Building Teaching Competencies Through Video Recorded Discourse

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The objective of this article is to present the findings of video recorded communication between candidates in a graduate initial teaching licensure (GITL) program and peers during simulated micro-teaching across three consecutive seminar quarter. The micro-teaching activity combines conventional face-to-face interaction, video micro-teaching, peer and instructor feedback, alongside self-reflection to undergird the complex process of planning and teaching. This research aims to gauge 1) whether the micro-teaching assignment is a graduate candidate-centered activity that promotes accomplished teaching skills through higher-order thinking; and 2) how GITL candidates demonstrate the synergistic professional practice of teaching.

Preparing graduate initial teaching licensure (GITL) candidates to enter the teaching profession with accomplished skills is the goal of most alternative route licensure programs. Teacher preparation program and education faculty want candidates who are capable and confident professionals. Components of highly accomplished skills include reflective practice, student centered teaching, teaching for the 21st century, and teaching authentically so preK-12 students will take ownership of their learning, develop critical thinking skills and effectively apply knowledge to contexts beyond the classroom. The GITL program at one public comprehensive regional university, represented in this study, strives to provide a cohesive program containing a foundational core in which all candidates seeking a teaching endorsement complete.

This foundational core centers on a philosophical belief that all candidates need skills in classroom management, assessment, methods, diversity, and technology regardless of the grade, age, ability level, or content area in which they will teach. This core sequence challenges GITL faculty to prepare candidates 1) to be able to teach effectively when they enter the classroom, and 2) to teach in a more socially and intellectually rigorous manner than is currently experienced in preK-12 classrooms. This research describes an effort to address these challenges by analyzing candidate and peer communication during a micro-teaching assignment embedded across three seminar courses.

Micro-teaching, as designed within the GITL seminar courses, provide a social setting for building candidates' commitment to participate in rigorous teaching practices. GITL candidates are intrinsically motivated to develop teaching practices differently than what they experienced as K-12 students. Motivation in the practice of teaching is as important as content knowledge and pedagogical knowledge (Sieberer-Nagler, 2016). Meaningful pre-service education programs involve learners in reflective practices and critical discourse, fusing the subjective with the intersecting worlds of pedagogy and practice within a community of inquiry. In such a community, students learn by "negotiating meanings, diagnosing misconceptions and challenging accepted beliefs" (Garrison & Anderson, 2003, p. 28). The skills to create consistently rigorous lesson plans and classroom experiences depend on the social circumstances in which one learns and develops their teaching identity (Cantor, et al., 2018; Clarke et al., 2014, Darling-Hammond, et al., 2020; Hoffman et al., 2015; Svojanovsky, 2017). Micro-teaching involves candidates in publicly practicing how to teach content using rigorous instructional methods, strategies, and activities. Using the seminar course framework, the objectives of this articles are to present the findings of the communication that occurs during the micro-teaching activity between the candidate simulating the role of the teacher and the candidate's peers role-playing as students.

The micro-teaching activity combines conventional face-to-face interaction, video micro-teaching, peer and instructor feedback, alongside self-reflection to undergird the complex process of planning and teaching. Through an analysis of candidate and peer communication as candidates execute one of their planned lessons through videotaped micro-teaching presentations this research aims to gauge 1) whether the micro-teaching assignment is a candidate-centered activity that promotes accomplished teaching skills through higher-order thinking; and 2) how candidates demonstrate the synergistic professional practice of teaching.

The micro-teaching assignment is video recorded, enabling the researcher to capture detailed actions and interactions between peers and candidates and faculty and candidates. In describing the findings, verbal exchanges that occur throughout the micro-teaching event illustrate how candidates learn to accomplished teaching practices. Throughout the micro-teaching event, interactions and exchanges between candidates and teacher educators support candidates in attempting more rigorous and student centered teaching instruction. The research findings described here contribute to the field of GITL preparation program design as well as discussions concerning GITL candidate practice.

Establishing the micro-teaching activity

The seminar courses are completed successively across three quarters. Prior to Seminar I, candidates complete a quarter of foundational education courses that include methods, assessment and culturally responsive management of the learning environment. In Seminar I and II GITL candidates progressively assume more and more classroom responsibility under the tutelage of their mentor teacher, their university supervisor and their seminar instructor. During Seminar I and II, candidates observe, work one-on-one with students, facilitate small group instruction, co-teach, or direct whole class activities. GITL candidates student teach during Seminar III.

Seminar introduces candidates to the complexity of planning for instruction and executing prepared lessons in a highly scaffolded manner. Managing the multiple relationships symbiotically occurring within instruction requires candidates to create and establish routines for interaction that do not deter from the

learning process. The act of performing a lesson forces candidates to use good judgment when faced with the myriad of elements that arise externally from the process of executing a lesson's content. Advancing candidates' learning of complex performance involves scaffolding academic pedagogy with social relationships where candidates continuously assess and adapt teaching to what students know and are able to do (Black & William, 2012; Moss, Pullin, Gee, Haertel, & Young, 2008; Pianta et al., 2012; Valencia et al., 2009). Eliciting student performance and effectively responding is a dynamic process requiring a particular set of skills and knowledge. Bransford, Derry, Berliner, and Hammerness (2005) referred to these skills as "adaptive expertise" and asserted that these proficiencies develop over time through rehearsal. Rehearsal allows candidates to make judgments about situations in the moment they happen and involves two qualities; 1) learning about students' involvement with the content in which they are learning and 2) requires candidates to discriminate which elements of the situation matter (Feldman & Pentland, 2003).

