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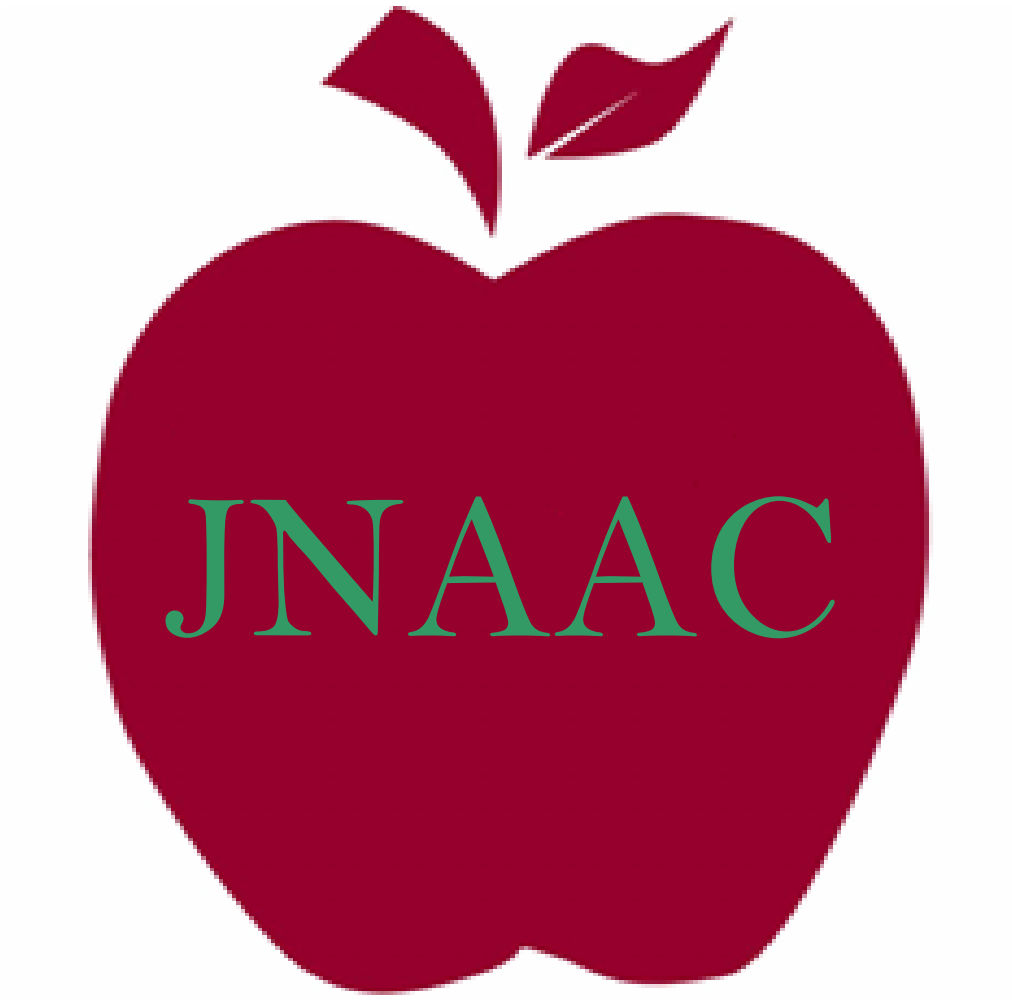

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STATE-WIDE COLLABORATIVE PARTNERSHIPS FOR ALTERNATIVE CERTIFICATION THE KANSAS TRANSITION TO TEACHING PROGRAM

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Alternative certification programs continue to increase as school districts, institutions of higher education, and commercial companies share common educational expectations. In Kansas, a state-wide collaborative of eleven partner institutions, governed by an advisory board, designed a conceptual framework, a standards-based program, curriculum, and a structure for managing, implementing, delivering and evaluating a state alternative teacher preparation program. Characteristics of the state-wide program are discussed including: (1) collaborative partnerships, (2) grant funding for candidates in multiple institutions, (3) cohorts of candidates, (4) consortium of institutions, and (5) online delivery model. Selection and support are identified as the key elements of success.

The National Center for Education Statistics forecasts that if the pupil-teacher ratio remains steady, at least 2.2 million new public school teachers will be needed by 2008 (Hussar, 1999). Reports of pending teacher retirements, teacher turnover, dissatisfaction with teaching, and the impact of the federal "No Child Left Behind" Act of 2001 lead to a consensus that our country faces serious problems with respect to "how teachers are trained, licensed, recruited and hired" (Feistritzer, 2003 & Berry, 2001).

Alternative paths to licensure are becoming increasingly more attractive to policymakers and teacher-educators as a means for recruiting potential teachers into high need areas (Humphrey, Wechsler, Bosetti, Wayne & Adelman, 2002). In 1983, only eight states reported they certified teachers through alternative routes although today they have become more common. All but a few states offer some type of alternative route program for teachers, and an estimated 200,000 people have been licensed to teach through alternative routes since 1985 (Feistritzer and Chester, 2000). Few, however, have state-wide programs supported by the state licensing agency with partners of state institutions and P-12 schools collaborating to support an alternative certification route as this paper describes. The purpose of this paper is to provide a brief overview of alternative licensure in

Kansas. The development, implementation, and results of a statewide collaborative Transition to Teaching Program coordinated through the Teacher Education and Licensure division of the Kansas State Department of Education (KSDE) will be discussed.

History of Alternative Licensure Program in Kansas

Alternative certification programs generally initiate in urban settings. Kansas was no exception. Following the establishment of the Peace Corps Fellows/USA Program in 1985 at Columbia University's Teachers College, Wichita State University (WSU), located in the largest city in Kansas and urban in nature, established an experimental alternative teacher preparation program in conjunction with the Kansas State Department of Education and the Peace Corps program in 1992. A grant from the Dewitt-Wallace Readers Digest Foundation funded stipends for Returning Peace Corps Volunteer (RPCV) participants and mentors, and for basic program and/or staff support. Participation was restricted to only state-identified areas of shortage at the secondary level. With this program, the foundation was established for alternative teacher preparation programs in the state of Kansas.

In 1996, WSU received approval from the Kansas State Department of Education for the experimental program to be expanded to include non-Peace Corps candidates. The KSDE already had innovative and experimental licensing regulations in place so that this process could occur. This expansion, which began in the summer of 1997, allowed all areas of secondary- and middle-school licensure for which WSU held approved "mainstream" preparation programs, rather than just shortage areas.

In 2000, a Restricted License was initially designed and approved by the Kansas State Board of Education as the vehicle for the alternative licensure process. It gave the individual immediate access to teach at the secondary level while at the same time completing on-line course work designed through collaboration among Kansas teacher preparation institutions. In the summer of 2000, funding provided by Dewitt-Wallace Readers Digest Foundation expired; however, support from the community and financial support from Title II funds and Raytheon Aircraft Industry spurred continued growth of the WSU Transition to Teaching Program.

In 2002, the WSU program had expanded to include 98 candidates serving 40 districts. With reduction in funding anticipated as grants were expended, WSU was forced to reduce the quota to 50 participants in the 2-year program, allowing for only 25 new candidates beginning with the summer 2004 cohort.

