

TRANSITION TO TEACHING: AN ALTERNATIVE CERTIFICATION PROGRAM THROUGH A PARTNERSHIP BETWEEN A PUBLIC SCHOOL DISTRICT AND A PUBLIC UNIVERSITY

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Abstract

The reauthorization of the Elementary and Secondary Education Act has had a significant impact on licenses for teachers working in school programs. The act refers to highly qualified teachers in both Title I and Title II. This paper defines alternative certification programs. This paper then describes a partnership, funded by the U.S. Department of Education, between a school district and a university to establish an alternative licensure program to train highly qualified secondary mathematics teachers. The goal of this partnership is to provide an infrastructure that supports the recruitment, preparation, placement, induction, and retention of highly qualified teachers through a new alternative route to teacher licensure. In addition, this paper discusses processes and procedures used in the project in light of the literature. It discusses how candidates were selected for the project, strategies used to meet the competencies for licensure, and assessment of candidates.

What Does It Mean to Be a Highly Qualified Teacher?

The No Child Left Behind (NCLB) legislation of 2001 places major emphasis on teacher quality as a factor for improving student achievement. Teacher quality is defined as a host of teacher characteristics, such as teacher certification, content knowledge, pedagogical knowledge, education experience, academic ability, and verbal ability [1,2]. Title II of the reauthorized Elementary and Secondary Education Act (ESEA) focuses on preparing, training and recruiting high quality teachers [3]. Title I of the ESEA requires that all teachers of core academic subjects hired after the first day of the 2002-2003 school year and teaching in a program supported by Title I Part A funds be “highly qualified.” [3] States are required to develop plans with annual measurable objectives that will ensure that all teachers of core academic subjects are “highly qualified” by the end of the 2005-2006 school year.

In the Commonwealth of Virginia, the term “highly qualified” is used in reference to any public elementary, middle, or secondary school teacher in the core academic subjects. A “highly qualified” teacher is one who holds a full license and teaches only in the area or areas of endorsement [4]. A teacher who enters the field through an alternative route meets the definition

of highly qualified if he/she has a bachelor's degree, has demonstrated subject matter competency, is permitted to assume the functions as a regular classroom teacher, and is making satisfactory progress toward full licensure [4].

Many researchers acknowledge the importance of teacher quality as a contributing factor in being a highly qualified teacher [1-3]. When studies look at teachers' knowledge of both subject matter and how to teach, they have found that both subject matter knowledge and knowing how to teach have strong effects on student achievement. Wenglinsky looked at how the mathematics achievement levels of more than 7,000 eighth graders on the 1996 National Assessment of Educational Progress (NAEP) were related to measures of teaching quality [5]. He found that student achievement was influenced by both teacher content background and teacher education, or professional development coursework; particularly, in how to work with diverse student populations. Students performed better when teachers provided hands-on learning opportunities and focused on higher-order thinking skills. Wenglinsky stated, "Regardless of the level of preparation students bring into the classroom, decisions that teachers make about classroom practices can either greatly facilitate student learning or serve as an obstacle to it." [5] Teachers' pedagogical decisions and activities independently make a difference in students' achievement.

Darling-Hammond used data from a fifty-state survey of policies, case studies, 1993-94 Schools and Staffing Surveys (SASS), and NAEP to examine the ways in which teacher qualification and other school inputs are related to student achievement [6]. The findings suggest that policy investments in the quality of teachers may be related to improvements in student performance. Darling-Hammond found that measures of teacher preparation and certification are the strongest correlates of student achievement in reading and mathematics, both controlling for student poverty and language status. The percentage of teachers with full certification and a major in the field is a more powerful predictor of student achievement than teachers' education (e.g., master's degree). The qualitative analysis suggests that policies adopted by states regarding teacher education, licensing, hiring, and professional development may make an important difference in the qualifications and capacities that teachers bring to their work.

What Are Alternative Certification Programs?

An alternative certification program (ACP) for teaching is generally defined as a pathway to a teaching license that falls outside a full-time teacher preparation program [7,8]. Participants of ACPs include career switchers, individuals in preparation programs for paraprofessionals, and recent college graduates who enter teaching. Most ACPs are designed for candidates who have a bachelor's degree and are employed as teachers while completing the program. Wilson, Floden and Ferrini-Mundy suggest that the following components should be included in a high quality ACP [9]:

- High entrance standards;
- Intensive training in instruction, management, curriculum, assessment and how to work with diverse students;
- Extensive mentoring and supervision by well-prepared teachers;
- Frequent and substantial evaluation;
- Guided practice in lesson planning and teaching, with benchmarks for competence prior to taking full responsibility as a teacher; and,
- High exit standards tied to state standards for teaching.

