

TRANSFER FROM A UTEACH REPLICATION SITE TO THE CLASSROOM: A STUDY
OF FIRST AND SECOND YEAR INSTRUCTIONAL PRACTICES

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Concerns based adoption model (CBAM) instruments were used to examine instructional practices of six graduates from a highly stylized, inquiry-based secondary math and science preparation program. Teachers were in the first or second years of teaching mathematics in six different secondary settings, ranging from poverty to wealthy schools. CBAM assumptions were tested. The primary assumption about concerns was that new teachers' highest concerns would be within the self and task dimensions. According to Hall and Hord, it was assumed that the levels of use are typically in the orientation and preparation stages as a new teacher begins to implement an innovation, in the case of this study, inquiry-based instruction. All three instruments of the CBAM model were used for data collection and included: the Survey of Concerns Questionnaire, Innovation Components Configuration Map, and Levels of Use matrix. Teachers were observed, interviewed, and surveyed, three times each, across a five-month period. The findings from this study showed that the teachers had similar concerns and levels of use, which supported the assumptions outlined by the CBAM principles. Across the six teachers, the self and task concerns were high, aligning with the assumptions. However, unrelated and impact dimensions were noted, in opposition to the assumption. Likewise, assumptions of the levels of use were upheld in the orientation and preparation levels of use noted in the observations. Some mechanical levels of use were observed for a few of the teachers, an anomaly to the assumption.

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My entire education has been one long journey – one place in my life to another. As most journeys do, they eventually come to an end. But, they do not come without sacrifice; at least this one did not. Before I can conclude my journey, I must acknowledge many who have sacrificed for me. First, I must mention the sacrifice of my sweet family who endured hours of waiting. Waiting for me to come home from school, waiting for me to watch them play, waiting for me to step away from the computer, waiting for me to tuck them in, and finally waiting for me to say I am done. Alan, Alex, Abbie, and Maddie, thank you for waiting. Thank you for the endless times you checked on my progress and offered encouragement when I needed it most. Thank you for your sacrifice of wife and mommy time, so that I could finish this part of our journey. Mara you are the sister I never had. Thank you for taking the AM calls when I just knew I had just lost my ‘mom of the year card’. Also waiting, thank you for waiting on your friend to have time for you again. Here is to time, no more waiting!

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CHAPTER 1

INTRODUCTION

Authors have noted a pronounced need for highly qualified secondary teachers, especially in science, technology, engineering, and mathematics (STEM) subjects (Darling-Hammond & Sykes, 2003; National Commission on Excellence in Education, 1983; Ingersoll, 1999). The rate of attrition among secondary STEM teachers exceeds other fields of secondary teachers (Ingersoll, 2003). In response, the University of Texas at Austin created a secondary STEM teacher preparation program that addressed these issues. According to the UTeach Institute website, the primary reason for its (UTeach) establishment in 1997 was in response to the national call for improvement of teaching in STEM subjects (UTeach Institute, 2014b).

The program's collaboration between the College of Natural Sciences and the College of Education offers a preparatory program for secondary teachers to experience teaching, content, and content pedagogy. Traditionally secondary teachers obtain a bachelors degree in the content area they choose to teach, generally minimizing pedagogical preparation for the content area. In contrast, UTeach targeted specific pedagogical preparation for STEM secondary teachers.

Reports from the UTeach Institute claim that retention rates of program graduates still teaching after five years was approximately 80 % (UTeach Institute, 2014a), which was higher than the national retention of approximately 60 % (Ingersoll, 2003). However, Ingersoll (2003) also notes, this percentage was for all teachers, with the caveat that retention of math and science teachers was likely higher than that. UTeach Institute provides extensive data about program graduates, but had not focused on the concerns or transfer of learning among their graduates.

The original program began in 1997, and was taught at UT Austin until 2007, when thirty-nine universities, across nineteen states initiated replications of the program. The

replication sites were mandated to follow the original program with completed fidelity, including courses, field experiences, and support systems during induction for three years. Expansion of the program has continued. Currently, the UTeach program and all replications, graduate approximately 2000 students each year, predicting a graduation over 8000 per year by the year 2020 (UTeach Institute, 2014a). With the numbers of teachers from this program rising, researchers were compelled to examine the outcomes of the program, based on induction teachers' performance, in addition to statistics of retention.

1.1 Purpose

The purpose of the study was to investigate the concerns and levels of use of instructional practices from a highly stylized, inquiry-based mathematics teacher preparation program to the induction years of high school mathematics teachers.

1.2 Questions

- Question 1: What were the concerns of induction teachers about transferring UTeach instructional practices to induction years of teaching?
- Question 2: What were the levels of use of UTeach instructional practices among UTeach induction teachers?

