which may have an impact on how their overall knowledge is shaped (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012). We see in the data that validation is the second most frequent code in the transcripts. The practice of validation is evidence of active listening and support of peers which shows that candidates are open to each other's ideas in an encouraging environment.

Shared experiences allow cohort members to co-construct knowledge within a common language during their internships (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012). When we look at the third code on the frequency chart, shared experience, there is further evidence of participation within a community of practice. This code also shows how candidates are utilizing a shared history to build

their understanding of the professional practice of teaching which will be discussed further through Wenger's (1998) key dimensions.

Research Question 2

Through Wenger's Community of Practice dimensions, what shared knowledge did the cohort give value to? When looking at the frequency totals among the three dimensions we see that mutual engagement (39.7%) is slightly higher than joint enterprise (37.8%). Wenger (1998) states that this dimension is the representation of how the community of practice functions and how members have formed relationships together as a unit. The communal component needs to be present for risk taking and openness with peers. The top emergent code in frequency was challenges which, supports the strength of the candidates' participation in their cohort community.

Wenger et al., (2011) expands on the idea of community by saying that shared practice is the ability of members to be recognized for their individual ideas while also building a shared learning environment that benefits the whole. In the context of teacher candidates in a cohort program Wenger et al.'s, (2011) claims about shared practice allow members to have a deeper learning experience. It is this idea that allows candidates to develop individually through their internships as well as have opportunities to come together as part of a shared practice. Cohort membership allows candidates time to reflect together under a common goal that wouldn't happen under a traditional internship.

Conclusion

Wenger et al., (2011) expands on the idea of community by saying that shared practice is the ability of members to be recognized for their individual ideas while also building a shared learning environment that benefits the whole. In the context of teacher candidates in a cohort program Wenger et al.'s, (2011) claims about shared practice allow members to have a deeper learning experience. It is this idea that allows candidates to develop individually through their internships as well as have opportunities to come together as part of a shared practice. Cohort membership allows candidates time to reflect together under a common goal that wouldn't happen under a traditional internship. The data illustrates that, with buy in to the cohort membership, co-constructing knowledge goes beyond the coursework. Candidates often reached out to each other to share and test ideas during their internships. They reached out to each other for advice and even peer observations. They created a safe space together that allowed them to reflect and grow together and even share challenges.

CHAPTER 5: CONCLUSION

To discuss the emergent codes, we return to the ideas from the cohort literature: students attribute familiarity with each other as a way for their conversations to go deeper and that trust shapes their participation in the learning community (Maher, M. A. 2005; Ross et al., 2006; Warhurst, R. P. 2006; Knorr, R. 2012). Likewise, the idea that learners need safe spaces to explore and discuss ideas among trusted peers (Driscoll, 2005). The dynamics present in participating in shared learning create an intrinsic component and that learning becomes inevitable by simply participating in the group (Warhurst, R. P. 2006). The limited component in the research was the lack of data that extends beyond coursework and the timeliness of data collection, much of which is collected after program completion (Maher, M. A. 2005; Ross et al., 2006; Knorr, R. 2012; Beck, C., & Kosnik, C., 2001).

The goal of the current study was to expand the research to understand what cohort membership looks like during candidate internships. Using a descriptive case study design two research questions were posed:

- In what ways does cohort membership impact teacher candidates in an alternative certification program?
- Through Wenger's Community of Practice dimensions, what shared knowledge did the cohort give value to?

The focus group format allowed the candidates themselves to show us how they participated in the shared learning space and what they found value in when talking with cohort members.

What we learned is that the characteristics discussed in the literature during coursework extended to the internship experience. Considering our first research question, we see that during the focus groups candidates had a safe space to explore shared knowledge. The two most frequent codes were challenges and shared experiences, both of which demonstrate trust and participation in the learning community. Teacher candidates solicited information from each other to build knowledge and understanding of classroom instruction and even gave advice to each other. What we learned from the professional identity codes were that candidates had a strong desire to understand applying content to instruction and connections between lesson planning and assessments, and how lesson planning for student engagement was important.