Roach and Cohen reviewed over one hundred ACPs and found that there are three main components: entrance, completion, and assessment [8]. The entrance requirements vary for each ACP; however, there are some commonalities among most programs. Many ACPs require candidates to show subject matter competency by either passing PRAXIS I and/or PRAXIS II, or a state-level standardized assessment. Some ACPs allow for waivers of some coursework requirements if the candidates pass standardized assessments at an acceptable level. Most ACPs require that candidates complete coursework related to the subjects they wish to teach prior to entering the program and many have a grade point average requirement.

The completion component for most ACPs includes pre-service requirements, induction and mentoring, and concurrent coursework. The pre-service component introduces candidates to pedagogy and classroom management. This component typically occurs during the summer months and candidates are required to complete this component prior to entering the classroom. For many ACPs, an induction system includes a formal mentoring process. Concurrent coursework is often offered at the university level or provided through the school district. Often, concurrent coursework focuses on classroom management.

Most ACPs have provisions to assess the performance of their candidates. The assessment procedure usually includes input from school district administrators, building level

administrators, and/or university faculty. The process from entrance requirements to assessment procedures can take from one to two years. At this time, candidates receive their license to teach.

What Does Research Say About the Effectiveness of ACP?

When looking at the impact of ACPs, research suggests that ACPs based on careful selection, purposeful preparation, intensive mentoring, and practice teaching are successful in preparing mid-career recruits from other fields. There is evidence that graduates of such programs feel confident about their teaching, are viewed as successful with students, intend to stay in teaching, and have positive effects on student achievement [1, 10-12]. ACPs that provide quick entry into the classroom negatively impact student achievement, and produce teachers who are weak in areas characterized as teacher quality [13-15]. Miller, McKenna, and McKenna matched forty-one teachers from an ACP with forty-one traditionally certified teachers [11]. The design of the alternative certification program provided the teachers with strong pedagogical preparation and mentoring. The alternatively certified teachers completed fifteen to twenty-five hours of university coursework before entering the classroom, and were intensively supervised and assisted by university personnel and school-based mentors while completing the additional coursework needed to meet full state licensure requirements. Miller, McKenna, and McKenna found that student achievement for the alternatively certified teachers was comparable to traditionally certified teachers. Because the design of this ACP is so different from the many quick-entry ACPs, Miller, McKenna, and McKenna concluded that it will:

...provide no solace for those who believe that anyone with a bachelor's degree can be placed in a classroom and expect to be equally successful as those having completed traditional educational programs...The three studies reported here carefully constructed AC programs with extensive mentoring components, post-graduation training, regular in-service classes, and ongoing university supervision [1].

In a 1992 study of a two-year training model ACP in Connecticut, Bliss indicated that this ACP provided "a significantly longer period of training than any other alternate-route program." [10]. Supervisors of the participants in this ACP gave mixed reviews of the participants' teaching performance. They found weaknesses in participants' classroom

management, but found strengths in the participants' teaching skills. This finding is comparable to new teachers completing a traditional preparation program.

Research on quick-entry ACPs indicates that their experiences are not comparable to traditionally prepared teachers. Laczko-Kerr and Berliner compared the academic achievement of students taught by under-certified primary school teachers to the academic achievement of students taught by regularly certified primary school teachers [2]. The under-certified sample included a sub-sample of teachers from the "Teach for America" (TFA) program. Results indicated that on all three subtests of the SAT 9, mathematics, reading, and language arts:

- 1) students of TFA teachers did not perform significantly different from students of other under-certified teachers; and,
- 2) students of certified teachers outperformed students of under-certified teachers on all three subtests by about two months on a grade equivalent scale.

Under-certified teachers made about 20% less academic growth per year than teachers with regular certification. Teachers from TFA teach better than any other under-prepared teachers.

Laczko-Kerr and Berliner concluded, "Traditional programs of teacher preparation apparently result in positive effects on the academic achievement of low-income primary school children. Present policies allowing under-certified teachers, including those from TFA, to work with the most difficult-to-teach children appear harmful." [2]

Jelmsberg reviewed an ACP in New Hampshire that provides little structure or support for candidates. In this setting, candidates take "full responsibility for students prior to any preparation, and [have] three years to acquire fourteen state-identified competencies through workshops or college courses." [14] Jelmsberg found that these alternate-route teachers were rated significantly lower than traditional teachers on instructional skills and instructional planning by their principals, and they rated their own preparation significantly lower than did traditionally certified teachers.