Kansas Transition to Teaching Program

In 2003, the Kansas State Department of Education (KSDE), under the direction of Dr. Martha Gage, Director, KSDE Teacher Education and Licensure, established a state-wide Transition to Teaching (T2T) Program with funding from Teacher Quality Programs Office, Office of Innovation and Improvement, ED. The grant, for more than $2 million dollars, was written by the Director of the Teacher Education Accreditation and Licensure Division of the KSDE. The program was designed with on-line delivery of courses and participation from eleven partner institutions in the state. Candidates for the first cohort entered the program in August, 2003, representing six of the 11 initial partner institutions. A discussion of the state-wide program, the process, and the partnership follows.

Traditionally, Kansas has had a strong system of public education that focuses on providing high-quality teaching and setting high standards for student achievement. The correlation between having a highly qualified teacher and improved student achievement cannot be denied. In this state, an alarming trend has occurred that makes it apparent that we are not producing enough highly qualified teachers to meet the demands of our children and schools. Kansas faces reduced

numbers of college students entering secondary education teacher preparation programs as well as significant attrition from teachers in the profession. Teacher shortages exist in special education, in content areas of science and mathematics, and in high-need geographic areas.

Outcomes for the KSDE Transition to Teaching Grant

The outcomes for the KSDE grant (www.ksde.org/cert/TransitionTeaching.htm) were based on the needs in the state. Needs included providing 200 new teachers in high need districts, an on-line collaborative program developed by teams of faculty and offered by accredited teacher education institutions statewide, sustainability, statewide mentoring and induction programs that support new teachers in their early years of classroom experience, and higher student achievement by children in this state, especially in high need areas.

Program Development

Key individuals in the KSDE and across Kansas worked to create the Kansas Transition to Teaching (T2T) Program following the design described in the United States Department of Education grant. An advisory board was established that included representatives from eight institutions comprised of public and private, and large and small institutions in the state. A five-member curriculum/technology committee (CTC) focused on curriculum development and program on-line delivery. Open to all institutions of higher education in the state, eleven (5 public and 6 private) agreed to become *participating institutions*. The participating institutions were actively involved in program development, assessment, and served on the advisory board. Most participating institutions also acted as *parent institutions*, selecting potential candidates and supporting those candidates throughout the duration of the program. The final distinguishing characteristic of the universities was the role of *presentation institution.* The presentation institution was the individual university (or universities) that presented/delivered the common state online course during a specific term.

Advisory Board

The T2T Advisory Board, serving as the unit, provided the key leadership role for developing governance and managing the program policies, curriculum, instructional delivery, and assessment. It was responsible for the design of the T2T program, using KSDE professional education standards and licensing regulations and following grant requirements as well as NCATE standards as guidelines. First appointed in January of 2003, by fall 2003, the Board designed the structure for managing, maintaining, delivering, and evaluating the T2T program. Key elements that the Board developed included the T2T conceptual framework that drives the program; course curriculum; candidate, university, and district participation guidelines; and an assessment system to measure candidate performance outlined in the Kansas Transition to Teaching: Policies and Procedures Guidelines (http://www.ksde.org/cert/ttt.doc).

The Unit, Conceptual Framework, and Assessment System

The conceptual framework includes mission, philosophy and purpose, knowledge base, candidate proficiencies, and the professional education standards for all state licensure programs (*Teacher Education and Licensure Regulations and Teaching Standards for Kansas Educators*, http://www.ksde.org/cert/CertHandbook.doc, 2003, p. 74). The unit has a comprehensive system for assessment of candidate performance with four decision points: admission to teacher education, admission to T2T, completion of T2T, and program completion. Criteria for those decision points and the definition and description of dispositions are described in the Transition to

Teaching Handbook (pp. 11-14). On-going monitoring of candidates includes assessment of content, pedagogical, and professional knowledge, skills, and dispositions to help all students learn (NCATE, 2000, Standard One). All assessments for the Kansas Transition to Teaching Program are designed to indicate that candidates meet appropriate elements of Standard One for NCATE, and professional, state, and institutional standards.

Dispositions

Dispositions for all candidates include: (a) a commitment to professionalism and ethical standards; (b) reflective practice; (c) life-long learning; (d) respect and provisions for equitable learning opportunities for all; (e) including parents and community members in the educational process; and (f) collaboration with other professionals to improve the overall learning of students. Candidates are informed of the dispositions at the time of admission and review them during induction. Candidate dispositions are assessed annually through professional practice and at the completion of licensure requirements. If satisfactory progress toward meeting the dispositions outcomes is not demonstrated, a candidate may not be allowed to continue in the program. If needed, a Plan of Assistance is developed jointly by the university supervisor and the school administrator.

Curriculum/Technology Committee

Early in the 2003 spring term, the Advisory Board appointed a five-member Curriculum and Technology Committee (CT) that made recommendations to the Board regarding the current seven-course curriculum and the appropriate on-line delivery format. The CT committee, whose members came from the university ranks, was appointed based on their expertise in technology, on-line delivery, and curriculum. This group set the parameters for the online courses that became the core of the KSDE T2T program as well as the framework for the induction and supervisory experiences. A series of seven courses for 18-credit hours was outlined (see Table 1), and a call for proposals was submitted to each participating institution. Course proposals were submitted by at least two institutions for each course and by as many as four for some.

Table 1 T2T Plan of Study Indicating Three-Year Sequence of Courses

Sequence	Summer	Fall	Spring
Year 1	State & Parent Institution Inductions	Introduction to Teaching Internship	Planning for Instruction Internship
Year 2	Understanding the Learner Content Deficiencies	Working with Diverse & Exceptional Learners Internship	Improving Instruction through Reading & Writing Internship
Year 3	Content Deficiencies	Becoming A Reflective Teacher Internship	Understand-ing the Foundations of Education Internship

A rubric guided decisions made by the T2T Advisory Board. The courses were developed in Blackboard and reviewed by a panel of professionals that included representatives of the participating institutions and practicing teachers from across the state. All teachers who participated in the curriculum review were identified through the KSDE office of Communications and Recognition Programs as exemplary teachers. The criteria used to determine exemplary teachers were (a) recognition as National-Broad Certified Teachers, (b) participation in the Teacher of the Year team, (c) recognition as a Local District Teacher of the

Year, and/or (d) selection as the recipient of the Presidential Award of Excellence in mathematics and Science Teaching. At each point, the course CD-ROM, which included copies of documents in Word and a Blackboard Course file, were in the possession of and owned by KSDE. When one of the participating institutions chose to become a presentation institution, the CD was sent with the Blackboard course file ready to upload; however, ownership stayed with the KSDE.

Plan of Study

A three-year plan of study was provided for each alternative candidate, beginning with the restricted licensure at entrance. Course deficiencies were determined by the parent institution. Table 1 indicates the required courses and their sequence. Following completion of professional practice (decision point three), candidates must demonstrate knowledge, skills, and dispositions specified in the conceptual framework as assessed by (a) mentor teacher assessments, (b) university supervisor assessments, (c) diversity assessment, (d) dispositions assessment, and (e) a final professional program practice assessment.