Reciprocity exists between the development of situationally appropriate knowledge and the application of that knowledge in varying situations (Cantor, et al., 2018; Darling-Hammond, et al., 2020; Pianta et al., 2012). Repeated practice develops efficiency, reinforces discernment and improves the ability to adapt responses to new situations. Conceptual understanding is developed throughout courework. Repeated practice transpires when candidates are in the field.

Each seminar course blends repeated practice with comprehension; a deliberate practice that balances the pedagogy with the practical (Graziano, 2008; Struthers Ahmed, 2020). Deliberate practice across the seminar courses unfold during the micro-teaching activity. Deliberate practice offers a cycle of repetition with critical feedback, where the feedback reinforces pedagogical clarification and mastery. As candidates gain personal experience engaging in real classroom situations and exchanges, they begin to note, or an instructor points out, specific examples of meaningful additional aspects of the circumstance (Calandra, et al., 2008; Ericsson et al., 2006; Yerrick et al., 2005). The deliberate practice of micro-teaching accompanied by immediate feedback from peers and the professor regarding a candidate's execution of a planned lesson assists the candidate in developing automaticity in knowing when and why the choices made in the moment are relevant at any given time during that lesson. This skill set becomes the conceptual framework that guides adaptation and innovation in unfamiliar situations (Benton-Kupper, 2001; Funmi & Irwin, 2009; Author, 2018). The critical feedback received is key to candidates' self-efficacy in applying and articulating what they have learned.

Seminar courses closely align coursework to fieldwork as GITL candidates are concurrently enrolled in courses entitled Clinical Practice. While enrolled in Seminar I candidates are also enrolled in Clinical Practice I; while enrolled in Seminar II they concurrently complete their field hours and classroom immersion in Clinical Practice II. This extends to student teaching (Clinical Practice III) while concurrently enrolled in Seminar III. Each seminar course supports practice centered instruction. The central focus of seminar permits candidates to rehearse planning and culminating artifacts showcase GITL candidates' best work through video recording.

Activities embedded across each seminar course are strategically introduced throughout each quarter. A unified lesson plan template is used throughout the GITL program and candidates are familiar with the template in each successive quarter of the program. Deep discussion and theoretical thought undergird each planned component of the lesson plan template. GITL candidates must be purposeful in their planning and chunking sections of the lesson into smaller parts; the anticipatory set, activity 1, activity 2, closure, etc., highly scaffolds their comprehension mastery. Sequencing parts of the lesson plan forces candidates to articulate their comprehension about how and why to teach the content using a certain model of instruction. Sequencing parts of the lesson plan also compels candidates to respond in principled, instructive ways to their K-12 students. Seminar course activities are designed to enable the GITL candidates to elicit and build on cogent student centered instruction.

Each component of the lesson plan is introduced with GITL candidates scripting out sections of the lesson into smaller parts; the anticipatory set, activity 1, activity 2, closure, etc., placing the student clearly at the center of learning during Seminar I. Candidate rehearse lesson components in groups of three or four in class, with their peers role- playing as students for the candidate rehearsing. As the GITL program is completely taught online, breakout rooms in the course management system are utilized for this activity. The GITL program also embeds monthly Saturday Seminar time throughout the duration of the program where face-to-face workshops occur.

A feedback rubric is completed by each peer for the candidate to use as reference when editing their scripted lesson elements. See Table 1. Each lesson section is rehearsed in small peer groups. Often, candidates find themselves editing and re-editing portions of the lessons as they build their pedagogical knowledge base regarding models of instruction and work toward fluidity. Peer feedback rubrics from each of the group members are completed with each rehearsal.

Table 1. Selected Sample Questions from Lesson Activity Peer Feedback Form

Presentation Style	**Superior**	**Above Average**	**Average**	**Need revision**	**NA**
The teacher spoke to students individually	3	2	1	0	
The teacher made eye contact with the class and individual students	3	2	1	0	
The teacher redirected or revisited the learning if needed	3	2	1	0	
The teacher monitored and assisted when needed	3	2	1	0	
Execution of the Activity					
The instructions for the activity were clear	3	2	1	0	
Differentiation was evident and appropriate	3	2	1	0	
Parts of the Activity					
The objectives were age/grade appropriate	3	2	1	0	
Students worked/spoke more than the teacher	3	2	1	0	

After candidates have drafted each element of a lesson's activities, examples of lesson plans written by former GITL candidates are introduced and discussed as a whole class. Identifying markers as to former candidates' names or gender are removed and the document is projected onto a screen for the class to view. Lesson plan examples used are not exemplary nor are they demonstrative of extremely poor work. The examples of previously written lesson plans have flaws in design, mechanics, timing, and fluidity. The class collectively assesses the methodology chosen, the assessment, and the scripted execution of the lesson. Seminar participants also examine the links between the focus of the lesson, the standard(s) chosen and the objective(s). Providing previous examples for GITL candidates to scrutinize builds classroom capacity, trust, and agency. The exercise of evaluating previously written plans provides candidates an equitable starting point in which to gauge their initial drafting of lesson plans against those written by former candidates. The exercise also gives candidates a platform in which to implement the professional vocabulary of education. This deeper dive into planning begins in Seminar I and continues in Seminar II and III. Seminar activities by design, allow GITL candidates to begin demonstrating the knowledge accumulated in previous coursework. GITL candidates must exhibit and articulate mastery of professional vocabulary through their choices of assessment, student voice, and inclusiveness alongside their new knowledge obtained through clinical experience as they plan and build their lesson plans.