1.3 Design

A multiple case study design was used. Case study research closely studies the implementation of a particular program. In-depth study can include, but was not limited to observations, interviews and documentation of participants' perceptions or feelings (Glesne & Peshkin, 1992). As a researcher observes and takes field notes in a classroom, followed by interviews, a researcher can begin to ascertain teachers' levels transfer of learning from university preparation to classroom practice. Stake (1995) recommends a case study when a

researcher chooses to study the complexities of a specific case. The complexity of the UTeach preparation program aligned well with the many dimensions of transfer of learning noted in Haskell's Theory of Transfer (2000). Yin (2009) notes an advantage of the case study was the iterative process, meaning the process allows for design, preparation, collecting, analyzing, and sharing. By conducting a carefully crafted study, the design can be replicated with new cases from the same program. Findings were examined and written as a holistic descriptive analysis of the case study (Glesne & Peshkin, 1992).

CHAPTER 2

RELATED LITERATURE

2.1 Concerns Based Adoption Model (CBAM) Development

Fuller (1969) found that preservice teachers have three dominant concerns during teacher preparation courses: (a) concerns of self adequacy as a teacher, (b) concerns about teacher tasks such as methods and performance, and (c) concerns about their students learning needs. In 1975 the Personalized Teacher Education Program was initiated to address the concerns of the preservice teachers (Fuller & Brown, 1975). A recommendation of this program was to change the order of the courses, offering the preservice teachers early field placements, rather than the traditional model of theory first. Fuller and Brown's rationale was to investigate if the order of courses would have an effect on the levels of concerns. This posited theory become a widely accepted understanding that teachers, both pre-service and in-service alike, have these concerns, most especially when change was underway (Hall, 2013). During his work with the Personalized Teacher Education Program, Hall reflects:

I came to realize that I was hearing the same pattern of concerns among college faculty that Fuller had encountered with teacher education candidates... It appeared that the concerns model applied to people that were engaged in different types of change! (p. 267)

Thus, his interest in change began. Hall and Loucks (1978) outline five assumptions of change:

(a) change was a process, not an event, (b) change was a personal experience, (c) perceptions and feelings of the individual were important to successful implementation, (d) individuals go through various stages of concerns, and levels of skill throughout the implementation (e) continued support was necessary for successful implementation. Combining Fuller's theory of concerns and Hall's theory of change, the concerned-based adoption model (CBAM) evolved. Three tools have been developed to assess concerns and use of an educational innovation during

the change process: the Survey of Concerns (SoCQ), the Levels of Use (LoU) and Innovation Configuration (IC).

2.2 Use of CBAM in Educational Settings

Anderson (1997) notes a long history of studies have been conducted in connection with the CBAM. For the purposes of this study, a select few have been chosen for discussion, with different reasons and implications for the research. Studies use the methodology differently, some use all three tools, and some use a combination of two, though many use only the SoCQ.

Tunks and Weller (2009) investigate the concerns and behaviors of fourth grade teachers who participated in a yearlong program on algebraic thinking. The main purpose of the training was to change the teachers' perceptions and understandings about algebra, then implement instruction on algebraic reasoning in elementary and middle school classrooms. Change facilitators initiating the program used the CBAM framework to provide a support structure throughout the innovation. By using all three tools, the researchers were able to gain a clearer understanding of the change over time, the use of the implementation and address the concerns of individual teachers over the course of the program. Data rich interviews offered the researchers insight into how the teachers' perceptions were changing as well. This study contributes to the current research by illustrating the need to use all three components for a more complete understanding change and concerns.

Similarly, Hollingshead (2009) examined the implementation of a character education program in a school district in Texas. Principals and campus counselors were given research-based information about the CBAM framework before initiating the program, thus providing them with an understanding of their role in the implementation of the program. Counselors conducted some informal interviews with participants, which led to the creation of the IC matrix

to observe the implementation of the innovation. Over three hundred teachers participated in the SoCQ, however not all of these teachers were interviewed or observed. Yet, the observations and the semi-structured interviews conducted helped explain the implementation at the campuses, which were performing at higher levels use. The teachers on the campuses with higher levels of use correlated with those teachers who had fewer personal concerns, but higher impact concerns. This finding resonates with the premise of the theoretical framework of CBAM. Although only a sampling of the teachers were interviewed and observed throughout the study, the implication of the use of all three tools as a means of triangulation was verified.

Isbell and Szabo (2014) conducted a study to understand the concerns of implementation of response to intervention (RTI) among secondary teachers. Specifically, this study only used two of the tools of CBAM, namely the SoCQ and the LoU branching interview to determine patterns in observable behavior (without actual observation) and a final exit interview to gauge perceptions of the innovation. Results of this study indicated a need for support, which supports a primary assumption of the theory of the concerns-based adoption model.

Some studies use only the SoCQ to explore changes of concerns about implementation of innovations. Chamblee, Slough, and Wunsch (2008) questioned the concerns mathematics teachers had about implementing graphing calculators and computers into classrooms. Twenty-two high school mathematics teachers completed the SoCQ twice in this study, once at the beginning of in-service and again at the end of the school year (Chamblee et al., 2008). Overall findings from the two surveys indicated the teachers were at impact stage of concern, meaning they wanted to understand what impact the technology would have on the students. Also, they discovered some of the teachers were at the collaboration stage of concerns, which may indicated they were willing to collaborate with others about calculator-based activities. Limitations of the

study include not having a deeper understanding of the teachers LoU through observation and not examining the teachers' perceptions about the technology through interviews. While they did explore their concerns through the survey, generalizations cannot be made about what changed the teachers concerns from the pre to post survey.