McDiarmid and Wilson evaluated mathematics majors in an ACP that stressed subject matter knowledge and found that those teachers held misconceptions about the subject matter and the appropriate ways to teach content [15]. McDiarmid and Wilson indicated that these teachers were unable to integrate their subject matter knowledge with teaching practices to allow for

effective instruction. Perhaps due to the lack of education coursework, they were unable to provide the appropriate instructions to students.

What is Transition to Teaching (T2T)?

The Transition to Teaching (T2T) Program unites a public school district and a state supported university's college of education to establish a recruitment, preparation, placement, induction, and retention model that will produce highly qualified licensed teachers for high-need academic areas in high-need schools. High-need schools are defined as schools located in an area in which 30% or more of the students come from families with incomes below the poverty line, or the school's percentage of unlicensed teachers exceeds 11%. Approximately one-third of teachers employed in the public school district are provisionally/conditionally licensed with a high turnover rate each academic year. Additionally, many of the schools in the public school district are located in high poverty areas. In view of this evidence, the T2T Program was established to meet the needs of the school district while meeting the guidelines of NCLB.

Transition to Teaching is a five-year funded project that will produce three major cohorts of highly qualified teachers in the first three years of the project. Continued follow-up of the cohorts will occur in the last two years of the project. In Year One, a cohort of secondary math and earth science teachers participated in a summer institute that was designed to meet the Virginia Board of Education's teacher licensure competencies. This paper focuses on the secondary mathematics cohort. This cohort will be supported during their next three years of teaching with assignment of mentors, continued cohort experiences, continued training and classroom visits delivered by university faculty, and extensive support, monitoring, and evaluation by the program director. Figure 1 shows the framework of the T2T Program.

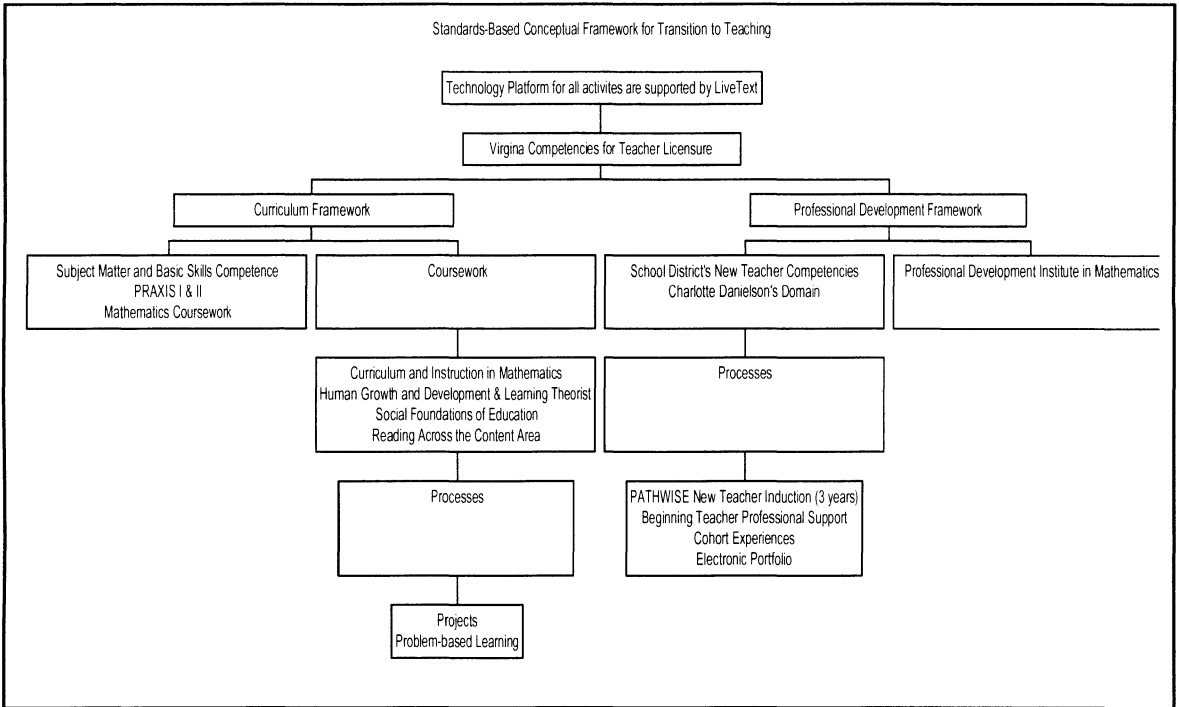


Figure 1. Framework for the T2T Program.