Licensure

At the end of the program, a conditional license is recommended to the KSDE if the candidate (a) achieves a 2.50 or higher cumulative grade point average in T2T professional education courses, (b) receives passing scores on the applicable Praxis II exam(s) (currently Principles of Learning and Teaching and content exam in area(s) of licensure), (c) receives approval from the parent institution or licensure officer after review of all data, and (d) receives a grade of "C" or higher in all Transition to Teaching professional education courses, including demonstration of acceptable classroom performance as evaluated by mentor teacher, university supervisor, and school administrator. These requirements include not only the KSDE requirements, but T2T requirements as well. The conditional license is valid for two two-year terms. During this two-year period, teachers must complete the Kansas Performance Assessment (KPA) to move to the professional license (http://www.ksde.org/cert/kpa.html).

Program Follow Up

A follow-up of program completers will be conducted to ensure that **c**andidates demonstrate professional practice consistent with teachers at the professional license level. Both employers and graduates will be contacted.

Partners in the KSDE Transition to Teaching

In developing state-wide collaborative partnerships for alternative certification, four critical partners existed with key individuals in each: (1) Teacher Education and Licensure office of the KSDE, (2) applicants/candidates, (3) the local education agencies, and (4) the 11 NCATE-accredited partner institutions in the state.

Kansas State Department of Education

An integral partner in T2T, the Kansas State Department of Education issues the restricted license which allows the alternative certification route. KSDE provided the foresight to see the need for the state-wide initiative. The state consultant, working closely with the director of teacher education and licensure, formulated the advisory board, and utilized grant funds to solicit interest and support, and to design, seek comment, approve, implement, oversee, and evaluate the program. That state consultant is in routine contact with all partners, providing information, support, and guidance.

Applicants/Candidates

Nineteen candidates began the program the first year. Nine were in high need schools, eligible for grant funds, 10 in non-high-need

schools. The grant, designed to help fill teaching vacancies in high need school districts through an alternate route to licensure, provided up to $1,500 per year to help pay the costs of tuition, materials, and supervisory costs for on-line professional education courses to be completed while teaching in a high needs school. The candidates worked with a school district and an institution of higher education to obtain a restricted license that allowed the candidate immediate access to a classroom.

To be eligible for the T2T grant funds, the applicant verified employment in a high need school district in the appropriate content area, and had an undergraduate degree in that content area or an equivalent number of hours in the content area of an approved teacher education program in which the restricted license was sought. In addition, candidates agreed to teach in one of the 83 high need school districts in Kansas during the length of the restricted license (3 years), complete the online coursework, be accepted in a partner institution's teacher education program, and complete a deficiency plan that could be accomplished within three years. The applicant applied for a restricted license after a teaching contract had been secured and submitted verification of the above through the parent institution and the hiring district to the KSDE. The application required a letter of reference indicating work with students and evidence that a bachelor's degree was completed two years prior to application. For the restricted license, a criminal history background check also was completed. Before the actual teaching began, the candidate participated in an induction program defined by each parent institution and completed other requirements as defined by that institution.

Local Education Agency

The local education agency (LEA) provided documentation of the following: (1) that it had exhausted reasonable attempts to locate and hire a licensed person for the position which the alternative candidate was to fill, (2) that it would employ the alternative candidate if the restricted license was issued, (3) that it would assign a licensed teacher with three or more years of experience to serve as a mentor for the alternative candidate, (4) that it would provide, within the first six weeks of employment, a new teacher orientation or induction program for the alternative candidate, (5) that it had collaborated with a participating Kansas teacher education institution regarding the program the alternative candidate would pursue to obtain full licensure, and (6) it would provide accommodations to the candidate, including release time, in order to work with the mentor teacher and to complete coursework needed for full licensure.

Cohort One included 11 female and 8 male candidates who were employed in 15 different districts in 9 different content areas (biology [3], mathematics [3], psychology [1], business [3], foreign language [2], industrial education [1], chemistry and physics [1], journalism [1], music [2]. Nine of those candidates were hired in high need schools, and 10 candidates taught in non-high need schools. Data for high-need district candidates includes 5 males and 4 females representing 7 districts, 6 participating institutions and 6 content areas (biology [3], mathematics [1], psychology [1], science [1], business [2], and music [1]).

Cohort Two included 30 candidates and this increase was encouraging. The candidates were employed in 25 different districts including ten different content areas (music [2], science [5], social science [3], business [10], mathematics [2], English [1], journalism [1], Spanish [2], technology [1], physical education [2], Latin [1]).

Numbers of candidates continued to grow with a total of 37 in Cohort Three. These candidates were hired by 26 different districts filling different content areas (journalism [2], math [9], business [5], science [9], Spanish [3], English [3], speech [2], art [2], music [1]). The science and math teachers were expected. However, the high number of business teachers was not expected.

Higher Education Participating Institutions

The *participating institution* is an institution of higher education that is a part of the T2T program and has a representative serving on the Advisory Board. The applicant selects one of the 11 participating NCATE accredited institutions to serve as their *parent institution*. The parent institution has responsibilities including:

- (1) drafts a list of deficiencies and a plan of on-line professional education coursework to erase those deficiencies,
- (2) conducts on-site visits at the applicant's school,
- (3) requires a demonstration of basic skills as identified by the parent institution,
- (4) plans an induction program for the preparation program as defined by the institution,
- (5) agrees to accept the on-line professional education courses from a participating institution,
- (6) assumes responsibility for advising and supervising the applicant, and
- 7) verifies successful completion of the program.

In the first cohort, six of the 11 partner institutions had candidates participating in the program. Ten institutions had candidates in the second cohort and eight institutions had candidates in the third cohort. Two different institutions, both of whom had candidates in the program, offered the first online course in the fall as the *presentation institution*. One of those also offered the second course during the second semester. Courses were first delivered by the institution that developed the course. After the first offering, the developing institution had the first option of teaching the course again, but others could offer the courses if needed.

Collaboration among Participants

The high-need district agreed to offer the candidate a contract and, based on funding, to (a) provide an induction program in collaboration with the parent institution, (b) assign a mentor who has three or more years of successful teaching experience, (c) collaborate with the presentation institution offering the on-line course work, (d) communicate with the parent institution regarding candidate performance or needs for assistance, (e) assist in filling out the state application, (f) complete the district section, and (g) provide an annual report on progress of the candidate to the Commissioner by July 1 of each year.

What Makes T2T Unique?

According to the National Center for Alternative Certification, in 2003, states reported a total of 144 routes other than the traditional approved college teacher education program, with 46 states and the District of Columbia reporting having some type of alternative route for certification (Feistritzer, 2003). Alternative certification is being examined as a possible solution for increasing the quantity and quality of teachers across the nation (Ingersoll, 2001).

Most alternatively licensed teachers are trained and teach in urban and rural areas. The greatest demands for teachers across the nation are in large urban areas and outlying rural areas (Feistritzer, 2003). While alternative programs typically vary enormously from state to state and from institution to institution, the KSDE Transition to Teaching program has implemented a statewide initiative for alternative preparation routes, unifying the process through collaborative efforts and partnerships. Distinctive characteristics of the state-wide program include: (1) state-wide collaborative partnerships, (2) transition to teaching state grant funding to candidates in multiple institutions, (3) eleven parent institutions for state-wide cohorts of candidates, (4) consortium of partner institutions, and (5) online course delivery for students enrolled in multiple institutions.