Christou, Eliophotou-Menon, and Philippou (2004) conducted a similar study using the SoCQ only to assess concerns of over six hundred mathematics teachers adopting a new textbook. However, they only issued the SoCQ one time to study concerns with respect to years of service and years of implementation. Findings indicated there was definitely a difference in the newer teachers' concerns, mainly personal and the more experienced teachers were at the task stage. This use of the SoCQ was limited to a one-time assessment, not allowing the researchers to assess change in concerns over time. The CBAM methodology had been used in its entirety or pieced apart according to the needs of specific research questions.

CHAPTER 3

METHOD

3.1 Subjects

Six secondary mathematics teachers who graduated from a UTeach replication program in Texas participated in the study. All participants were employed as secondary mathematics teachers in Texas. The teachers were in the induction years of teaching, which were considered the initial three years of teaching. Specifically, four of the teachers were in the first year, and the remaining two were in the second. Haskell (2000) suggests that should transfer of learning occur, it happens within the first few years. Therefore, the purposeful choice of UTeach inductees early after graduation was to examine evidence that UTeach precepts transfer into teaching practice in the first three years.

In the study, there were two middle school teachers and four high school teachers. The middle school teachers held degrees in interdisciplinary studies, whereas the high school teachers have a bachelor's degree in mathematics. The difference between the two degrees and certifications were the significantly reduced number of mathematics classes a person required for the interdisciplinary degree. A bachelor's of mathematics a graduate completed forty-eight hours of mathematics, although in an interdisciplinary degree students completed eighteen hours of mathematics. The six pedagogy courses in the UTeach program remained the same for all graduates. All graduates of the UTeach program completed courses with elementary, middle school, and high school placements. At the end of course work, each student completed a semester long apprentice teaching semester called Apprenticeship. The student teacher chooses the school for the Apprentice semester.

3.2 Teacher Preparation

Inquiry learning: the 5-E model. UTeach purposely prepares preservice teachers (PSTs) employing multiple teaching methods. These styles of teaching range from direct teach to inquiry-based approaches. The most prevalent style supported was inquiry-based instruction. The program advocated hands-on learning experiences (UTeach Institute, 2007). As PSTs they learned about the theory of inquiry-based approaches. Typically the PSTs experienced how to apply these during instructional practices in the university classroom, as well as in school settings. During, the first experience, a course called Step 1, the PST taught three times in an elementary school, generally during the PST's freshmen year of college.

In this setting, the PSTs used an inquiry-based teaching tool, the 5E model. The model designed by Bybee et al. (2006) provided guidance on lesson preparation, organization, and implementation that leads to concept discovery. Engage, explore, explain, elaborate, and evaluate constitute the 5E model. A notable component of this particular plan was the emphasis on questioning. Each section had a dedicated place for higher order questions. Throughout the entire program, there was a heavy emphasis on the use questioning to elicit student understanding and generate student engagement (UTeach Institute, 2007).

In the next course, called Step 2, the PSTs wrote mathematics lessons using the 5-E model, but taught in a middle school. Something to note in the lesson plan template was the intensity of the write-up. The lesson required the PSTs to be explicit in three categories, what the teacher will do, what the student will do, and the questions that will guide each section. Furthermore, the PSTs were supposed to color code the questions according to the Bloom's taxonomy chart included on the template. All of these components of the lesson plan were to help guide PSTs to understand how to think about planning for a lesson that involves the students

learning through inquiry-based methods. Bybee (2014) suggests this model of teaching was meant to be inquiry-based and student-centered, and supports the mathematics standards set by NCTM. Explicitly, the NCTM standards recommend that students learn mathematics through problem solving, reasoning and proof, communication, making connections, and multiple representations (National Council of Teachers of Mathematics (NCTM), 2000).

3.2.1 Project Based Learning.

The teachers completed a course designed to teach them about project-based instruction (PBI). This course was designed with a field placement in a PBI based high school. The PSTs designed and implemented a weeklong unit on a mathematics concept. PSTs were introduced to lesson design focused on a driving question, that leads to authentic student projects. PSTs were introduced to rubric design and formative assessment. Additionally, the PBI experience offers PSTs opportunities to explore cooperative learning and authentic learning.

3.2.2 Functions and Modeling.

A specific course the mathematics majors completed was Functions and Modeling. According to the UTeach (2007), the PSTs were exposed to learning university level mathematics (algebra, calculus, etc.) through inquiry. PSTs experienced how to uncover patterns in functions from real life data, rather than experiencing mathematics as lecture, rote learning. Another part of the design of the course was for the students to discover relationships between mathematics in high school and college. Although there was not a field experience component in this course, the design allowed PSTs to experience learning through inquiry, with the intent of encouraging PSTs to teach using inquiry.