How Are T2T Candidates Selected?

The selection of candidates was a collaborative process between the project’s program director, who is an employee of the public school district, and the university’s faculty and administrative staff. Applications were reviewed by the project’s program director for completion, and administrative staff from the university’s Career Switchers Program and Troops to Teachers Program, housed at the university, reviewed applicants’ transcripts. The Career Switchers Program and the Troops to Teachers Programs are ACP programs with personnel who have experience with transcript analysis. Each transcript was reviewed according to guidelines established by the Virginia Board of Education regarding course requirements for teacher licensure. Missing coursework, if any, was noted along with the applicant’s grade point average in selected content areas. Each candidate’s detailed résumé and letters from employers were examined to determine which content competencies were met via her/his work experiences. Additionally, the candidates had to submit passing PRAXIS I and PRAXIS II scores. A review

board consisting of university faculty, administrative staff from the Career Switchers Program and the Troops to Teachers Program, and the project's program director, met to review the applications. The program director then provided feedback to the applicants and monitored their follow-up to ensure that any missing coursework was completed prior to the university's submission of licensure packets to the state. This application process was used so that applicants had a single point of contact. In addition, the program could utilize the application screening expertise of an existing alternative licensure program already approved by the Virginia Board of Education, as well as the expertise of university faculty specializing in the appropriate content methods pertinent to the cohort.

There were thirty-two secondary mathematics applicants for the T2T Program. Fifteen applicants were accepted as candidates for the T2T Program. Upon acceptance into the T2T Program, the candidates, with the help of the school district's human resources office, sought teaching positions within the school district. Nine candidates were hired as high school mathematics teachers, five as middle school mathematics teachers, and one as a mathematics teacher for the juvenile detention center (middle and high school). Many of the candidates were close to demonstrating subject matter competency as evidenced by their undergraduate and/or graduate course of study and passing PRAXIS I and PRAXIS II scores. Six candidates had undergraduate degrees in mathematics, four candidates had undergraduate degrees in engineering (mechanical, industrial, civil, and electrical), three candidates had undergraduate degrees in economics and business, and the remaining two candidates had undergraduate degrees in psychology and atmospheric science. Three candidates had graduate degrees. Most of the candidates had previous experience in working with students as a substitute, instructor, or tutor. In fact, eight of the candidates worked for the school district as a substitute teacher, translator, or registrar. Two candidates had experience as mathematics tutors and two were adjunct college mathematics instructors. Although fifteen candidates were accepted prior to the summer institute, fourteen candidates completed the summer institute. In addition, two candidates resigned after the school year began. Consequently, the cohort consists of twelve candidates: six high school teachers, five middle school teachers, and one teacher for the juvenile detention center.

How Are T2T Candidates Prepared?

Once accepted, teacher candidates were then instructed to complete twenty observation hours in schools located within the school district prior to their attendance and participation in a

four-week summer institute. Experiences during the summer institute were established so that they would build upon observation experiences that the cohort had completed prior to and during the institute. The secondary mathematics cohort received instruction primarily from mathematics education faculty; however, reading education faculty, special education faculty, and social foundations faculty provided instruction. Using a project-based curriculum (for example, see Krajcik's *Teaching Children Science*), candidates completed a set of projects under the guidance of university faculty [16]. Each project was designed to specifically address particular competencies established by the Virginia Board of Education (see Appendix A). Matrices identifying the projects and the specific competencies addressed are provided in the appendix for the secondary mathematics teacher candidates (see Appendix B). A project-based approach to the curriculum was selected so that the entire institute would remain focused on the competencies. Consequently, lectures, activities, classroom observations, and workshops were created so that each would link to a specific project. Additionally, this project-based approach resulted in a number of products that candidates could then utilize in their teaching. The institute also included professional development workshops designed and conducted by district staff developers, which provided the candidates with first-hand knowledge of district expectations for teaching and student work. During the first year of teaching, candidates attended weekend seminars to continue their training as they worked daily in their respective mathematics classrooms.