State-wide Collaborative Partnerships

Clearly, all teacher education programs parallel much of what is outlined in this program, assessment plan, courses, and program follow up. It is, however, the state-wide collaboration between KSDE, universities, and partnering districts that makes the program unique. Candidates may be associated with one institution--the parent institution, and yet will likely be enrolled in two institutions in any given semester; one for the academic coursework, possibly prepared by a third institution—overseen by a state-wide program committee, and another institution for the supervisory and mentoring experiences. The school district also provides supervision and mentoring. The commitments of each group vary, as outlined previously. However, it takes the collaboration by all parties involved for a candidate to be successful.

Transition to Teaching Grant Funding to Candidates in Multiple Institutions and Agencies

The T2T grant provided funds for the development of courses by faculty at multiple institutions, for candidates across the state, and for the local education agencies. Eight thousand dollars was allowed for the development of each of the seven courses. Funding for candidates included $1,500 per year for individuals to pursue teacher licensure through alternate means. Funding for the local education agency allowed $1,000 to provide an induction program for all the Transition to Teaching participant(s) from their district, $500 for the mentor teacher, and $150 per day, up to 10 days, for release time of the T2T teacher and mentor teacher for professional development purposes. No grant funds were provided to the participating institutions; instead, each institution received tuition for two (2) hours of internship per participant each year.

Eleven Parent Institutions for State-wide Cohorts of Candidates

Parent institutions are the communication and collaborative hub of the T2T process. The parent institution acts as the monitoring agent of the T2T process and is responsible for providing essential monitoring and mentoring to assist each new teacher in becoming a professional educator. The licensure officer, or the alternative certification program director, validates that the integrity of the institutional and state standards have been met. This process includes an institutional evaluation of the perspective teacher's transcripts, the development of a deficiency plan for any needed coursework, meeting with the prospective teacher, and communicating with the hiring school district.

Although potential candidates must independently find employment, the parent institutions are responsible collaboratively with the districts for on-going monitoring and support of the T2tT participants. The parent institution provides an induction class that all program participants are required to attend prior to the beginning of the school year. In addition, through the on-going monitoring of each teacher's progress, advising and support occurs on a regular basis. Each T2T participant has several observation visits each year that are coordinated by the parent institution and are in collaboration with the school district mentor. All data for the assessment system are maintained by the partner institution. The licensure officer of the partner institution then makes final recommendation for conditional licensure to the state. Each parent institution also is eligible to offer the courses developed by professionals and owned by KSDE. The courses are taught online by faculty at the parent institution to candidates across the state who may be enrolled concurrently in two institutions, one institution for the course delivery and the other for the clinical supervision and support.

A Consortium within the Partner Institutions

A collaborative arrangement to deliver the T2T program exists between the three universities of the Midwest Associated Colleges Consortium (MACC) (Baker University, Mid-America Nazarene University, and the University of Saint Mary). While each university acts as the parent institution to its own T2T candidates, the orientation class is coordinated through the consortium. Instruction is provided by a faculty member from one of the consortium universities, and the Education Committee of MACC oversees the course evaluation. In addition, the supervision of T2T candidates is coordinated through the Education Committee. As will be noted later, this model was extended to a state-wide collaborative induction for the second cohort.

When MACC agreed to support the Kansas T2T program and candidates via the Kansas restricted licensure program, they had no idea how much interest would be generated throughout the state. With limited advertising, the three universities received multiple calls each week from individuals interested in the T2T program. Between May and July in 2003, MACC was able to place seven T2T candidates into the classroom. A few candidates have had difficulty meeting the T2T program requirements (particularly content hours) and some have had difficulty finding a job in their content field. However, most of the candidates interviewed have strong potential for classroom placement.

The typical candidate applying for the T2T program through MACC must meet both academic qualifications and professional dispositions, is over the age of 30, possesses a strong knowledge base and real-world work experiences, and wishes to make a mid-career change into a field to make a difference. Comments such as "These teachers are truly making a positive difference," "This young lady will soon become one of our stronger teachers," "We are very pleased and we want to investigate the placement of others," demonstrate the positive feedback from the university supervisors and district administrators.

Presentation Institutions: Online Course Delivery for Students Enrolled in Multiple Institutions

Having been successful in the development, implementation, and sustainability of an alternative certification program, Wichita State University was anxious to support the state initiative for training highly qualified teachers. Four teams of faculty submitted proposals for courses and three were awarded the grants. Following course development, faculty who authored the course taught it for the initial offering to facilitate reflection, review, and revision. The immediate reality of not knowing the candidates, the programs they were in, the institutions they were associated with, or their advisors was disconcerting.

The course, originally designed to begin August 1, was projected to be completed by October 1. Late hires, communication delays, and procedural gaps combined with the challenges that alternative candidates faced entering the profession made it apparent that the beginning and the ending date for the first course had to be adjusted.

Nineteen candidates began the course and one dropped due to health issues. By the end of the first semester, eight candidates had completed the course. Four more completed the course over the winter holiday; and no grades were submitted for four other candidates who worked through the next semester. One of the last four candidates never enrolled in the course. One candidate never completed anything past the initial exploration of the on-line course, documented by the course utilities of Blackboard. It is unknown why the other two candidates did not finish the course.
Some candidates found the process difficult:

> I want to apologize for turning so much work in at the end of class. I realize you are both very busy. Some technical problems combined with a lack of organization provided for a lot of last minute work. I'm

> very sorry for giving you more to grade at an already busy time of the year. I have learned a lot about teaching and on-line learning in the last few months. (Candidate X)

However, in the midst of the struggles, comments like the following were encouraging:

> Throughout my career I have always thought of myself as a motivational manager. So many of the things I found in this module I have used. However, there was one large exception, I always (normally) had a select group of individuals. In school that is not the case! It may be fatigue of a first year teacher, at the end of the first semester, but after using many of the motivational strategies given in this module I feel like singing 'The Impossible Dream'. What I learned is that all of the techniques found in this module [Motivation] are great, useful, and necessary given the diversity of the student body. I have had successes which are very rewarding but the ones that are still on the fringe that I have tried to motivate can keep one awake at night. (Candidate Y)

The work of the instructors included: (a) providing the material in the online course, (b) sending it by email to those who could not understand how to navigate the system, (c) answering legal and ethical questions related to teaching, and (d) providing one-on-one tutoring on a variety of topics. Additional responsibilities included grading (many wanted immediate feedback), remediation enhancement, and cheerleading. Cheerleading, along with individualized support, might be one of the most important roles played as can be seen in a candidate's reflection on effective teaching:

> I am unable to recall a time when a teacher helped me persist though a difficult assignment other than this class. I have had the hardest time in my life motivating myself through this class, but you as professors have continued to push me along and believe that I can actually finish in time. The emails I have received from you always seem positive and help switch my way of thinking to a more positive light. Never once have either of you threatened me about getting finished. You have both shown compassion by relating personal experiences of how you succeeded in similar situations. You have been very helpful in breaking down my assignments so that I have known from the beginning what actually needs to be turned in and graded and you have responded with appropriate comments that demonstrate your understanding of the material. You have basically made me want to finish more because I don't want to let you down rather than from just wanting to finish myself. (Candidate Z)

Shortly after the initial online course began at Wichita State University, the need for another section was predicted, as a second group of candidates were hired at the beginning of the school year and a second introductory course was made available. After the course was copied onto the Fort Hays State University's server, the professor began the process of learning the course content and the on-line organizational style. Having designed many courses online using several different web-based programs, this professor felt confident that the Blackboard course would be easy to navigate. This professor learned, however, that course documents and assignments are much easier to find when you have organized them yourself. The professor was learning, just as the students, where to locate essential resources, which provided challenges and rewards at the same time. Once the organizational format was learned, the professor's focus turned to the content and delivery of the course.