Next, GITL candidates edit their plans in preparation for micro-teaching. The micro-teaching video activity is a required assignment in each seminar, allowing candidates the opportunity to test in practice the results of their preparation by simulating full teaching responsibility in an environment where feedback is immediate. GITL candidates micro-teach and video record their performance four times each quarter with their peers acting as students. The videos, no more than 20 minutes in length, are uploaded and available to the cohort through the university's One Drive software platform the day of microteaching. Candidates micro-teach to a minimum of 4 peers, who role-play as students.

Role-playing offers an in-depth experience in which everyone in the course role-plays as student and teacher. Participating as a student requires tapping into one's previous preK-12 experience, allowing in-depth observation as to how students at the age/grade level would respond and behave to the lesson. Further, role-playing as students offer candidates the opportunity to consider what kind of feedback they themselves would like when they role-play as the teacher. Candidates are responsible for preparing the environment for simulating the lesson content. This includes having materials ready, having student friendly objectives visible, orienting 'students' to their age, grade and ability level and the content being taught. Candidates must also ensure the video recording equipment properly works.

Each peer role-playing as a student completes a Lesson Peer Feedback Rubric (see Appendix) for the candidate micro-teaching (Author, 2015). The instructor provides formative assessment on the written lesson plans and the micro-teaching performance. Once feedback from peers and the instructor are received, candidates review their video performance and the feedback. Candidates then write a reflection on the process of creating and executing the lesson plan. The reflection prompt requires candidates to examine how the method or model, strategies, and content designed into the lesson played out in a particular situation. A revised lesson plan with an explanation for changes along with the reflection are then submitted for a summative grade.

Video recording the micro-teaching event provides candidates and faculty a unique opportunity in which performance showcases a collaborative examination of appropriate teaching actions via a setting that can be reviewed multiple times. The micro-teaching cycle embedded in the seminar courses are specifically designed so candidates practice the complexity of executing a lesson and then analyze their performance for improvement. The activity builds an iterative and interactive relationship between knowledge and principles, as well as practical tools.

METHOD

The author of this article completed a similar study with undergraduate teacher candidates (Author, 2018). The current study evaluates adult learners in a GITL master's program rather than a conventional undergraduate teacher preparation program experience. GITL candidates work with the same mentor and K-12 students throughout the duration of the teacher preparation program. The undergraduates participate in two practica experiences before student teaching each in a different K-12 school with a different mentor teacher. The previous study evaluated undergraduate micro-teaching videos during enrollment in a methods of instruction course completed prior to student teaching. Candidates in the undergraduate study were not in cohorts and each participant was at varied stages of program completion. One course of 24 pre-service teachers was included. This study examined two cohorts of GITL candidates from the beginning of their clinical practice throughout the duration of their program, culminating in student teaching.

Framework for analysis

The author's research methods involve evaluating 372 micro-teaching videos across two cohorts of GITL candidates enrolled in academic year 2019-2020 and academic year 2021. There are two entrance quarters to the GITL program, winter quarter and summer quarter. See *Table 2*. Videos from candidates who dropped the program or were removed from the program were not included in the data set.

Video recorded exchanges between candidates role-playing as teacher and peers roleplaying as students formulate the database in which Teacher Actions and Levels of Cognitive Quality gauge 1) whether the micro-teaching assignment is a candidate-centered activity that promotes accomplished teaching skills through higher-order thinking; and 2) how candidates demonstrate the synergistic professional practice of teaching. Each course section analyzed in this study was taught by the same teacher educator for consistency.

A systemic analytic approach to code across each of the classes comprises the data set. Each candidate's name has been

Table 2. **Enrollment and Video Totals**

Academic year	Section	Enrollment	Videos per Quarter	Videos Total Across Seminar I, II and III
Summer 2019 cohort	001	24	72	216
Winter 2020 cohort	001	13	52	156

changed to an alphanumerical marker. Alphanumerical markers have been assigned based upon candidate's cohort, enrollment quarter and section and coincide upon the alphabetizing of the candidate's name. For example, if a candidate entered the GITL program with the 2019 summer cohort and was enrolled in section 001 of seminar I during fall quarter and they were the first student on the roster, they were given the marker of SF1901A. The second student in the same section was assigned the marker of SF1901B, and so on. As the GITL candidates are in cohorts, there is only one section of each seminar course per quarter. See Table 3 for an example of coding the summer 2019 GITL candidate data for the fall 2019 seminar. The names provided are fictitious and included here for illustrative purposes only.