During the institute, candidates were trained and required to use *LiveText* for their project work. *LiveText* was selected for its ability to bring an enormous set of technology-based resources to the classroom, along with its capabilities of file sharing between users so that lesson plans and other products, such as tests, student sheets, and classroom support materials can be shared during the institute, as well as after the institute when the candidates are in their own classrooms in different schools across the district.

The candidates were assigned trained PATHWISE mentors who worked at the same school as the candidates. The mentors were trained using the strategies from the PATHWISE Mentorship Program created by Educational Testing Services (ETS). The PATHWISE mentors helped the candidates with the teacher induction process by helping them reflect and build upon their teaching practices.

Are T2T Teachers “Highly Qualified?”

Teacher candidates were assessed during the summer institute in a variety of ways. Rubrics were developed for each project so that each candidate’s performance throughout the institute could be monitored. Candidates were required to resubmit products that failed to meet expectations according to the project’s rubric. Additionally, candidates taught mini-lessons during the institute in which their teaching was evaluated. At the end of the institute, candidates submitted reflective notebooks documenting their project work and aligned their work with each of the competencies for their licensure area as established by the Virginia Board of Education. In this reflective notebook, candidates were required to reflect on their mastery of each competency using evidence from their project work.

The program director completed an evaluative observation form every nine weeks that was aligned with the university’s teacher preparation program. In addition, the program director, university faculty, and the PATHWISE mentor conducted non-evaluative observations of candidates’ teaching. These observations provided feedback to build candidates’ teaching practices. Lastly, candidates had to meet expectations within the school district’s teacher evaluation program in which all teachers were required to participate.

Conclusion

The T2T Program is designed with strong research support. The Program includes strong subject matter competency, comprehensive education coursework, intensive mentoring, and substantial evaluation. As described earlier, Wilson, Floden and Ferrini-Mundy suggest six components that should be included in a high quality ACP [9]. The T2T Program meets all of the suggested components of an effective ACP.

- *High entrance standards:* the T2T candidates are screened through a comprehensive process to ensure that high quality candidates gain access to the program.
- *Intensive training in instruction, management, curriculum, assessment and how to work with diverse students:* the summer institute, professional development institute, and follow-up during the academic year provide T2T teachers with intensive training in the aforementioned areas.
- *Extensive mentoring and supervision by well-prepared teachers:* the T2T teachers’ PATHWISE mentors, project director, and university faculty provides a strong support system to ensure that T2T teachers will be successful in the classroom.

- *Frequent and substantial evaluation*: all T2T teachers receive substantial formal and informal evaluation of their teaching. Teachers are observed two to three times per month.
- *Guided practice in lesson planning and teaching, with benchmarks for competence prior to taking full responsibility as a teacher*: T2T teachers use *LiveText* to share lesson plans and exchange ideas with university faculty and other members of their cohort. In addition, they receive feedback of their teaching and planning after observations.
- *High exit standards tied to state standards for teaching*: at the end of the summer institute, T2T teachers submit portfolios that demonstrate that they met the teaching competencies of Virginia. If candidates are deficient on any competency, they have opportunities to demonstrate competency during the academic year.

Zeichner stated:

“...all forms of teacher education include a wide range of quality from awful to excellent. Instead of continuing the debate over which is better...traditional programs or alternative programs, it would be more useful to focus on gaining a better understanding of the components of good teacher education regardless of the structural model of the program [17].

In order to produce high quality teachers regardless of entry into the field, it is essential to focus on those qualities that positively impact student achievement.

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APPENDIX A

VIRGINIA'S TEACHER LICENSURE COMPETENCIES IN SECONDARY MATHEMATICS

Competencies 1-12 are specific to licensure in Secondary Mathematics, and competencies 13-16 are for all secondary grades (6-12) licensure areas.