Due to the late fall start of the second section of the course, frustrations similar to those expressed from candidates in the initial course offering were experienced. The professor facilitating the second section found the candidates in the course were already overwhelmed beginning new careers, serving on committees, participating in after-school student activities, and trying to balance family and community obligations. Anxiety was high. The program of study was originally designed to complete courses in eight weeks. It quickly became evident to both institutions offering the initial course that this was an unrealistic expectation. Throughout the graduate-level, online course, the apprehension and concern was evident in the questions from the candidates and the feedback from the faculty. Reassurance, support, and often technical assistance were vital. With this support came the realization that an

understanding of the profession was also essential. Candidates were on committees, worked late, and graded papers at home. This pressure was intense.

Extensions on assignment due dates were allowed, while encouraging candidates to persevere while working through the modules. As part of each module, candidates were to journal and converse with their mentor teachers. These reflections also helped relieve some of the stress. Even though the content seemed overwhelming at times and the pace rigorous, as the work was completed, the candidates stated that the information was helpful. Those candidates who were unable to complete the course work until the winter holiday shared that the information provided in the course would have been very helpful if they had completed it earlier in the semester. Teaching this course served as a re-awakening for the professor, a veteran educator, who remembered similar struggles as a beginning teacher in reading and listening to challenges faced by these candidates. These reflections aided the expectations of subsequent course offerings. They also provided real-life scenarios with which to prepare future candidates.

CONCLUSION

Much has been learned about state-wide management of a complex, collaborative, comprehensive alternative certification program. Numbers for the first year in the program were small, but have grown each year. Enrollment, without stipend, was opened to non-high need schools in order to make the best use of resources at all institutions. Nineteen candidates started the program in the first cohort. Because of small numbers and to maintain confidentiality, statistics will be reported for the entire cohort. Two candidates did not continue after the first semester. Five additional candidates will not continue for the second year. Reasons for withdrawing include workload, travel time (three hours a day), number of teaching preparations (4), family, and unsatisfactory progress as determined by the parent institution and the state T2T Advisory Council. Four candidates of the thirty dropped from the second cohort, and one of the thirty-seven has dropped from the third cohort.

Examination of the data and reflection on experiences from the first cohort has resulted in revisions to the program to enhance the experience of subsequent cohorts. These proposed changes include the establishment of an incomplete grade agreement and a FERPA release form (http://www.ksde.org/cert/TransitionTeaching.htm), a state-wide induction, an institutional induction, the renaming and re-conceptualizing of the practicum to an internship, the standardizing of the structure for the online courses within Blackboard, and the spawning of a new alternative certification program in the state. As a result of the experiences in establishing the T2T program, the following is a discussion of the forms that have been developed to make ensure data gathering and information sharing.

Forms

FERPA release form. As the first course was being taught, the state consultant requested information about how candidates were doing in the course. The instructor's reluctance to provide that information without candidate consent lead to the establishment of a *FERPA Release Form* (http://www.ksde.org/cert/TransitionTeaching.htm, p. 34), authorizing the instructor of the institution delivering the course to release the following specified educational records and information, including any and all information regarding their progress in the online professional education course(s) for the purpose of monitoring progress.

Incomplete grade agreement. Because some candidates had not completed the course at the end of a given semester, an *Incomplete Grade Agreement* (http://www.ksde.org/cert/TransitionTeaching.htm, p. 33) was designed allowing a grade of I (Incomplete) to be assigned to a candidate at the discretion of the instructor. The Incomplete had to

be removed prior to the beginning of the next semester's (or summer's) on-line professional education work. Requests for extensions were to be made in writing to the online course professor and the candidate's parent institution supervisor, who consulted with one another.

Inductions

State induction. The Advisory Board provided the framework for the induction course and for the supervision to be conducted by the parent institution. A state induction and an institutional induction are both planned for the second cohort. Described in the handbook (KSDE, 2003, pp. 21-22), state induction is being planned for mid-July with all candidates and representatives from participating institutions meeting in the state capitol. The instructor of the first course will meet face-to-face with the candidates. The Conceptual Framework and Assessment Procedures will be presented; all forms, documents, procedures, and paperwork necessary for signatures will be provided; and expectations of the course, program, and teaching in general will be provided as well as an explanation of the expected professional dispositions. Candidates will have an opportunity to familiarize themselves with Blackboard and practice navigating the course with technology assistance provided.

Parent institution induction. An induction by the parent institution is now a requirement of each cohort, approved quickly after the first two months of the first cohort. A two-credit course with a minimum of 32 hours of contact time will provide an orientation for prospective Transition to Teaching candidates into the field of education. The course covers the following topics: philosophy, beliefs, attitudes, and dispositions; pedagogical content knowledge; active participation; content reading strategies; disciplining with dignity; motivation; lesson and unit planning; state standards; assessment design and strategies; focus on learning; technology in the classroom; and making modifications for diverse learners. The course also includes recommended performance activities, such as developing a philosophy of education, developing lesson plans, developing assessments, presenting lessons to peers and completing reflections, and writing reflection papers on teaching and learning. The induction is an introduction to topics that will be investigated in depth during the first online course and a foundation for preparing candidates with the basic skills needed to enter the classroom.

Online Courses

Although all courses were designed for use in Blackboard, they were designed by seven different sets of faculty at two different institutions. Because of that, the format for each of the first two courses was different, which caused another online learning curve at the beginning of each course. The challenge of electronic instruction and navigation through courses designed by other individuals has also been addressed. Representatives from the institution partnerships are working to create a standard framework for all courses, which will facilitate awareness for both instructors and candidates in the location of documents, design of modules, and management of the online delivery.

Spawning New Programs

The University of Kansas, one of the original partner institutions, withdrew and began its own alternative certification program. A T2T partnership began in 2004 between the University of Kansas and the Kansas City, Kansas Public Schools (KCKPS), very similar in structure to the state program, but more traditional in nature. Their goal was to "recruit and prepare talented and highly skilled individuals to teach mathematics in KCKPS middle and secondary schools." (Peter, 2003-2004, p. 6). The two-year program, focusing on teachers of mathematics or science (or related fields) will require teaching full time on a restricted license and completing

two years of graduate coursework, after which candidates will qualify for state licensure and fulfill the requirement of two more years of service to KCKPS.

First Year Reflections

With little time for recruitment following grant notification, the numbers for the first year in T2T were small. However, remembering the beginnings of the WSU program where there were only 3-5 per year for several years, the numbers were meaningful. In an examination of the program and the experiences of the first year, two key elements seem essential for success: (1) selection and
(2) support. In traditional teacher education programs, the variables associated with each of these concepts are minimized because there are typically only two participants for the first several years: (1) the student and (2) the institution with the addition of a participating district in the final semester. In many alternative certification programs, three variables are considered: (1) the candidate, (2) the participating institution offering coursework, supervision visits and support, (3) and the local education agency (LEA). In the T2T Program, both selection and support have multiple variables along with the career change that is in process.