The second research question provided an opportunity to look at the codes through Wenger's community of practice dimensions: joint enterprise, mutual engagement, and shared repertoire. Wenger (1998) states that the presence of the three dimensions demonstrates active participation in a shared learning process. Looking at the data through the key dimensions we found mutual engagement was slightly higher than joint enterprise. Mutual engagement is the representation of how the community functions and how relationships have formed (Wenger 1998). In the data, we see that candidates often reached out to each other to share challenges and test ideas during their internships. Next, considering the joint enterprise dimension which is about working together under a shared understanding there is evidence of validating ideas, giving advice, and developing a shared understanding of professional expectations and

strategies. These ideas together demonstrate that the candidates created a safe space together which allowed them to reflect and grow together.

Significance of the Study

Alternative pathways programs are not a new idea in the United States, the National Center for Education reported that by 2010 approximately 500,000 teachers had been certified through alternative routes (Feistritzer, C. E., & Haar, C. K., 2010). Many of these programs utilize a cohort model design where students progress through the program together as a group (Maher, M. A. 2005; Jorissen, K. T., 2002; Ross et al., 2006; Mandzuk, D. et al., 2005). With the increase in use of alternative pathways to teaching it is important to go beyond informing policy and use cohort research to inform and improve our teacher education programs.

Future Considerations

Our study provides evidence that, with cohort membership, teacher candidates have a support system beyond their coursework. They have additional time to reflect together within a common goal which creates a much richer space to understand professional expectations and strategies than if they were participating individually. Looking forward it will be important to see how cohort membership is impacted among new cohorts. Are there common practices to support consistent findings when looking at other shared communities? Is it possible to create these safe spaces for teacher education programs that are not cohort based? Would they assign value to the same codes individually as they did together?

If cohort literature is considering the development of communities of practice and co-construction of knowledge during coursework, the lack of data collected outside of coursework is a major oversight. Internships are a key component to teacher certification, we need further studies such as this one to better understand the role of cohort membership during that time. Additionally, we need more data to address the plea by Ross et al., (2006) who calls on the need for research to better understand connections between cohorts and later participation in professional learning communities within schools. Looking longitudinally to see how cohort members adapt to new shared learning communities will give a new perspective as to what components strengthen that transition.

REFERENCES

- Beck, C., & Kosnik, C. (2001). From cohort to community in a preservice teacher education program. *Teaching and Teacher Education, 17*(8), 925-948.
- Beijaard, D., Meijer, P. C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and Teacher Education, 20*(2), 107-128.
- Beijaard, D., Verloop, N., & Vermunt, J. D. (2000). Teachers' perceptions of professional identity: An exploratory study from a personal knowledge perspective. *Teaching and teacher education, 16*(7), 749-764.
- Beauchamp, C., & Thomas, L. (2009). Understanding teacher identity: An overview of issues in the literature and implications for teacher education. *Cambridge journal of education, 39*(2), 175-189.
- Brantlinger, A., & Smith, B. (2013). Alternative Teacher Certification and the New Professionalism: The Pre-Service Preparation of Mathematics Teachers in the New York City Teaching Fellows Program. *Teachers College Record, 115*(7), n7.
- Chin, E., & Young, J. W. (2007). A person-oriented approach to characterizing beginning teachers in alternative certification programs. *Educational Researcher, 36*(2), 74-83.
- Cooperman, S. (2000). Alternative teacher certification: It works. *Principal, 80*(1), 65-66.
- Cuddapah, J. L., & Clayton, C. D. (2011). Using Wenger's communities of practice to explore a new teacher cohort. *Journal of Teacher Education, 62*(1), 62-75.
- Driscoll, M. P. (2013). *Psychology of Learning for Instruction: Pearson New International Edition*. Pearson Higher Ed.
- Fairbanks, C. M., & LaGrone, D. (2006). Learning together: Constructing knowledge in a teacher research group. *Teacher Education Quarterly, 33*(3), 7-25.
- Feistritzer, C. E., & Haar, C. K. (2010). Research on alternate routes education research. *Washington, DC: National Center for Alternative Certification*.
- Friedrichsen, P., Lannin, J., Abell, S., Arbaugh, F., & Volkmann, M. (2008). Examining incoming identities in an alternative certification program in mathematics and science. *Eurasia Journal of Mathematics, Science & Technology Education, 4*(2), 175-188.