1. Understanding of the knowledge, skills and processes of the Virginia Mathematics Standards of Learning and how curriculum may be organized to teach these standards to diverse learners;
2. Understanding of a core knowledge based of concepts and procedures within the discipline of mathematics, including the following strands: number systems and number theory; geometry and measurement; analytic geometry; statistics and probability; functions and algebra; calculus; and discrete mathematics;
3. Understanding the sequential nature of mathematics and the mathematical structures inherent in the content strands;
4. Understanding of the connections among mathematical concepts and procedures and their practical applications;
5. Understanding of the ability to use the four processes – becoming mathematical problem solvers, reasoning mathematically, communicating mathematically, and making mathematical connections – at different levels of complexity;
6. Understanding of the history of mathematics, including the contributions of different individuals and cultures toward the development of mathematics and the role of mathematics in culture and society;
7. Understanding of the major current curriculum studies and trends in mathematics
8. Understanding of the role of technology and the ability to use graphing utilities and computers in the teaching and learning of mathematics;
9. Understanding of and the ability to select, adapt, evaluate and use instructional materials and resources, including professional journals and technology;
10. Understanding of and the ability to use strategies for managing, assessing, and monitoring student learning, including diagnosing student errors;
11. Understanding of and ability to use strategies to teach mathematics to diverse learners

12. Understanding of proficiency in grammar, usage, and mechanics and their integration in writing;
13. Human growth and development -- Skills in this area shall contribute to an understanding of the physical, social, emotional, and intellectual development of children and the ability to use this understanding in guiding learning experiences. The interaction of children with individual differences -- economic, social, racial, ethnic, religious, physical, and mental -- should be incorporated to include skills contributing to an understanding of developmental disabilities and development issues related, but not limited, to attention deficit disorders, substance abuse, child abuse, and family disruptions.
14. Curriculum and instructional procedures -- Skills in this area shall contribute to an understanding of the principles of learning; application of skills in discipline-specific methodology; communication processes; classroom management; selection and use of materials, including media and computers; and evaluation of pupil performance. Teaching methods appropriate for exceptional students, including gifted and talented and those with disabling conditions, and appropriate for the level of endorsement sought shall be included. Curriculum and instructional procedures for secondary grades 6-12 endorsements must include middle and secondary education.
15. Foundations of education -- Skills in this area shall be designed to develop an understanding of the historical, philosophical, and sociological foundations underlying the role, development and organization of public education in the United States. Attention should be given to the legal status of teachers and students, including federal and state laws and regulations, schools as an organization/culture, and contemporary issues in education.
16. Reading -- Skills in this area shall be designed to impart an understanding of comprehension skills in all content areas, including a repertoire of questioning strategies, summarizing and retelling skills, and strategies in literal, interpretive, critical, and evaluative comprehension, as well as the ability to foster appreciation of a variety of literature and independent reading.

APPENDIX B
MATRIX ILLUSTRATING HOW THE PROJECTS UTILIZED DURING THE
SUMMER INSTITUTE ARE ALIGNED WITH THE COMPETENCIES FOR TEACHER
LICENSURE IN SECONDARY MATHEMATICS, ESTABLISHED BY THE VIRGINIA
BOARD OF EDUCATION

| Secondary Mathematics Competencies | History of Mathematics Education | Analysis of the VA SOL and NCTM <ul style="list-style-type: none"> • Content Stds. • Process Stds. | Planning: <ul style="list-style-type: none"> • Pacing Guides • Conceptual Map • Unit Planning • Daily Planning • Using the "Block" in block scheduling | Manipulatives <ul style="list-style-type: none"> • Algeblocks™ • Hands-on Equations™ • Make and Take • Tangrams™ | Levels of Cognitive Demands <ul style="list-style-type: none"> • Memorization • Connections w/o Procedures • Connections w/ procedures • Doing Mathematics | Pedagogical Settings <ul style="list-style-type: none"> • Chalk and Talk • Think-Pair-Share • Cooperative Learning • Jigsaw | General Learning Theories* | Mathematics Learning Theories** |
|------------------------------------|----------------------------------|---|--|---|---|--|----------------------------|---------------------------------|
| 1 | | X | X | X | | | | |
| 2 | | | | | | | | |
| 3 | | X | X | | | | | |
| 4 | | | X | X | X | X | | |
| 5 | | X | X | X | X | X | | |
| 6 | X | | | | | | | X |
| 7 | X | X | | | | | | X |
| 8 | | | | | | | | |
| 9 | | | X | X | X | X | | X |
| 10 | | | X | X | X | X | | |
| 11 | | X | X | X | X | X | | |
| 12 | | | X | | | | | |
| 13 | | | | X | X | X | X | X |
| 14 | | X | X | X | X | X | X | X |
| 15 | X | | | | | | | |
| 16 | | | | | | | | |

*General Learning Theories: Weiner, Gagne, Carl Rogers, Piaget, Skinner, Vygotsky, Bandura, Ausubel

** Mathematics Learning Theories: Dienes, Van Hiele, Skemp, Thorndike, Bruner