3.2.3 General Teaching Skills

From the Step 1 course to Apprentice Teaching, the program deliberately reinforced questioning strategies, classroom management techniques, and current trends in teaching (UTeach Institute, 2007). During each experience, PSTs were asked to reflect on teaching, reflect on learning, and reflect on experiences. In addition to written narratives, students engaged in conversations and debates about teaching practices in the UTeach preparation courses. Many times these experiences were in direct opposition to what they learned about teaching in Pre-k through high school. The PSTs were challenged and encouraged to practice different styles of teaching, along with the varied instructional strategies.

A pilot study conducted on three PSTs perceptions about teaching mathematics, following their teaching experiences in the first two courses (Fields, 2014) reveals that while PSTs do not fully understand inquiry-based teaching as presented in the lessons they taught, they understood that teaching was not exactly what they thought it was – it was much more. The PSTs noted that the instructional practices differed from their learning experiences as a mathematics learner, however they were eager to try. The ultimate desire of UTeach was to prepare teachers “with strong pedagogical content knowledge who were able to select good tasks, elucidate concepts, identify misconceptions, make content more meaningful and interesting, and assess when students were ready to delve more deeply into a subject” (UTeach Institute, 2007, p. 8).

3.3 Instruments CBAM

All three tools recommended by the Concerns Based Adoption Model (CBAM) were used to collect data (Hall & Hord, 2011). The three components were: The Survey of Concerns Questionnaire (SoCQ), the Innovation Component Configuration Matrix (ICC), and the Level of

Use (LoU). Levels of use and teachers' concerns about the educational innovation were analyzed. Together the data gathered from three forms created an understanding of the use of innovation. The innovation under review was the transfer of UTeach instructional strategies to the induction years of teaching.

3.3.1 SoCQ

The SoCQ was an electronic survey that can be given at multiple time points to examine change in concerns over time. This was a self-reporting survey that includes 35 items and used to ascertain the beliefs, perceptions, or feelings an individual had about an innovation. Hall and Hord (2011) noted the instrument had strong reliability estimates ranging from .65 to .86, along with internal consistency, alpha-coefficients from .66 to .93.

There were seven stages of concern within four dimensions a teacher may encounter when implementing an innovation in the classroom. The first dimension, unrelated, includes only the unconcerned stage, which was when a person describes himself or herself as indifferent about the innovation. In fact, they were likely more concerned with many other things than the innovation at the time they report. The second dimension, self, which includes: informational and personal. Self describes a person who was having personal concerns about being able to implement the change. The third dimension, task, relates to management concerns, which could be time management, planning or logistics of the innovation.

Finally, the fourth dimension, impact, was the dimension where the participant reconciles the impact the innovation had on students. Respondents were also concerned with how this innovation affects collaborating with other teachers. Applied to this study, concerns of induction teachers about the use of the instructional practices learned from their experiences in the UTeach program was assessed. See Table 3.1 for a description of the stages of concern.

Table 3.1

Dimensions and Stages of Concern

Dimension	Stage	Stage Name	Description
Unrelated	0	Unconcerned	Individual had little concern and involvement with innovation.
Self	1	Informational	Individual had general awareness of the innovation and interest in learning more about the innovation.
	2	Personal	Individual was uncertain about the demands of the innovation and their role in the innovation.
Task	3	Management	Individual's attention was focused on the processes and tasks of using the innovation, along with best use of information and resources.
Impact	4	Consequence	Individual focuses on impact of the innovation on their students.
	5	Collaboration	Individuals focus on coordination and cooperation of others regarding the use of the innovation.
	6	Refocusing	Individuals focus on exploration of more universal benefits from the innovation.

3.3.2 Innovation Components Configuration (ICC) Observations

The ICC matrix was an observation instrument designed to determine the level of use of the innovation from a behavioral perspective. The ICC matrix includes a configuration of components with respect to the innovation. Particularly, Hall and Hord (2011) suggested the ICC matrix have components to observe teacher and student behaviors, materials use, methodology use, and general instructional practices. The innovation, transfer of learning from the UTeach program to the classroom was under review. UTeach Institute recommended the use of the UTeach Observation Protocol (UTOP) to note use of the innovative methodologies

presented in UTeach teacher preparation (Walkington et al., 2012). For the purposes of this study, the UTOP was used as the ICC Matrix.

The UTOP was designed to assess UTeach induction teachers on four configurations/factors: classroom environment, lesson structure, implementation of practices learned in the program, and math/science content knowledge (Kane & Staiger, 2012; Walkington et al., 2012). The retention of the four factors was due to the initial factor analysis verifying internal consistency, which yielded Cronbach alpha coefficients .905 to .962. The UTeach Institute contends they will conduct future studies with larger samples sizes for further verification of interrater reliability and validity (Walkington et al., 2012).

Each configuration consists of six components, with the exception of the knowledge configuration, that had eight components. A scale of 1 to 5 was used to rate the teacher on each component. Observations were conducted to provide evidence for a rating. On the training website of the UTOP an observer can find example scenarios to justify the given rating. Prior to use of the instrument, I attended an all-day training hosted by the originators of the instrument. Additionally, I watched the three sample videos online, completed ratings on all three, and then compared my ratings and evidence to a completed master rater. My interrater reliability was within the acceptable range recommended by UTeach Institute. Displayed in Table 3.2 is the configuration of the UTOP.