Table 3. **Alphanumerical Coding of Summer 2019 cohort for Seminar I**	
Fall Quarter 2019 Seminar I	**Coding**
Boyle, Elizabeth	SF1901A
Feldman, Peter	SF1901B
Garr, Helga	SF1901C
Kahn, Gene	SF1901D
Wilder, Madeline	SF1901E

None of the sections used for this study contain over 26 students, therefore alphabetical letters from A-Z were used only once. Table 4 demonstrates coding of the winter 2020 GITL candidate data for the spring seminar.

Table 4. **Alphanumerical Coding of Winter 2020 cohort for Seminar II**	
Fall Quarter 2020	**Coding**
Brooks, Pat	WS2001A
Goldman, Terri	WS2001B
Kemp, Madeline	WS2001C
Mars, Marty	WS2001D
Pushman, Lidia	WS2001E

Coding synchronous micro-teaching exchanges.

GITL candidates choose their video recording software provided the recordings contain time stamps and a stop function when reviewing the recording. See *Figure 1*. These functions allow for detailed coding of candidate and peer interactive communications in identifying how candidates demonstrate synergistic professional practice of teaching. The use of video allows the researcher to review the video multiple times in order to track and code exchanges thoroughly. Timelines created for each micro-teaching capture the verbal rapport between candidates and peers. Coding the video according to time permits a variety of verbal and visual cues to be comprehensively considered, including the nature and quality of the communication.

Video recorded timelines also function for tracking the reciprocal nature of the communication between the teacher (candidate) and the students (peers); and allow multiple passes to ensure complete data identification. Table 5, Teacher Actions lists the codes signifying the teaching actions of the candidate during micro-teaching.

Table 5. **Teacher Actions**	
Nature	**Description**
Engage and respond	Engaging and responding to students
Representation	Representing ideas in writing
Time management	Pacing the lesson appropriately for student comprehension
Physicality	Physical proximity, voice projection. Moving around the physical space
Assessment	Formatively assessing student involvement with the activity
Lesson objectives	Attending to the specific lesson objectives
Methodology	Attending to the specific steps in the method employed for the lesson

In order to characterize the *Levels of Cognitive Quality* between the candidate and peers during micro-teaching the researcher applied Anderson and Krathwohl's (2001) six cognitive categories adapted from Bloom's taxonomy for the contemporary classroom. The six cognitive categories and processes for coding the *Levels of Cognitive Quality* of the interaction ranked in order from lowest thinking skill to highest are:

- **Remember:** Recognizing and Recalling
- **Understand:** Interpreting, Exemplifying, Classifying, Summarizing, Inferring, Comparing and Explaining
- **Apply:** Executing and Implementing
- **Analyze:** Differentiating, Organizing and Attributing
- **Evaluate:** Checking and Critiquing
- **Create:** Generating, Planning and Producing

Coding each video identifies which of the six cognitive categories appear during micro-teaching. More than one category can emerge from a singular micro-teaching event. Coding the interactions using Anderson and Krathwohl's (2001) framework reveals whether and with what frequency the micro-teaching activity promotes higher order learning across the entire data set.

Both the *Teacher Actions* categories and Anderson and Krathwohl's six cognitive classifications of quality indicate the actions and quality of the exchange between candidates and peers during micro-teaching. The Timeline Analysis Chart (Table 5) documents the candidate's Teacher Actions and Levels of Cognitive Quality during the micro-teaching event; the time, length, nature, and cognitive levels of the exchange are represented in their respec-

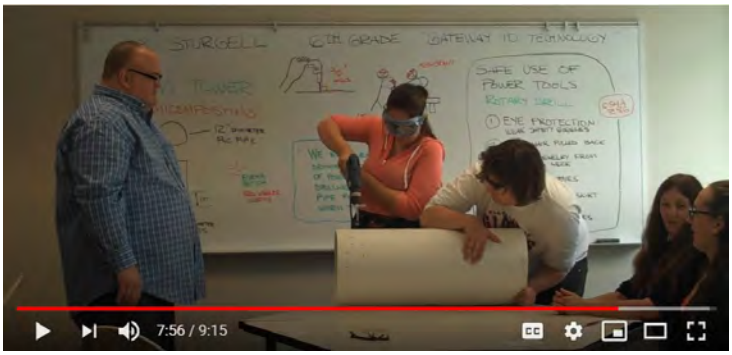

Figure 1. Time stamp of candidate's micro-teaching video

tive columns. Numerous events simultaneously transpire in teaching. Consequently, multiple Teacher Actions noted for a single micro-teaching video combined with the Levels of Cognitive Quality within the teaching activity capture the total aspects of practice. Indicating whether dialogue contained one or multiple Teacher Action codes frames a way of analyzing the complex, layered nature of teaching. Table 6 illustrates a portion of a completed Timeline Analysis Chart for candidate WS2001M.