- Hoff, D.L. 2000. "Science Teachers' Turnover Dissatisfaction High, Survey Finds." *Education Week*. April 19, 2000.
- Humphrey, D., Wechsler, M., & Hough, H. (2008). Characteristics of effective alternative teacher certification programs. *The Teachers College Record*, 110(1), 1-63.
- Izadinia, M. (2014). Teacher educators' identity: A review of literature. *European Journal of Teacher Education*, 37(4), 426-441.
- Jorissen, K. T. (2002). Retaining alternate route teachers: The power of professional integration in teacher preparation and induction. *The High School Journal*, 86(1), 45-56.
- Knorr, R. (2012). Pre-Service Teacher Cohorts: Characteristics and Issues--A Review of the Literature. *SRATE Journal*, 21(1), 18-23.
- Larkin, D. B. (2013). *Deep knowledge: Learning to teach science for understanding and equity*. Teachers College Press.
- Luehmann, A. L. (2007). Identity development as a lens to science teacher preparation. *Science Education*, 91(5), 822-839.
- Madden, L., & Wiebe, E. (2015). Multiple perspectives on elementary teachers' science identities: A case study. *International Journal of Science Education*, 37(3), 391-410.
- Maher, M. A. (2005). The evolving meaning and influence of cohort membership. *Innovative Higher Education*, 30(3), 195-211.
- Mandzuk, D., Hasinoff, S., & Seifert, K. (2005). Inside a student cohort: Teacher education from a social capital perspective. *Canadian Journal of Education/Revue canadienne de l'education*, 168-184.
- O'Connor, E. A., Malow, M. S., & Bisland, B. M. (2011). Mentorship and instruction received during training: Views of alternatively certified teachers. *Educational Review*, 63(2), 219-232.
- Pillen, M., Beijaard, D., & Brok, P. D. (2013). Tensions in beginning teachers' professional identity development, accompanying feelings and coping strategies. *European Journal of Teacher Education*, 36(3), 240-260.
- Ross, D. D., Stafford, L., Church-Pupke, P., & Bondy, E. (2006). Practicing collaboration: What we learn from a cohort that functions well. *Teacher Education and Special Education*, 29(1), 32-43.

- Schultz, K., & Ravitch, S. M. (2013). Narratives of learning to teach: Taking on professional identities. *Journal of Teacher Education, 64*(1), 35-46.
- U.S. Department of Education (DOE). (2015). *Highly qualified teachers enrolled in programs providing alternative routes to teacher certification or licensure*. Washington, DC: Author.
- Warhurst, R. P. (2006). "We Really Felt Part of Something": Participatory learning among peers within a university teaching-development community of practice. *International Journal for Academic Development, 11*(2), 111-122.
- Wenger, E. (1998). Communities of practice: Learning as a social system. *Systems thinker, 9*(5), 2-3.
- Wenger, E., Trayner, B., & De Laat, M. (2011). Promoting and assessing value creation in communities and networks: A conceptual framework.
- Williams, J. (2010). Constructing a new professional identity: Career change into teaching. *Teaching and Teacher Education, 26*(3), 639-647.
- Yin, R. K. (Ed.). (2003). *Case study research: Design and methods* (Vol. 5). sage.
- Zeichner, K. M., & Schulte, A. K. (2001). What we know and don't know from peer-reviewed research about alternative teacher certification programs. *Journal of Teacher Education, 52*(4), 266-282.