Table 3.2

UTOP Innovation Component Configuration (ICC)

Configuration	Component
I. Class Environment	Engagement
	Interactions
	On-Task
	Management
	Organization
II. Lesson Structure	Equity
	Sequence
	Importance
	Assessment
	Investigation
III. Implementation	Resources
	Reflection
	Questioning
	Involvement
	Modification
IV. Content	Timing
	Connections
	Safety
	Significance
	Fluency
	Accuracy
	Assessments
	Abstraction
Relevance	
Interconnections	
Societal Impact	

3.3.3 Levels of Use Interviews

The LoU framework indicated levels of non-use and use of the innovation, which chronicles how an innovation was being used by the person across multiple categories (Hall & Hord, 2011). Category and levels can assess individuals across time to determine overall trends of their use of an innovation. Cumulating the LoUs of the multiple participants in a study can provide general trends among users of the innovations. Table 3.3 explains and describes each

level of use. Further understanding the LoU was deduced through use of interviews, therefore semi-structured interviews were conducted at the conclusion of each observation.

Table 3.3

Levels of Use of the Innovation

Level	Name	Description
Nonusers	0 Nonuse	User had little or no knowledge of innovation. Showing no involvement or inclination to become involved in innovation.
	I Orientation	User had recently acquired some knowledge of innovation and was exploring the value of the innovation within their system.
	II Preparation	User was preparing to use innovation for the first time.
Users	III Mechanical	User focuses on the short-term or day-to-day use of the innovation. Very little time allotted for reflection or refinement of the use of the innovation. The user was generally engaged in a stepwise attempt to master the tasks of the innovation, often resulting in a disjointed and superficial use of the innovation.
	IVA Routine	Use of the innovation was stabilized. Few if any changes were being made to the ongoing use. Little preparation or thought was being given to improving the innovation use or its consequences.
	IVB Refinement	User varies the use of the innovation to increase impact on clients within immediate sphere of influence. Variations were based on knowledge of both short and long term consequences for the client.
	V Integration	User was combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within the common sphere of influence.
	VI Renewal	User was re-evaluating the quality of use of the innovation, seeks major modifications or alternatives to present innovation for improvement or increased impact on clients. User examines new developments in the field and explores new goals for self and the system.

CHAPTER 4

RESULTS

4.1 Individual Overall CBAM Profiles

Each participant was assessed across all three instruments, which rendered an overall CBAM profile. The participants completed the SoCQ twice, once at the beginning of the school year and again at the middle of the school year to establish any changes in concerns over time. Participants were observed and interviewed three times to ascertain levels of use and uncover reasons for the concerns noted by the surveys.

4.1.1 Participant 1

Aligning the concerns of the SoCQ, levels of use on observations and interviews, a confident first year teacher emerged. While Percy continued to plan for changing practices, he understood that there were equally important parts of teaching beyond knowing the mathematics. He acknowledged he had the mathematical knowledge and felt qualified to teach sixth grade, but spoke mostly about classroom management and students' engagement. Without engagement and organization, he did not believe the learning environment would be as successful. Therefore, his purposeful attempts at generating engagement and keeping the class organized boosted his self-confidence. He specifically attributed his confidence and preparedness to the program and mentorship. Personal concerns rose in the second survey, but the increases did not diminish his concern for collaboration or information. His concerns for information and collaboration aligned with the confident use profile, because confident teachers were ready to work with others and concerned about how to do this, as well as being concerned about new information, such as new textbooks.

4.1.2 Participant 2

Annabeth's high levels of concerns in all dimensions aligned with what was observed and heard as Annabeth describes herself as a first year teacher. Annabeth was concerned about becoming a better teacher before she had even completed her first year. Mentally, Annabeth knew what she wanted to improve. Actively she strove to question her students, use cooperative learning strategies, and exploratory lessons in order to keep them engaged. She knew appropriate levels of mathematics the students needed to learn and attempted to ensure she taught on a level the students understood. All of these aligned with a teacher who was willing to master the implementation of her preparation. However, a fluid implementation was not realized. All of these markers, in both concerns and levels of use, were representative of a person who continued at the preparation level of use. Some days were more effective than others, as she noted when her students were more active than normal.

4.1.3 Participant 3

Jennifer's higher concerns about self and management aligned with someone still orienting and preparing to implement the innovation. While Jennifer did demonstrate some of the instructional strategies she learned through UTeach, she still used more worksheets and practice problems than inquiry. She was less concerned about the impact of her practices on her students, until the second survey. The task concerns also aligned with her mechanical use in performance. She wanted to do more, but struggled with logistics such as the amount of class time and timely content coverage. Additionally, Jennifer worried about chaos ensuing should students not understand the material through the hands-on activity. Until management concerns continue to lessen, Jennifer will likely stay at the mechanical level of use for performance and preparation.