Table 6. **Timeline Analysis Chart**

Candidate S1501M	Time	Length	Teacher Actions	Cognitive Level
	2:58	78s	Representation	Understand
Notes	Whole class Teacher writes student responses on white board			

FINDINGS

The process of analyzing the data set of 372 micro-teaching videos and coding them according to the Teacher Actions and the Levels of Cognitive Quality allowed for multiple analytic reviews. The first analytic analysis indicated broad descriptors across the entire data set according to Teacher Actions. The second elicited particular Teacher Actions transpiring simultaneously with other action codes, and the third pass compared singular versus multiple codes of Teacher Actions. A fourth scan investigated the Levels of Cognitive Quality within the micro-teaching activity. Each cohort's videos were scanned four times in Seminar I, four times in Seminar II, and four times in Seminar III. Analysis of 372 microteaching videos elicited 4,683 Teacher Actions.

Candidates' micro-teaching activity lasted on average 10 to 16 minutes with reciprocal exchanges between peers and candidates occurring on average 15 times per micro-teaching during Seminar I. Time spent in teaching the instructional activity averaged 52% with 45% of the time spent between candidate and peer exchanges. Dialogue between candidates and peers lasted on average 16 seconds. The candidate simulating the role of the teacher initiated the communication 34% of time. During Seminar II, the micro-teaching video activities were 10 to 18 minutes in duration with reciprocal exchanges occurring on average 18 times per micro-teaching event. The mean time spent in teaching the instructional activity was 48% with 50% of the time candidate and peer exchanges. Dialogue between teacher candidate and peer students lasted on average 14 seconds with the candidate teacher initiating engagement 26% of the time. Seminar III revealed micro-teaching lasting 8 to 14 minutes on average with the median reciprocal exchanges occurring 22 times per event. Instruction averaged 42% with 53% of the time spent between candidate and peer exchanges. Dialogue exchanges lasted on average 12 seconds with the teacher candidate initiating communication 22% of the time

Teacher Actions

Classifying the reciprocal nature of the communication of candidates' actions during the micro-teaching event using the *Teacher Actions* codes indicates 36% of candidates' communication in Seminar I contained one descriptor, illustrating concentration on one aspect of teaching. *Engage and respond, time management* and *lesson objectives* collectively represent the single codes most often involved. Collectively, these three categories total 36% of the micro-teaching exchanges between teachers (candidates) and students (peers) during Seminar I. These figures change during Seminar II and Seminar III with 32% of candidates concentrating on one aspect of teaching in Seminar II and 27% representative of Seminar III communications during micro-teaching. Percentages do not sum to 100% due to overlapping teacher actions during microteaching.

The interactive activity of *engage and respond* as a single focus of teaching exists in 24% of candidate/peer exchanges and 88% of all video evidence in Seminar I. During Seminar II, *Engage and Respond* manifests in 22% of reciprocal exchanges and 90% of all video evidence. Seminar III data reports 20% of reciprocal exchanged across 93% of all video evidence. Collectively, *engage and respond* as an aspect of teaching is identified in 22% of reciprocal exchanges between GITL candidates as teacher and peers as students uniformly across all seminar experiences in 90.3% of the videos used in this study.

Table 7 Classification of Single Descriptor Teacher Action codes delineates the codes of both the winter cohort and summer cohort for each seminar. *Table 7* displays the occurrences/percentages of single descriptor teaching actions that emerged from each seminar course. *N = 4,683* occurrences. *Lesson objectives* and *time management*, like *engage and respond*, happen uniformly across all 372 videos but with less frequency.

Lesson objectives as a single focus of teaching occur 85% overall and *time management* emerges 82.6% cumulatively. Other aspects of teaching, *methodology*, (17.3% of exchanges) and *representation* (55%) exist with less frequency overall, but still transpire in more than 67% of the total micro-teaching videos.

Multiple markers reveal that the teacher's actions exist in 62% of the micro-teaching interactions between teacher and students, revealing that GITL candidates work on more than one aspect of practice simultaneously when executing lesson plans during the simulated micro-teaching activity. *Teacher Actions* during the micro-teaching event address multiple categories simultaneously; actions that operate synergistically in relation to each other. For example, while candidates rely on *engage and respond*

Table 7. **Classification of Single Descriptor Teacher Action Codes**

	Engage and respond	Representation	Time management	Physicality	Assessment	Lesson objectives	Methodology
Seminar I occurrences	1124	1967	3653	1030	1498	3840	890
Seminar I percentage	24%	24%	24%	24%	24%	24%	24%
Seminar II occurrences	1030	1030	1030	1030	1030	1030	1030
Seminar II percentage	22%	22%	22%	22%	22%	22%	22%
Seminar III occurrences	937	1950	4121	515	1077	4121	749
Seminar III percentage	20%	63%	88%	11%	23%	88%	16%
Cumulative occurrences	1030	2575	3868	749	1278	3980.5	810
Cumulative percentage	22%	55%	82.6%	16%	27.3%	85%	17.3%

Note: Columns do not sum to 100% due to overlapping teacher actions during microteaching.

most commonly across all micro-teaching events, combinations of *Teacher Actions* classifications are also indicated during the same micro-teaching. The variability comes from the activity itself, the teacher (GITL candidate), the students (peers), and the fact that teaching exists in cycles that allow observations in different contexts.

