

## Facilitating Teacher Reflection Using a Metacognitive Tool

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*Teacher reflection is a central component of developing preservice and practicing teachers. This article describes a case study designed to explore reflection through an examination of a metacognitive tool, the Teacher Learning Instrument. The findings provide insight into the dimensions of reflection, specifically the interplay of observation and inference. Through their use of the metacognitive tool, the teachers adopted a metalanguage to discuss their observations of students' learning, to express their thought processes about instruction, and to pinpoint changes to their instruction to enhance student performance. The findings contribute to a deeper understanding of the reflective process and inform the teaching of reflection practice in teacher education programs.*

### Introduction

The widespread appeal of reflection across many domains of professional programs has been described “as the bandwagon [that] has traveled through the world of practice” (Loughran, 2002, p. 33) and has become an integral component of many teacher education programs during the 1980s and 1990s. Fast forward to the 21st century; the literature on reflection in teacher education affirms that reflection is still a central component of developing preservice and practicing teachers (Jones & Jones, 2013) and is now included in standards of professional practice (e.g., Council of Chief State School Officers, 2011). Furthermore, questions of how to define reflection and how to develop reflective practice through programs for preservice and in-service teachers continue to be debated (Clarà, 2015; Danielowich, 2012; Farrell, 2016; Ryken & Hamel, 2016).

As researchers, our continued interest in teacher reflection stems from a decade of involvement in a statewide professional development initiative focused on coaching for improved literacy instruction (Rosemary et al., 2002). One central feature of that professional development initiative was the development and use of a metacognitive tool, the Teacher Learning Instrument (TLI), which provided a structure and context for the close analysis of teacher-student interactions and, thereby, supported a close analysis of teaching (Rosemary et al., 2002; Rosemary, 2005). The purpose of this exploratory study is to better understand the process of reflection through an examination of teachers' use of the metacognitive tool designed to support a reflective process. Specifically, we address the research question: How do teachers engage in reflection when using the TLI? Our research goal is to describe how the results may be applied in instructional contexts within a teacher education program at the undergraduate and graduate levels.

## Reflection in Teacher Education

Anchored in the works of Dewey (1901, 1933) and Schön (1983, 1987), the concept of reflection has remained a central focus in teacher education programs and research on teacher education since the 1980s and 1990s (Colton & Sparks-Langer, 1993; Risko, Roskos, & Vukelich, 2005; Risko, Vukelich, & Roskos, 2002; Zeichner & Liston, 1987). Although professional standards for beginning and accomplished teachers call for teachers to think critically and systematically about their teaching to improve practice (Council of Chief State School Officers, 2011; National Board for Professional Teaching Standards, 2016), critiques of reflection in teacher education programs identify several issues that warrant attention (Beauchamp, 2015; Clarà, 2015; Roskos, Vukelich, & Risko, 2001).

One of the persistent issues addressed in the research on reflection is the lack of consensus in how reflection is defined (Beauchamp, 2015; Loughran, 2002; Rodgers, 2002a; Roskos, Vukelich, & Risko, 2001). In a close examination of Dewey's work, Rodgers (2002a) suggested four criteria that characterize Dewey's concept of reflection: (a) reflection is a meaning-making process that moves a learner from one experience into the next experience; (b) reflection is systematic, rigorous, disciplined, and grounded in inquiry; (c) reflection needs to happen in a community; (d) reflection requires attitudes that value personal and intellectual growth (p. 845). Risko, Vukelich, and Roskos (2002), citing Dewey (1933) and Schön (1983), described reflection as active, purposeful, and problem solving. While many would agree that reflection is an active, systematic, rigorous meaning-making process, other aspects of reflection continue to be debated.

A second issue addressed in the literature is *how* reflection occurs. Multiple frameworks have been suggested for describing and even prescribing the process of reflection. As with defining reflection, the works of Dewey (1901, 1933) and Schön (1983, 1987) have provided the foundation for many of these frameworks described as phases, levels, or stages of reflection. Rogers (2002b), for example, described reflection as a cycle consisting of four phases: presence in experience, description of experience, analysis of experience, and experimentation (p. 235). Ryken and Hamel (2016), in their research examining *surface-level* reflections, summarized the research proposing different levels of reflection, such as low to high, and routine to transformative (p. 32). It could be argued that multiple frameworks or prescriptions for the process have contributed to confusion around the meaning of reflection.

Addressing the recurring calls for clarity and building on prior research, we grounded our study in a theoretical framework proposed by Clarà (2015), who based his assumptions on Dewey (1933), Schön (1983), and Wertheimer (1971). Clarà (2015) suggested that "*reflection is spontaneous, common, real thinking*" (p. 262, emphasis in original), and the essential criterion is that reflective thought "*transforms an incoherent situation into a coherent one*" (p. 263, emphasis in original). Clarà's definition differs from others in that, at its core, reflection is natural and does not require specific steps or characteristics. Reflection is not ordinary thought; rather, it must result in meaning-making and transformation from incoherence to coherence. Clarà's (2015) framework also differs from many others who posit that reflection must be done in prescribed ways, or is a "pedagogic ideal" (p. 262). However, like others, he suggested that the process of reflection is not well understood and that an important direction for future research

is to explore how it actually occurs. He offered four assumptions about how reflection works: (a) it works as a continuous interplay between inference and observation; (b) it works as a conversation between subject and situation to be clarified; (c) five aspects of interplay can be distinguished, and these aspects follow Dewey's description of reflection very closely; and (d) some reflections reach a conclusion leading to action, but some do not (Clarà, 2015).