4.1.4 Participant 4

The combination of Bruce's concerns from the survey, observations, and interviews provided a picture of a teacher who was mostly orienting and preparing to use UTeach methodology in his classroom. The shift in the levels of the impact dimension suggested Bruce was motivated to begin implementation of the strategies, but had not fully embraced them early in the year. However, the management concerns of the innovation increased enough to suggest that while he anticipated impact, he was not completely confident about full implementation. Possibly, Bruce still had enough personal concerns to prevent him from implementing fully within the UTeach precepts everyday. These indicators aligned with someone still at preparation and mechanical levels of use.

4.1.5 Participant 5

The low concerns, observations, and interviews highlight a teacher who had chosen to teach using methods alternate to those presented in the UTeach program. Piper recognized what the program promoted, such as the inquiry, experiments, and even commented on the project-based course she took. However, her ideals on how to teach the students in her school, according to Piper, did not required those approaches, therefore she chose to not worry about implementing the strategies. Her primary expectations, student engagement and work completion, brought about the focus of her teaching.

4.1.6 Participant 6

A portrait of a teacher who aligned his teaching practices with how he was prepared to teach emerged. Concerns in the impact dimension combined with the observations and interviews aligned with a confident teacher whose main concern was about continuing to be an effective teacher. Lower consequence concerns suggest Kruppe believed his practices were

beneficial to the students; therefore the impact on the students lessened more by the second survey. The task of becoming the new PLC leader most likely increased the concerns in informational because he will rely on information to share with colleagues. The impact concerns align with his need to share his ideas of successful teaching. Kruppe portrayed a teacher who used the UTeach principles with ease and comfort. His levels of use were between mechanical and routine, which emphasized regular, smooth use of the UTeach precepts.

4.2 Cumulative Results

4.2.1 Survey of Concerns (SoCQ)

All SoCQ data were examined to determine trends among teachers in the study. While each teacher had some differences in concerns, the trends of concerns were similar. As a group, the teachers exhibited above average concerns in most areas of the innovation, particularly higher concerns about the unrelated and self dimensions. The group was concerned about other parts of their lives outside of teaching. As induction teachers, these levels of concern showed new teachers attempting to balance personal lives with a new life of teaching. Each participant remarked about learning to juggle the logistics of lesson planning, meetings, administrative parts of the job, and life in general. None of the teachers felt overly prepared for the administrative components of teaching.

However, the lowest concerns were in management, consequence, and refocusing. These stages suggest the group overall felt prepared to manage a classroom, capable of teaching the students, and less likely to change current practices. According to the observations and interviews, these were the strengths of the group. They have shown adequate classroom management and instructional strategies within the guidelines of the UTeach innovation. As noted by Figure 4.1 and Table 4.1, the group consistently remained concerned about the same

stages at both time points. This indicated that at both administrations of the SoCQ, all teachers were still mostly concerned with other issues outside of teaching. These results support the position of UTeach that teachers from the program enter teaching prepared to manage and perform as post-induction teachers.

Table 4.1

Cumulative SoCQ Results

Dimension	Stage	Survey 1	Survey 2
Unrelated	Unconcerned	91	69
Self	Informational	72	60
	Personal	70	70
Task	Management	52	52
	Consequence	30	38
Impact	Collaboration	64	64
	Refocusing	42	52

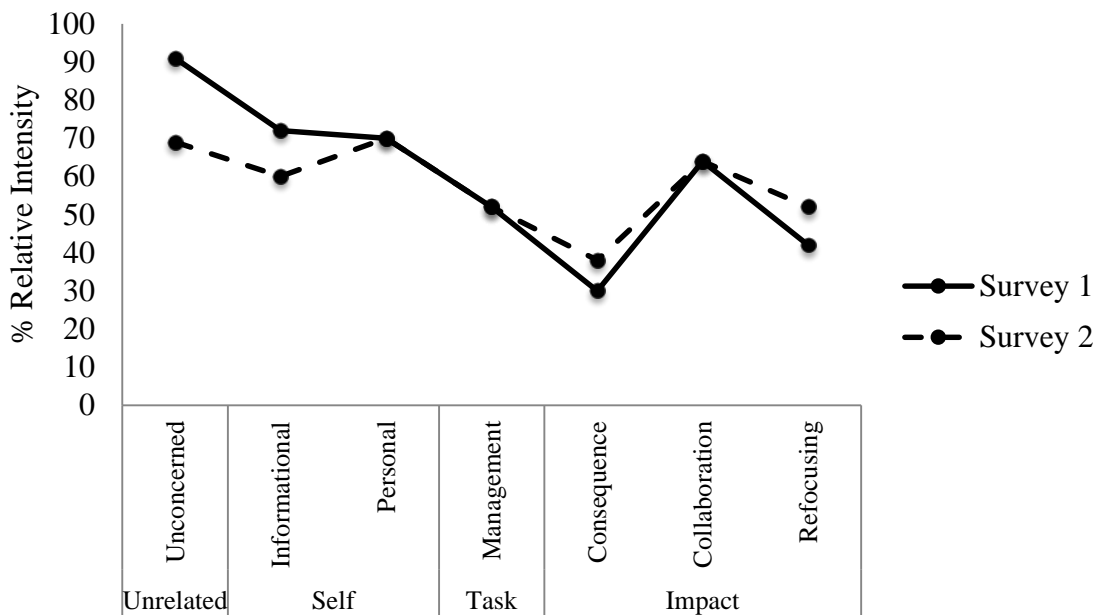


Figure 4.1. Cumulative SoCQ results.