APPENDICES

Appendix A: Focus Group Interview Questions

Focus Group Interview Questions (30-45 min. per session) October, April, and June

1. At this point in the program how prepared do you feel to teach in your content area?
2. In what ways, if any, do you feel your STEM backgrounds are impacting your teaching?
3. What are some pros and cons regarding lesson planning? How comfortable are you identifying and including appropriate standards during lesson planning?
4. What advice would you give to future teacher candidates?
5. Have there been any surprises that you have encountered during this current period that you would like to share

Appendix B: Codebook

Codebook

Code	Criteria for Inclusion	Example
Advice	Providing Ideas Direct advice to cohort member Suggestions But not a response to interview question	Maci: Use rubrics, it makes grading so much easier. Sean: Get to know the security guards.
Camaraderie	Accountable to group norms Identifying a group need Joking together Modeling after each other Knowing each other But not soliciting advice	Emma: I've got binders and stuff and started acting like Sierra. Matt: Just something on a broad base I think is what we need.
Challenges	Classroom struggles Student challenges Parent challenges Confiding weaknesses But not a wonder or disagreement	Lea: There was a lot of frustrating moments throughout lesson planning. Matt: I don't know he never gives me feedback.
Classroom Environment	Resources Room layout Technology But not content or pedagogy	Maci: Yeah, I'm totally boxed in. I don't have board space to work. Matt: My classroom has a chalkboard
Content Standards	Standards Lesson planning Concept Discussion Reference to Common Core or NGSS But not behavioral	Brent: Like assignments are linked to state standards but our lesson plans are linked to the curriculum ones." Sean: Standards are really nice just because it's that one thing that you know if you do it you're doing it right.
Professional Identity	Application of content to instruction Teaching decisions Classroom presence Subject area strength Establishing classroom culture But not coursework or belongingness	Maci: I don't like canned experiments; I don't like trying to set up everything so it goes perfect. No, I want you to screw up. Emma: Just with having this experience in teaching and seeing the different type of questions that kids ask, it lets me know what else needs to be added into this lesson.
Shared Experiences	Common narrative shared by more than one speaker Similar classroom practices Common situation Similar teaching strategies Initiated with each other But not individual statements or validation	Ethan: A lot of completion grading. Maci: I grade most of it like that. Sean: It's also surprising that the fourteen, fifteen year olds their scope of future is so short sighted. Maci: Their scope of the future is like tomorrow.
Solicit	Direct Question Asking for clarification Asking for support Asking for confirmation Initiated by cohort member	Sean: Have you been to one of the Academy meetings? Emma: Do you ask for feedback?

Code	Criteria for Inclusion	Example
	But not from interviewer questions	Brent: I'm curious, real quick, have any of you guys subbed for your teachers?
Validation	Agree Confirmation Yes/yeah/yep/right Agree and repeat Validation and expand But not disagreement or negative	Ethan: I feel like I could do it, but it wouldn't be pretty. Matt: Yeah Maci: I'll second that. Matt: I'll third that.
Withdraw	Distancing from the group Checking out But not disagreement or alternate idea	Lea: I don't have the background like they do. Lea: I don't really have any.

Appendix C: Informed Consent Document

**Western Michigan University
Mallinson Institute for Science Education**

Principal Investigator: Dr. Marcia Fetters
Student Investigator: Ms. Katherine Eaton
Title of Study: How Do Secondary Teacher Candidate's Professional Identities Develop Throughout a Cohort-Model Alternative Certification Program?

You have been invited to participate in a research project titled "How Do Secondary Teacher Candidate's Professional Identities Develop Throughout an Alternative Certification Program?" This project will serve as Katherine Eaton's dissertation for the requirements of the Doctor of Philosophy in Science Education. This consent document will explain the purpose of this research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

What are we trying to find out in this study?

Our interest is in looking at how teacher candidates in an alternative certification program develop their professional identities throughout an intense course of study and internship. This study will help develop a deeper understanding of the needs of teacher candidates entering into education from STEM backgrounds.

Who can participate in this study?