While common combinations, such as *engage and respond* partnered with *representation* exist in 5.5% of total micro-teaching events, more than 200 code combinations varying from 2 to 5 are identifiable across all 372 micro-teaching videos. The extensive number of unique combination of codes that arose from analysis suggests that the candidate/peer interactions transpire in-the-moment as candidates and peers role-play the learning activity.

Social interaction, a necessary component of teaching, develops between the teacher and the students, the students, and the students and the content. Teachers advance students through content by building foundational knowledge, scaffolding prior knowledge, and working toward student mastery. *Engage and respond* is the most frequently occurring *Teacher Action* category in this study appearing in 37% of all candidate/peer exchanges and 92% of all video evidence. Focused communication between teachers and students characterize a large portion of the lessons within micro-teaching. Because *engage and respond* routinely appears as a single teacher action within a lesson activity and within multiple combinations of *Teacher Actions*, comparing how teachers advance a lesson activity when *engage and respond* operates as a singular code in comparison to working alongside one or more other *Teacher Actions* empirically conveys the complexity of teaching. *Engage and respond* as a singular lesson focus appears in 22% of all exchanges, in comparison to micro-teaching videos in which *engage and respond* synergistically blend with other codes (37% of all exchanges).

Engage and respond as single teacher action.

As a singular *Teacher Action* code, *engage and respond* appears in 632 of 4,657 exchanges. The *engage and respond* communication as a singular notable action happens in a shorter span, 5 seconds compared to 17 seconds, than the mean length of all the communications exchanges between teacher and students. Characterizations of *engage and respond* fall into 3 groups; teacher initiating many students, teacher initiating an individual student, and student initiation. The following exchange typifies the teacher initiating engagement with many students:

> T: Class, we are going to practice the overhand serve with our partners. Take turns with your partner as I move from pair to pair observing your technique.
>
> S: Respond by taking turns practicing the overhand volleyball serve with their partner.

In this 10th grade physical education lesson, the teacher elicits whole class response by engaging students' prior knowledge of the overhand serve in volleyball with a kinesthetic activity requiring whole class movement. A teacher asking individual students to respond orally by pointing to students at random characterizes an example of the second group *engage and respond* as a singular teacher action.

Student initiation, the third group depicting *engage and respond,* unfolds with an example from a science classroom. Students are learning about simple machines, specifically pulley systems. Groups of three rotate around each pulley station in the room placing various items on each pulley. Each group measures the weight (load) of the object, effort, discussing and determining the mechanical advantage of the various pulley systems. There is a worksheet each individual student completes, answering focused questions; the teacher circulates the room checking progress.

> S: I I know I need to calculate the actual Mechanical Advantage of each pulley system using the equation, but I cannot remember what to divide load by.
>
> T: Mechanical Advantage measures the force amplification by using some device. [engage]
>
> S: The device here it's the pulley. So … I need to measure effort required to life the load. And I do that by… uh, dividing the load by …um, ...effort. The equation is load/effort.
>
> T: Excellent. Good use of thinking the problem through. [respond]

The teacher (candidate) responds quickly to the student affirming the individual student's learning progress, representing the singular *Teacher Action* of *engage and respond*.

Verbal exchanges between the teacher and the students illustrating *engage and respond* as a singular *Teacher Action,* although short in duration, enhance pre-service candidate's skill ability in learning how, when, and in what manner to elicit students into public thinking and demonstration of knowledge achievement. Further, peers role-playing as students draw on their knowledge of age/grade appropriate behaviors to prompt the candidate to think deeply about the lesson activity. The exchange between teacher and student most often prompts revision of lesson plans to create a more in-depth learning experience that is more student centered and involves higher order critical thinking skills.

Engage and respond in blended teacher actions.

Seamlessly blending *Teacher Actions* during the teaching event demonstrates the complex, layered nature of teaching. Pinpointing multiple *Teacher Actions* during a single micro-teaching combined with the *Levels of Cognitive Quality* captures the total aspects of practice. Classifying and coding more than one *Teacher Action* occurring simultaneously provides diagnostic evidence of the synergistic demands of teaching. A decision to examine only videos depicting 3 *Teacher Action* codes, as opposed to all code combinations, was determined because *engage and respond* is the most common blended *Teacher Action* descriptor, existing in combination with up to 5 other *Teacher Action* codes. In total, 426 communication instances contain multiple teacher actions. Reducing investigation to only 3 codes containing *engage and respond*, provides a sub-set of 86. Communication transpires longer between the teacher and the student in which *engage and respond* exists simultaneously with two other actions than the mean length of communication, 34 seconds in contrast to 23.

The relational nature of teaching between the teacher and student is contingent upon the manner in which ideas are generated, discussed, and understood. An illustrative example containing the codes, *engage and respond*, *assessment*, and *representation* occurs in the micro-teaching of a bilingual English language learner elementary classroom pre-K classroom in which the instructor leads the students through an exercise on identifying vocabulary using context clues.

> T: Displays a vocabulary word on the PowerPoint pointing to the word and reads the word aloud with students helping them with the pronunciation. The current word is *champion.* Asks the students to repeat the word aloud.

T: What do you notice in the picture? Turn and talk to your partner. How does the picture illustrate the word? Now who would like to share?