Selection

Initially, the candidate selects the T2T program and identifies a parent institution. Between the two of those, paperwork for admission to the program and the institution are completed. Next, the candidate selects a high-need district where there is an opening. There is no selection in the courses that are to be taken, either in the case of the content area or the professional sequence. In the case of the professional education coursework, there is no selection in the mode of delivery and with small numbers, no selection of faculty. In almost all cases, online learning was a new experience and not one that candidates would have selected, given a choice.

From the T2T perspective, guidelines were in place that allowed the selection of candidates. However, the guidelines are primarily academic. Requirements for the state include a degree, limited teacher education coursework, and a 2.5 GPA. Requirements for the parent institution include the required GPA in the content area of the parent institution (which varies by parent institution) and academic standing appropriate for entrance, again varying by institution.

Academic performance is seen as one indicator of teacher success but research has also begun to look at the characteristics or dispositions of successful alternative candidates as well. Attitudes, propensity and desire to teach, and experience working with students are minimally assessed in a letter of reference required as part of the state application/selection process.

The success and sustainability of an alternative certification program depends on recruiting quality candidates -- more so than in a traditional, college-based teaching program. A typical alternative route program accepts only a limited number of teacher candidates at any one time. The program's resources must be funneled to candidates who will be employed by participating districts, so investing resources in candidates unlikely to succeed is a loss—a lose situation for programs and districts. As a result, selecting the right candidates for admission is crucial to the program's success (Gordon, 2004).

The experiences and backgrounds of candidates entering an alternative program also have a significant effect on their success in the classroom. Teacher preparation program models that identify characteristics of successful candidates in the selection process facilitate the transition of the alternative candidate to the classroom.

The selection of a mentor is left to the LEA with experience and training being required by the state regulations: “the local education agency will assign a licensed teacher with three or more years of experience to serve as a mentor for the applicant” (KSDE, 2004, p. 16). New teachers are not finished products. Districts and schools

that hire new teachers bear responsibility for making sure that they are provided good mentoring and a strong induction program during the first few years of their career to bolter their preparation (ECS, 2004).

Support

As districts throughout the state prepare for the influx of new teachers, there is a challenge to provide the newcomers with the kind of support needed if they are not only to remain in the profession, but to develop into the kinds of educators able to teach to today's high standards (Stansbury & Zimmerman, 2002).

Support is a critical element of success in any alternative certification program. The T2T grant provides financial support in terms of funding for those in high-need areas. The local education agency provides support in terms of professional development for all teachers, but also additional teaching support by an assigned mentor. Each partner institution provides support in the form of an assigned academic advisor and a supportive internship supervisor. As noted in the reflective comments of Student Z, the instructors of the online courses also provide support in terms of encouragement and motivation. The advisory board outlined parameters for the supervised internship (two credit hours per year), considered the link between the university, the T2T candidate, and the school district. This internship includes a series of supervised activities to support each T2T candidate.

This last year has provided excellent opportunities to research, reflect, and refine a statewide collaborative alternative certification program. As partnering institutions and local education agencies monitor and assess the progress of the first cohort of alternative candidates, and as feedback is received from these new teachers, the collected data will suggest modifications to strengthen the alternative preparation program and facilitate the transition of new teachers into the profession.

After the grant

In planning for a continuation of the state-wide alternative certification program after grant funds were no longer available, Teacher Education and Licensure put out a call for institutions or consortia to continue the program. Two consortia have been developed, each consisting of the major players in the original grant. Courses are voluntarily being updated by faculty who designed and developed them initially, and the Kansas state-wide alternative certification program will continue. Twenty-eight students are in one consortium and 10 in the other. Numbers of candidates continue to grow as school districts learn about the program, the teacher shortage increases, and candidates prove their effectiveness over time.

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ALTERNATIVE CERTIFICATION AND RETENTION OF SECONDARY MATH AND SCIENCE TEACHERS: A STUDY BASED ON *SASS/TFS*

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In light of shortages of mathematics and science teachers, alternative certification was introduced in the mid-1980s. This study examined the effect of alternative certification among math and science teachers who moved to a different school or left the profession. This was accomplished using the national SASS and TFS databases. The results indicated that alternatively certified teachers were comparable in their commitment to their current school and the teaching profession when compared with their traditionally certified colleagues. Findings are discussed with respect to their relevance for education policy makers and school administrators.

Keywords**:** *Alternative Certificate, Teacher Retention, Math and Science Education*

Since the early twentieth century, teacher education has been the responsibility of teacher colleges, while school districts directed their efforts to teaching children and youth. Within the past few decades, many schools faced difficulties finding teachers, particularly in some specialized areas. Demographic changes and class-size reductions, among other factors, have increased the need for new teachers, and concerns about staffing schools with qualified teachers have been raised. In 2000, Murphy, DeArmond, & Guin (2003) estimated that 45,000 public-school teaching positions were unfilled when school began. However, the depth of the problem varies across subject area and region in the United States. For example, a study based on a national survey found ninety-five percent of urban school districts had an immediate demand for science, mathematics, and special education teachers, compared to only fifteen percent in social studies (Recruiting New Teachers Inc., 2000).

To alleviate the teacher shortage, alternative teacher certification programs have grown rapidly since their introduction in 1983. At that time, only eight states offered alternative routes for people who had not come through a traditional teacher education program. In 2003, 45 states and the District of Columbia have some type of alternative route for certifying elementary and secondary teachers, and an estimated 200,000 people have received alternative certifications since 1985 (Mikulecky, Shkodriani & Wilner, 2004). Approximately 18 percent of new hires in California, 24 percent in Texas, and 24 percent in New Jersey entered the teaching force through "alternative" routes (Feistritzer, 2003). A recent *New York Times* advertisement recruiting participants for the New York City Teaching Fellows programs provided an indication of the professional workforce being targeted by these programs, i.e. "mid-career professionals and recent graduates", in the high-need disciplines of mathematics and science. ("Become a NYC Teaching Fellow", 2006).

Due to the nature of these programs, alternatively certified teachers have typically taken fewer education courses and undergone training programs of shorter duration than

traditionally certified teachers. In 1990, Darling-Hammond pointed out the inconsistency in existing definitions of alternative certification and the often-ignored difference between "alternative certification" and "alternative paths to certification." Shen (1997, 1999) used the working definition from *Schools and Staffing Survey (SASS)*, which is, simply put, "what the state calls an 'alternative certificate program'" (1997, p. 277).[1] Laczko-Kerr and Berliner (2002) defined "under-certified teachers" as those who had emergency, temporary, and provisional certificates, while Qu and Becker (2003) pointed out that traditional standard teacher certification and traditional provisional teacher certification appears to differ only in their levels of teaching experience. McKibbin (1999) mentioned that, in 1998, some states merely considered alternative certification as synonymous with emergency certification or a way to test out of normal requirements. Compared with teachers who obtained a teaching certificate through traditional routes, alternative certificate holders usually took their educational coursework during an on-the-job internship, though most alternative certification programs require completion of a Bachelor's degree in some subject-matter field. While alternative certification programs have addressed some critical shortage areas and brought more minority teachers into classrooms, concern in the educational establishment remains over the quality of alternatively certified teachers. Some researchers have suggested that these teachers have more difficulties learning to teach than traditionally certified teachers (Darling-Hammond, 1990; Salyer, 2003).[2] On the other hand, others have argued that good teaching is based on subject matter knowledge and an enthusiasm for teaching (Moore, 1994).