4.2.2 Cumulative Level of Use (LoU)

The group averaged UTOP ratings and corresponding LoU was listed in Table 4.2. All

three observations were averaged for each configuration among all the participants. The overall results were orientation to mechanical levels of use.

Table 4.2

Cumulative Averaged UTOP Ratings and Corresponding LoU

Configuration	Average	Corresponding Category	Corresponding LoU
I. Class Environment	3.65	Performing	Mechanical
II. Lesson Structure	2.68	Planning	Orientation
III. Lesson Implementation	3.16	Performing	Mechanical
IV. Content	3.01	Knowledge	Preparation

4.2.2.1 Configuration I

As a group, the classroom environment was the highest performing configuration. Consistently they all demonstrated adequate classroom management strategies. In this configuration, the teachers had above average classroom interaction, engagement, on-task behavior, and organization. Also, the classrooms were observed as equitable learning environments. The teachers created an adequate culture of productive and collegial students, according to UTeach principles. Most teachers were implementing the strategies at a mechanical level of use.

4.2.2.2 Configuration II

The teachers were observed lowest on the configuration of lesson structure. In general, there were few investigative lessons observed. Two components typically rated the lowest in this configuration: importance and resources. Teachers were seldom observed teaching the students about the importance of the mathematics. Resources were usually worksheets or textbooks. However, the one component, which rated the highest, was reflection. This affirmed the concerns the teachers have about refocusing. At the conclusion of the observed lessons, the

teachers typically wanted to make changes and improve the lesson sequence or structure. Yet, inhibitors such as resources, time, and student apathy were typically reasons the teachers gave as impediments to change. These indicators align with used at an orientation level of use. Most teachers were still working towards gathering new information and resources to implement better lesson structure.

4.2.2.3 Configuration III

Lesson implementation was observed at a mechanical level of use. Primarily, the teachers rated above average on questioning strategies, involvement, and timing. The teachers used questioning to elicit student involvement. Regardless of the resources or activities, the teachers promoted student participation. The component of the configuration rarely observed was connections to prior knowledge or experience. Mathematics was often taught in isolation without connection to other mathematics content or student's prior understandings. The disjointed actions and lesson implementation aligns with mechanical levels of use. Varied degrees of efficiency were noted in most observations.

4.2.2.4 Configuration IV

Content knowledge was not a hindrance for the majority of the teachers. They all had enough knowledge to clearly explain the mathematics to their students. All teachers exhibited above average ratings on mathematics fluency and accuracy throughout the lessons. The parts of this configuration that were below average were the conceptual components. In particular, the group of teachers infrequently taught the students about interconnections, societal impact, relevance or abstraction. The students typically learned only a single representation of the mathematics, whether it was symbolic or pictorial. Seldom students learned the importance of the topic, nor did they explore when or how they would use the mathematics in their everyday

lives. But, most of the teachers reflected in the interviews on how they would teach the content differently if they had the time or resources to do more exploratory activities with the students. These observations and reflections align with teachers who were still preparing to use those principles of the innovation, which aligns with the preparation level of use.

4.2.3 Interviews

Overall participants reported at levels of use that aligned with the observations. The three LoU categories commonly noted among the participants were performance, knowledge, and planning; also aligning with the observation categories. Statements from the participants generally aligned with the observations by affirming their use (or lack of use) of instructional practices they learned from the UTeach program. Table 4.3 lists the LoU categories most commonly attested to, along with the general level of use for the group.

Table 4.3

Cumulative Levels of Use by Category

Category	Level of Use
Performing	Mechanical
Knowledge	Preparation
Planning	Orientation

4.2.4 Cumulative Profile of Concerns and LoU

Overall concerns and levels of use indicate a group of induction teachers who are still in the initial stages of use of the innovation. Although intentions were evident, actual implementation levels were typically low. The orientation to mechanical levels highlight a group of teachers still managing the everyday tasks of teaching, whilst working towards implementing various instructional strategies learned through their preparation program. The high concerns in

the unrelated and self dimensions align with the overall levels of use, again supporting the findings of teachers adjusting to their new lives as teachers, unrelated to their preparation.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 CBAM Assumptions

5.1.1 Survey of Concerns

Hall and Hord (2011) note that there were differences in each individual's desire to change and the actualization of change. Although prepared to make the change, a person undergoes many emotions or concerns before implementation occurs. Hall and Hord found consistent features of concerns among preservice, induction, and tenured teachers. Preservice teachers are typically concerned with self, particularly classes, nightlife, and personal situations. Preservice were also concerned with making grades and only completing the courses, not making connections or worried about future use of the knowledge they were learning. New teachers generally had high concerns in the unrelated, self, and task dimensions, in contrast to tenured teachers who would typically report higher concerns in the consequence dimension. The findings from the study indicated that CBAM concerns' assumptions were upheld.