S1: She is wearing a medal.

T: Is there anything else you can describe?

S2: She has won.

T: How do we know?

S3: She is pointing number 1.

T: What is another word for champion?

S4: A champ.

S5: A winner.

T: Yes. Let me write those words on the board so you see how they are spelled and what they look like.

The teacher scaffolds questions to elicit use of specific vocabulary and gauge students' thinking about the task. The original broad question, "what do you notice?" differs significantly from the identification question, "how do we know?" The query, "how do we know" requests students to articulate their thinking about their pictorial observations in order to assess student understanding. When one student identifies the hand gesture of the number 1, the teacher prompts the class with a follow-up question, "what is another word for champion" encouraging students to further articulate their thoughts. Building the questions from broad to specific frames the students' reasoning and ability to express their thinking using precise lesson vocabulary. Focusing the questions from broad to specific demonstrates the environment created by the teacher, illuminating how the synergistic categories of *engage and respond*, *assessment*, and *representation* elucidate the complex, multi-layered, aspects of the teaching practice. The social and intellectual intricacies of teaching emerge through the concurrent *Teacher Actions*.

Quality of communication

The Levels of Cognitive Quality data illustrates evidence of the candidate and peers applying lower, intermediate and higher-order thinking skills in their exchanges during micro-teaching. Table 8 presents the aggregate Levels of Cognitive Quality codes labeled within the micro-teaching video evidence. The cognitive categories are listed from lowest level of quality, remember, to highest, create. The frequency in which the cognitive categories occur are represented in two ways; 1) the number of all candidate and peer exchanges that include the specific Levels of Cognitive Quality category, and 2) the number of all micro-teachings that involve the cognitive category).

The frequency of cognitive categories across all micro-teachings indicate that cumulatively candidates concentrate more on the lower-order thinking skill of *understanding* during micro-teaching. *Remembering*, also a lower-order thinking skill, comprises the second largest majority of all micro-teaching events across the seminar courses of two GITL cohorts. The higher-order thinking skills of *evaluation* and *creativity* represent a smaller number than the lower-order skills, but not by a significant margin. *Remembering* embodied 263.74 of all of the micro-teaching events while 253.34 exemplified the higher-order thinking skill of evaluating. Analyzing, an intermediate thinking skill rates the lowest cognitive category, denoted by 198.22 instances.

Table 8. **Frequency of Cognitive Categories**

Cognitive Category	# of all Candidate/ Peer exchanges	# of all micro-teachings (*n* = 372)
Remember	83	263.74
Understand	67	266.34
Apply	56	252.17
Analyze	58	198.22
Evaluate	72	253.34
Create	86	232.47

In any learning situation that involves teacher and student interaction, there is typically concentrated evidence of the lower-order skills of knowledge, moderate evidence of the intermediate skills of comprehension and application and some evidence of the higher-order skills of evaluation and creativity (Author, 2015). The six levels of thinking skills detected in the micro-teaching videos correlate to the objectives specified in the written lesson plans. For example, if the lesson's objective states; "students will be able to identify fact from opinion with 80% accuracy" the video demonstrates the students engaging in identification.

DISCUSSION

Micro-teaching within the GITL seminar courses offer candidates a simulated opportunity to execute planned lessons. The highly scaffolded assignments, woven throughout the internship experience, combine conventional face-to-face interaction, video micro-teaching, peer and instructor feedback, and self-reflection. Recording the interaction of actively engaging in a planned activity simulates the engagement of practice. The aims of evaluating the communication between candidates and peers during micro-teaching were to gauge 1) whether the micro-teaching assignment is a candidate-centered assignment that promotes accomplished teaching skills through higher-order thinking; and 2) how candidates demonstrate the synergistic professional practice of teaching.

Limitations of the study/research

It is important to be cognizant of the study's limitations in order to consider and make programmatic recommendations. Continuance of research into the novice teaching years could assist school administrators and teacher preparation programs in developing supports for new teachers. This research makes visible a micro-teaching activity contained in initial teacher preparation courses which are often pedagogical in design. The analytical microteaching process was not conducted between pre-service candidates and the age, grade or ability group they will teach beyond licensure. Examining communication between novice teachers 1-3 years from licensure and their K-12 students in the day-to-day K-12 classroom would provide robust information concerning the use of or continued growth of accomplished teaching skills through higher-order thinking.

Whether GITL candidates will continue developing skills for accomplished, higher order teaching once they are practicing professionals is a consideration for further study. According to Hamel & Viau-Guay (2019) "in order to trigger a reflective process, the situation analyzed must be significant for the learner—usually leading to an emotional as well as a cognitive reaction" (p. 9). A research concentration on the fluid dimension of teaching, documenting the symbiotic discourse of novice practice and growth of accomplished teaching skills could illuminate what is considered significant for the teacher.