An important issue ignored by most researchers on this topic is the attrition/retention rate of alternatively certified teachers compared with traditionally certified teachers. The teaching occupation suffers from chronic and relatively high annual turnover compared with other professions. As reported by the National Commission on Mathematics and Science Teaching for the 21st Century (2000), close to 10% of beginning teachers do not survive their first year of teaching and 30% leave teaching within the first three years. Data on cumulative attrition suggested that after just five years, between 40 and 50 percent of all beginning teachers have left the profession (Ingersoll, 2003). In addition, contrary to the presumption that alternative certification is a route for committed and experienced people to enter teaching, a high proportion of alternatively certified teachers have been recent college graduates or those who did not consider teaching as a lifelong career (Shen, 1997). Some have worried that this "revolving door" phenomenon (Ingersoll, 2001) – teachers leaving for reasons other than retirement – would hurt students in urban schools, where many viewed the teacher shortage as the most severe.

Since alternative certification is a relatively recent development, the studies available on teacher retention in this area mostly focus on local or small samples. While important, local studies lack the scope of a national analysis that may offer a wider perspective on alternative certification. For this reason, we have chosen to base our analysis on the combination of the *Schools and Staffing Survey (SASS)* and the *Teacher Follow-up Survey (TFS)*. *SASS* was designed to collect information on tens of thousands of in-service teachers, while *TFS* surveyed a sub-sample of the *SASS* teachers to gather longitudinal information. Designed specifically to provide teacher retention data in a nationally representative sample (Haggstrom, Darling-Hammond, & Grisser, 1988; Ingersoll, 1995), *TFS* obtained exit questionnaires of all teachers who left the profession or left for another school. Linking *SASS* and *TFS* provides an

[1] Twenty-nine percent of alternatively certified teachers taught math, 24% taught in the sciences, 11% taught special education, and 25% taught in urban schools (Mikulecky, Shkodriani, & Wilner, 2004).

[2] The term "urban" pertains to the central city as used by the U.S. Census. Its definition is taken from the Federal Information Processing Standards.

opportunity to study math/science teacher attrition longitudinally in a comprehensive manner.

METHODS

Data Source

Our study used the 1999-2000 *Schools and Staffing Survey (SASS)* and 2000-01 *Teacher Follow-up Survey (TFS)*, which are the largest and most comprehensive and recent data sources on staffing, and the occupational and organizational aspects of US schools. *SASS* obtained extensive information from teachers, schools, and districts in a nationally representative sample. The survey included over 50,000 teachers in both public and private schools. *TFS* was carried out one year after *SASS* and followed all the teachers who left the profession as well as a random sample of current teachers in the cohort. Like its three predecessors, the fourth cycle of *SASS-TFS* included separate, but linked, questionnaires from a random sample of teachers in each school. The national teacher sample of 2000-01 *TFS* included 5,788 teachers, with information on 2149 teachers who left the profession (*leavers*") and 3639 who remained in the teaching force. Of those who remained, the sample included 1324 teachers who transferred to another school ("*movers*") and 2315 teachers who stayed at the same school ("*stayers*"). Since we limited our focus to mathematics and science, this large initial data base offered an opportunity to cull a large enough final sample to perform our analysis.

Analysis

Initially, the sample included 900 regular math/science teachers. Of this number, 92 were deleted from the sample because of missing information and 137 teachers were deleted because of retirement. Of the final sample of 671 math and science teachers, 270 of them remained at the same school, 203 moved to a different school, and 198 were no longer teachers. By gender, the final sample included 301 males and 370 females. By discipline, the final sample included 346 mathematics and 325 science teachers.

The independent variables used in this analysis came from the 1999-2000 *SASS* teacher questionnaires and included both continuous and categorical variables. The dependent variable was by nature categorical with three options: stayers, movers, and leavers. An inferential statistical technique specifically designed for this form of analysis is multinomial logistic regression. This analysis technique allows us to assess the degree to which an independent variable was associated with the categorical outcomes. It does so by producing a series of estimated probabilities that allows for the comparison of the estimated likelihoods of selected outcomes for prototypical cases. Independent variables were included to control for teachers' backgrounds and school-related differences. Major independent variables included school demographics (urbanicity – a categorical variable indicating whether a school was located in an area considered to be rural, suburban, or urban; school sector – public versus private), teacher demographics (gender, race, age, salary, years at school, and 'new teacher' – fewer than 3 years of experience), satisfaction variables (job satisfaction and satisfaction with salary), and teacher certification (traditional versus alternative).

The dichotomous teacher certification independent variable was specifically included to account for any significant difference between traditional versus alternative teaching certificate holders. We defined traditional certificate holders as those who held regular, standard, or provisional teaching certificates as a part of a Bachelor's, 5^{th} year, or Master's degree program. Alternative certificate holders were those who (i) obtained a regular or standard teaching certificate through an alternative program or continuing professional development, (ii) obtained a teaching certificate through their school or school district, or (iii) taught with a probationary, temporary, or emergency certificate. As a result, the process to categorize the participants into these two

certification groups was fairly complex and involved the use of several variables which are listed in Table 1. Our inferential analysis offers two comparisons: 1) leavers versus stayers and 2) movers versus stayers.

TABLE 1 *SASS* Survey Items Used to Create Variable "Traditional/Alternative Certificate"

Item Number	Question	Answer	Coding
T0103	Do you have a teaching certificate in this state in your MAIN teaching assignment field?	Yes No	Go to **T0104** Go to **T0107**
T0104	What type of certificate do you hold in your field?	Regular/Standard Probational Provisional Temporary Emergency	Go to **T0106** Alternative Traditional Alternative Alternative
T0106	How did you earn your regular or standard certificate or advanced certificate in your MAIN teaching assignment field?	Part of a Bachelor's degree program Part of a "5th year" program Part of a Master's degree program After/before I began teaching, as part of an alternative program Through continuing professional development Other	Traditional Traditional Traditional Alternative Alternative Alternative
T0107	Are you currently in a program to obtain state certification in your MAIN teaching assignment field?	Yes No	Go to **T0108** Go to **T0109**
T0108	Which of the following describes this program?	University or college program Program offered by your school or school district Other	8 (Missing) Alternative Alternative
T0109	This school year, are you assigned to teach classes in OTHER fields at this school, in addition to your MAIN teaching assignment field?	Yes No	Go to **T0111** Go to **T0113**
T0111	Do you have a teaching certificate in this state in your OTHER teaching assignment field at this school?	Yes No	Go to **T0112** Go to **T0113**
T0112	What type of teaching certificate do you hold in this field?	Regular/Standard Probational Provisional Temporary Emergency	Traditional Alternative Traditional Alternative Alternative
T0113	Do you currently hold ANY ADDITIONAL regular or standard state certificate or advanced professional teaching certificate in this state or any other state?	Yes No	Traditional Alternative

RESULTS AND DISCUSSION

The descriptive data showed that alternatively certified teachers were more likely to be male and belong to a minority group, compared with traditionally certified teachers. See Table 2. A further analysis indicated that alternatively certified teachers appeared to be about the same in terms of leaving the teaching profession but more likely to move to another school. Also, the descriptive statistics indicated that alternatively certified teachers were more likely to work in urban schools. However, these conclusions are based on analyses that lack controls. The inferential analysis that follows includes controls for a number of potentially important factors.