Generally teachers in the study were dealing with personal issues and/or were concerned about things outside the realm of teaching. The reports of above average unrelated concerns from teachers' SoCQ supported the CBAM assumptions. They were concerned about many other parts of their lives outside of implementing the UTeach instructional practices. As a group, teachers reported that there were other aspects of their lives more important than worrying about teaching, in spite of the fact that they planned and delivered daily. From coaching to taking weekend time off, the teachers verbalized other priorities than implementing UTeach programmatic designs. Finding a balance between personal and professional lives was frequently noted.

High personal concerns noted in the findings of this study, supported the assumptions purported in the CBAM theory. Hall and Hord point out that induction teachers will be concerned about how the innovation will affect them or need more information to use the innovation. Each new teacher was inundated with professional development training and district curriculum requirements. Often the first year induction teachers commented on following the rules of the district. Trying to implement personal ideas in the classroom would have increased concerns. As a group, the most apparent need was a need for more information. Successful implementation required blending the district ideas along with the ideas learned in the UTeach preparation program. The conflict between what they learned and how to actually implement was evident in interviews and supported with data from the SoCQ. Hence, the assumption that first year induction teachers would have higher intensity levels of personal concerns was supported.

Hall and Hord note that new teachers will also have concerns about management of an innovation. The concerns expressed by teachers in the study were typically about how to gather materials, plan, and organize logistics of lessons that use the UTeach instructional practices. Of the group concerns, this was one of the lower concerns. This assumption was not met; these induction teachers were either not concerned or more confident in their management skills than other attributes of the innovation. Class management was an evident strength of the group and their concerns mirrored the observations.

The CBAM theory states that more experienced teachers will exhibit concerns about the impact the innovation had on students or colleagues. New teachers rarely had high intensity levels of impact concerns. Hall and Hord (2011) specifically state, "Impact concerns were the ultimate goal for student teachers, teachers, and professors" (p. 70). Contrary to the assumption

that experienced teachers generally concern themselves with impact, the induction teachers in this study did indicated high intensity levels on the two of the impact concerns. Collaboration and refocusing typically had higher levels of concern than consequence. But, the consequence levels were noteworthy. The consequence stage suggests the UTeach graduates were somewhat concerned about how the implementation of the instructional practices was affecting their students. In interviews, teachers indicated a desire to do what was best for students, yet SoCQ data did not fully support this in the independent polling.

Through anecdotal stories of UTeach graduates, there have been persistent claims that (UTeach Austin, 2014) they produce teachers more like second or third year teachers. The higher intensity concerns on the impact dimension offer some affirmation of that claim. These induction teachers reported being cognitively aware of the impact these strategies would have on students, strongly concerned about collaborating with colleagues about their learned practices, and strongly concerned about refocusing on implementation of the UTeach precepts, which supports Hall and Hord's findings regarding tenured teachers concerns.

5.1.2 Levels of Use

Hall and Hord reported several assumptions about levels of use for early users of an innovation. The authors found that the new participants were non-users as they began to orient and prepare for the use of new innovations. Without proper support and intervention, the teachers are unlikely to move beyond mechanical use of the innovation. The study revealed similar findings. Most of the new teachers were in the orientation and preparation levels of use during their first year of teaching. Each was struggling to get beyond the daily requirements for teaching, much less implement controversial instructional practices. The exceptions were those who had been placed in positions of responsibility or had added levels of preparation such as

training from a former inductee. Therefore, the assumption that support and intervention is necessary was upheld. The PLC would have to continue to support the preferred methods of instruction or failure of implementation would have occurred.

By examining Transfer and CBAM principles, in reference to findings from the study, there was supporting evidence that the use of some principles affected levels of transfer, use, and concerns from preparation to practice. At least four of the Transfer principles were addressed directly in the UTeach program, netting low levels of transfer. Lending more attention to the remaining principles could potentially increase the likelihood of higher levels transfer, levels of use, and concerns at the Impact levels in induction classrooms.

5.2 Implications for Future Research

Three recommendations and considerations for future research were warranted: The first is a recommendation for future research in other UTeach replication sites for transfer from preparation to practice. The second recommendation is to use CBAM as a means for collecting necessary data for analyzing concerns and implementation levels of the preferred UTeach practices. Third, to increase levels of transfer, the UTeach could consider aligning the program to the principles of transfer.

The CBAM tools guided the investigation of the concerns about and adoption levels of the innovation. However, at the completion of this study UTeach had been in operation for 15 years. No research employed change management instruments such as CBAM. However, the tools demonstrated how profile created of induction teachers' concerns and use of UTeach precepts informed the UTeach preparation in practice. This current contribution to the literature and, in essence, the program, serves as a means by which UTeach could verify its effectiveness as a cutting edge secondary teacher preparation program.

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