FINDINGS

Longitudinally examining the growth of GITL candidates' teaching practices provides rich information contributing to teacher preparation programs for graduate students seeking initial teacher licensure. This study examined GITL candidates' creation and execution of planned lesson activities across three consecutive quarters where growth over the course of their five-quarter program was evident. The micro-teaching assignment provides candidates in-depth feedback, several opportunities to reflect on the feedback and edit lesson components to demonstrate growth of accomplished teaching skills. *Teacher Actions* became more fluid and *levels of cognitive quality* increase as candidates progress through the program. This study mirrored the findings of a prior study on undergraduate teacher education students and teacher competencies (Author, 2018). Whether pre-service candidates were in a conventional four-year undergraduate program, or were graduate career changers in a one-year graduate licensure program, the outcomes were similar. Accomplished teaching is complex; comprised of multiple synergistic *Teacher Actions* in conjunction with multi-layered *Levels of Cognitive Quality* occurring simultaneously between the teacher and their students.

Regardless of the length of the micro-teaching video, the execution of the lesson plan approximates classroom practice in which teachers make multiple decisions in-the-moment as needs arise. In micro-teaching, GITL candidates have the opportunity to work on developing "key aspects of practice that may be difficult for them but almost second nature to more experienced practitioners" (Grossman, et al., 2009, p. 2078). Rehearsing a planned lesson creates rich opportunities for candidates to practice and learn how to navigate the social and intellectually multifaceted components of accomplished teaching. By design, candidates practice and learn how to involve students (a singular *Teacher Action*) and how to accomplish specific goals or meet the needs of individual students (three or more *Teacher Actions*).

The data from this study reveals candidates attend to specific aspects of a lesson as well as to variations of practice as they interact with individual students and lesson goals. The broad aspects of practice that candidates and peers experience during the micro-teaching experience illustrate the judgment embedded within the complexities of teaching. "The more the practice context that rehearsal affords can give novices opportunities to practice *ambitious* teaching, the more it is an authentic approximation of *ambitious* teaching" (Lambert, et. al., 2013, p. 239). The microteaching activity provides GITL candidates multiple opportunities to contemplate aspects of practice as they role-play both as the teacher and as the student. Considering how to appropriately respond as a student while simultaneously considering what they would do as the teacher involves contemplating situational responses that fuse pedagogy, methodology, practices, and content knowledge (*Levels of Cognitive Quality*).

Participating as both the teacher and the student forces reflective thought centering on the relational components of good practice. Micro-teaching represents the multiple relationships teachers have with students and content. Both the rehearsing candidate and candidate peers investigate the actions a teacher might take in response to student performance. Structured micro-teaching as it exists across the three seminar courses immerse GITL candidates into engaging with basic and complex instructional tasks, as well as the routine and spontaneous interactions that must be managed in teaching. Candidates collaboratively participate in developing accomplished teaching skills that shape their identity as practicing professionals (Holland, et al., 2001), connecting their pedagogical knowledge to the context of practice.

Awareness of demonstrable, cognizant growth in teaching practices assists GITL teacher preparation programs frame meaningful tasks and experiences within candidates' coursework. As teacher education programs strive to prepare GITL candidates who are capable and confident in their teaching abilities, a critical look at the interactional elements of practice including the social and intellectual components of accomplished teaching may elicit explicit considerations for teacher preparation. Expanding what works from an individual course with an individual instructor across programs and departments, schools and school districts offers a collaborative environment for stakeholders invested in teacher education; a model of practice where pedagogy and practice is highly scaffolded and supported.

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APPENDIX
Lesson Peer Feedback Rubric

Presenter Evaluator

Lesson Topic and grade level:

In rating the excellence of the microteaching lesson, please circle the number which best describes the item in question. Please write general comments on the back of this page.

Presentation Style	**Superior**	**Above Average**	**Average**	**Needs revision**	**NA**
The teacher was organized, calm and in control	3	2	1	0	
The teacher centered learning on the student	3	2	1	0	
The teacher's voice was clear, understandable and projected to every part of the room	3	2	1	0	
Teacher used appropriate language and no fillers (guys, um, like, uh, etc.)	3	2	1	0	
The teacher moved around the room, not staying in the "T" zone	3	2	1	0	
The teacher spoke to students individually	3	2	1	0	
The teacher made eye contact with the class and individual students	3	2	1	0	
The teacher redirected or revisited the learning if needed.	3	2	1	0	
The teacher monitored and assisted when needed	3	2	1	0	
Execution of the Lesson					
The instructions for the lesson were clear	3	2	1	0	
Distribution of materials was efficient	3	2	1	0	
Activities for the lesson were varied	3	2	1	0	
Activities supported the objectives	3	2	1	0	
Appropriate visuals and materials were used	3	2	1	0	
The lesson followed the principles of the stated teaching model (cooperative learning, information processing, scientific inquiry, etc.)	3	2	1	0	
The lesson was brought to appropriate closure	3	2	1	0	
The objectives were accomplished in the lesson	3	2	1	0	
Differentiation was evident and appropriate	3	2	1	0	
Parts of the lesson					
The objectives were stated and visually displayed	3	2	1	0	
The objectives were age/grade appropriate	3	2	1	0	
The objectives were understood by the learners	3	2	1	0	
The anticipatory set was learner centered	3	2	1	0	
Closing activity was learner centered	3	2	1	0	
Main activity was learner centered	3	2	1	0	
Students worked/spoke more than the teacher	3	2	1	0	
Assessment was reasonable and age appropriate	3	2	1	0	