TABLE 2 Comparisons of Alternative and Traditional Certificate Teachers on Gender, Ethnicity, Urbanicity, and Teaching Status in Percentage

Variables	Traditionally Certified	Alternatively Certified
Gender		
Male	232 (44.4%)	69 (46.3%)
Female	290 (55.6%)	80 (53.7%)
Ethnicity		
White	479 (91.8%)	129 (86.6%)
African-American	17 (3.3%)	10 (6.7%)
Asian/Pacific Islander	17 (3.3%)	8 (5.4%)
Native American	9 (1.7%)	2 (1.3%)
Urbanicity		
Large or mid-size central city	141 (27.0%)	45 (30.2%)
Suburban	246 (47.1%)	64 (43.0%)
Small town/Rural	135 (25.9%)	40 (26.8%)
Teaching Status		
Stayers	224 (42.9%)	46 (29.5%)
Movers	144 (27.6%)	59 (39.6%)
Leavers	154 (29.5%)	46 (30.9%)
Sample size	522	149

In our approach to the multinomial logistic regression analysis, we chose to use a series of nested models. We first established baseline models to account for background and contextual factors (Models 1 and 2). We then created our final statistical model (Model 3) by entering the

primary predictor of traditional vs. alternative certification. The two groups of control variables were (i) school demographics and (ii) teacher demographics and experience. School demographics included school sector and urbanicity. Albeit statistically significant at an α–level of 0.05, these variables played a very small role in teachers' decisions, accounting for only 1.3% of the total variance (see Model 1).[3]

Teacher demographics and experience included gender, ethnicity, number of years at the current school, whether they have been new teachers with less than 3 years of teaching experience, salary, satisfaction in general, and satisfaction with salary. Inclusion of these variables increased the pseudo R^2 to 18.6%, a large improvement over Model 1 ($p<0.01$). Gender and ethnicity information, however, were not significant in predicting a teacher's decision to leave or move.

Finally, we included the primary independent variable of traditional versus alternative certification and found that this variable was not statistically significant ($p>0.05$) in predicting the outcome variables (mover vs. stayer, leaver vs. stayer) in Model 3. This result indicated that, after the control variables had been accounted for, alternatively certified math and science teachers were not more likely to move to a different school or leave the teaching profession compared to traditionally certified teachers. Model 3 accounted for about 19% of the variance in teachers' decisions to leave the teaching profession or to move to another school. The two most prevalent factors that related to teachers' decisions to leave or to move to another school are general satisfaction and number of years at current school ($p < 0.01$), both inversely proportional to the outcome. Lower earnings were also a significant predictor for teachers leaving the profession ($p < 0.01$). Finally, new teachers were more likely to leave teaching compared to those who had been teaching for more than three years ($p < 0.01$), reiterating Ingersoll's (2001) earlier call for teacher induction programs.

CONCLUSIONS

Based on our analysis of background and contextual factors, school demographics played only a small role in teachers' decisions to move to other schools or to leave the profession. On the other hand, it appears that low salary was an important predictor of teacher attrition, while salary satisfaction was an important predictor of teacher movement to another school.

Apart from these ancillary findings, we originally set out to assess the role that certification routes may have played in mathematics and science teachers' decision to leave or stay in teaching careers. A simple descriptive analysis seemed to indicate that alternative certificate holders were about the same in terms of percentage to leave the teaching profession but were more likely to move to another school. However, after factors such as earnings, job satisfaction, salary satisfaction, and years at current school had been accounted for, teachers with alternative certification were not found to be more likely than teachers with traditional certification to either leave teaching or move to another school.

Our findings should be considered in light of the limitations of the data. Since only one year had elapsed between the *SASS* and *TFS* surveys, longer-term evaluation of these factors lie outside the scope of this analysis and, indeed, suggest an area for much needed further research. In addition, further examinations of large-scale studies that consider the issues brought forth in more highly detailed studies, e.g., ethnographies and interviews, appear to be in order. However, this analysis does offer some evidence suggesting that the goal of alternative certification programs to provide teachers for urban schools and in

[3] To take into account co-linearity between variables in the data set, Variance Inflation Factor (VIF) analysis was performed on the variables selected to eliminate some of the highly correlated variables from the models. Nevertheless, there are still some variables in the model that are inevitably correlated, such as the number of years the teacher had been at the current school and the earning from school.

difficult-to-staff subject areas and to diversify the teaching force have been successful. While alternative certification programs may draw some potential pre-service teachers away from traditional programs given the low cost and typically shorter duration of formal training, the introduction of alternative certification programs has not contributed to the "revolving door" phenomenon, based on this analysis. It appears that alternatively certified teachers fill a needed gap in the teaching force that traditionally certified teachers do not fill. We hope these results will offer some evidence to critics of alternative certification programs regarding teacher commitment. It appears that the teacher workforce may be strengthened through the diversification of certification options.

TABLE 3: Nested Multinomial Logistic Models for Predicting Math/Science Teachers' Likelihood of Leaving Teaching Profession or Moving to a Different School

		Nested Multinomial Models			Odds Ratios from Multinomial Model 3	
					"Leavers" vs. "Stayers"	"Movers" vs. "Stayers"
Independent Variables		Model 1	Model 2	Model 3	Total [d] Sample	Total Sample
School Demographic Predictors [a]	School sector	+	+	+	1.27	1.06
	Urbanicity				0.87	0.92
Teacher Demographic Background and Teaching Experience [b]	Gender				1.15	0.88
	Ethnicity				0.89	0.69
	Years at school				0.95 **	0.93 **
	New teacher flag (<3 years)		+	+	2.00 **	0.86
	Salary				0.68 **	0.96
	Satisfaction with salary				0.82	0.81 *
	Satisfaction in general				0.58 **	0.52 **
Teaching Certificate [c]	Regular/Alternative Certificate			+	1.24	1.57
χ^2		7.93	120.83	124.35		
$\Delta\chi^2$			112.90**	3.52		
df		2	9	10		
Δdf			7	1		
pseudo R^2		0.013	0.186	0.191		
Δ pseudo R^2			0.173**	0.005		

a: School demographic predictors included school sector and urbanicity variables. School sector is a dichotomous variable with private school = 1 and public school = 0. Urbanicity is an ordinal variable with higher values indicate more urban areas.

b: Teacher demographic background variables included gender (male = 1 and female = 0), ethnicity (white = 1 and other = 0), year at the current school, whether they are new teachers with less than 3 year experience (yes = 1), teacher earning from school (an ordinal variable with higher values indicate higher salary), satisfaction in the salary (higher value indicates higher satisfaction), and satisfaction in general (higher value indicates higher satisfaction).

c: Teaching certificate variables included the type of certification they have (regular certificate = 1 and alternative certificate= 0).

d: The analysis for the total sample has sample size of 671.

+ indicates that these variables were added to the model.

**: $p < 0.01$; *: $p < 0.05$.

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