This study will be conducted throughout the first year of the incoming cohort of Woodrow Wilson fellows. All students in the cohort have the option to participate or opt out of the data collection. This study will not be associated with a particular course so it will not have any impact on students' final course grades or internships.

Where will this study take place?

This study will primarily take place in Sangren Hall. The SAMPI survey and focus groups will take place in 4111 Sangren Hall or alternate classroom in Sangren if necessary. The reflection journals will be a part of the program coursework and the online journals can be completed at a location convenient to the participant.

What is the time commitment for participating in this study?

The time commitment will be spread out throughout the year at times that work best for the participants. The SAMPI survey and reflection journals are already part of the established program design. The three focus groups will be limited to 45 minutes and will take place during scheduled campus time during the fall, winter, and spring terms. The only component to take place outside of scheduled events will be the monthly online journals, which are designed to take between 10-15 minutes to complete.

What will you be asked to do if you choose to participate in this study?

You will be asked to complete the SAMPI evaluation survey, participate in three focus groups, complete a monthly online journal, and share entries from internship reflection journals. The survey and focus groups will be built into activities that are already part of scheduled meetings. The online journal will be reflective in nature and occur monthly.

What information is being measured during the study?

This study that contain qualitative data: the focus groups and journals, along with data from the pre and post SAMPI surveys. The SAMPI survey is a validated instrument that is generally used as a quantitative instrument but due to our small sample size we will be seeking qualitative correlations as opposed to quantitative claims. The qualitative information obtained will help give a descriptive look into how professional identities developed throughout the year in an alternative certification cohort-model program.

What are the risks of participating in this study and how will these risks be minimized?

The main risk will be confidentiality. Each participant will be assigned a random ID so that the confidentiality of the students will be maintained. The focus groups will be conducted by myself and will be transcribed utilizing only the randomly assigned IDs. Any video recordings will be destroyed after transcription is complete. The questions and journals will be geared towards pedagogical development in order to reflect what participants are learning and applying during their internships. If they have concerns regarding a specific classroom incident or issue then they will be asked to discuss with the Woodrow Wilson staff or mentor privately. Students can withdraw from the study at any time and also have the option to withhold isolated journal entries when necessary.

What are the benefits of participating in this study?

There are no direct benefits to participating in this study. However, the information garnered will hopefully help support future cohorts of alternative certification fellows.

Are there any costs associated with participating in this study?

There are no direct costs associated with participating in this study.

Is there any compensation for participating in this study?

There will not be any compensation for participating in this study.

Who will have access to the information collected during this study?

The student investigator will have primary access to the data during the study. Hard copies of documents will be maintained in locked cabinets of either the primary investigator or the student investigator. Any electronic data will be stored in password-protected files and on a separate password protected logon id. Dr. Fetters and other investigators will provide advice and guidance along the way but students' identities will remain anonymous throughout the analysis. This is part of Ms. Eaton's Dissertation requirement for her PhD program so results may be part of conference presentations or journal articles however all participants will remain anonymous.

What if you want to stop participating in this study?

You can choose to stop participating in the study at anytime for any reason. You will not suffer any prejudice or penalty by your decision to stop your participation. You will experience NO consequences either academically or personally if you choose to withdraw from this study.

The investigator can also decide to stop your participation in the study without your consent.

Should you have any questions prior to or during the study, you can contact the primary investigator, Dr. Marcia Fetters at marcia.fetters@wmich.edu. You may also contact the Chair, Human Subjects Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298 if questions arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

Please Print Your Name

Participant's signature

Date

Appendix D: HSIRB Approval Letter

Date: July 10, 2014

To: Marcia Fetters, Principal Investigator
Katherine Eaton, Student Investigator for dissertation
Allison Kelaher-Young, Co-Principal Investigator

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 14-07-07

This letter will serve as confirmation that your research project titled “How Do Secondary Teacher Candidate’s Professional Identities Develop throughout a Cohort-Model Alternative Certification Program?” has been **approved** under the **expedited** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under “Number of subjects you want to complete the study.”*** Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: July 9, 2015