Other researchers have found Clarà's framework for reflection useful in analyzing how reflection works. In their research with preservice teachers, Ryken and Hamel (2016) developed a Learning from Practice tool used as a "form of structured guidance" (p. 34). In analyzing what they deemed as "surface-level" reflections based on previous consensus in the literature, they concluded that Clarà's (2015) description of reflection as "*spontaneous, common, real thinking*" [emphasis in original], is useful in supporting early career professionals (Ryken & Hamel, 2016, p.46). Gelfuso (2016) built on Clarà in her research examining video-mediated reflection (Gelfuso & Dennis, 2014). Gelfuso's findings support Clarà's (2015) assertions about reflection, and contribute additional insights regarding reflection and preservice teachers. Gelfuso concluded, as did Clarà, that "reflection is descriptive rather than prescriptive, meaning that reflective thought is spontaneous and common" (Gelfuso, 2016, p. 77). Further, Gelfuso (2016) agreed that reflection could be described as giving coherence to an initially unclear situation, and also emphasized the importance of facilitation and support when professional understandings are not yet well-developed (p. 78). Finally, Gelfuso confirmed Clarà's assertion that reflection works as an interplay between observation and inference, and extended this assertion by describing the move that occurs between analysis and synthesis during reflection. Our research builds on contemporary reflection research, which has focused primarily on preservice teachers. The aim is to explore the process of reflection in practicing teachers and to address a common critique underscored by Beauchamp (2015) and Clarà (2015), i.e. a lack of understanding of how the process of reflection works.

### **The Teacher Learning Instrument (TLI)**

Our exploratory study extends earlier research on teachers' self-analysis of teaching through the use of a metacognitive tool, the TLI, which two of the authors developed and implemented in the context of a statewide professional development project in the Midwest to support improved literacy practice in kindergarten to grade three classrooms (Rosemary et al., 2002; Rosemary, 2005). Grounded in sociocultural principles (Tharp & Gallimore, 1991), the TLI supports teachers' collaborative work with colleagues to refine their teaching. The TLI is a transcript-analysis tool that assists teachers in self-evaluating their own teaching to improve reading instruction (Rosemary, et al., 2002). Teachers record and transcribe three teaching episodes in which they utilize the same instructional strategy (e.g., word sort), and then use the descriptive codes for protocol and scaffolding features to closely examine their instructional moves. Finally, they work in consultation with a colleague or coach to reflect on and discuss the teaching episode and plan subsequent lessons based on their insights gained through the TLI process.

The two sets of codes defined by the TLI are intended to be applied by the teachers to transcripts of their own teaching. The two sets include codes for protocol features of the lesson, and codes for the scaffolding components utilized in the lesson (see Table 1). Teachers apply each set of codes to transcripts of their teaching, and use the coding to analyze what happened in the lesson.

The protocol codes outline specific teaching actions in an instructional technique whereby a teacher gradually releases responsibility of the learning task to the student (Pearson & Gallagher, 1983). The protocol codes refer to the salient features of lesson structures found to be integral to skillful teaching (Rosemary, et al., 2002). Examples of these codes include *focusing attention*, *modeling the task*, and *assisting performance* (Rosemary, et al., 2002). Though the specific teacher moves vary across different instructional techniques, the protocol codes are designed to assist teachers in understanding the structural features present in their teaching. Teachers engage in systematic analysis of their teaching through multiple cycles of lesson analysis.

Whereas the protocol codes outline specific teaching actions, the scaffolding codes define specific components of teacher-learner interactions within the zone of proximal development (ZPD), defined as “the distance between the actual developmental level as determined by independent problem-solving and the level of potential development under adult guidance or in collaboration with more capable peers” (Tharp & Gallimore, 1988, p. 86). The TLI identifies the scaffolding features in the teaching-learning process as defined by Berk and Winsler (1995): (a) *joint problem solving* (involve students in meaningful activity, help students learn by doing); (b) *intersubjectivity* (come to a shared understanding, work toward a shared goal); (c) *warmth and responsiveness* (create a positive emotional tone, attribute competence to student); (d) *maintaining the ZPD* (organize activities that are challenging but achievable with assistance. use instructional talk that prompts students to talk, encourages child to tell more, and adds to their thoughts and ideas); and (e) *promote self-regulation* (step back to let students take control of their own activity, provide assistance as needed to support students’ problem solving) (p. 26-32). Taken together, the protocol and scaffolding features draw attention to the specific teaching moves and qualities of teacher-student interactions that support learning in the ZPD. Table 1 displays the codes utilized in the TLI that define protocol and scaffolding features of a lesson designed to scaffold learning. The teachers analyzed the transcripts of their instruction using these codes.

Table 1  
*Protocol and Scaffolding Codes.*

Protocol Codes for the TLI		Scaffolding Codes for the TLI	
P1	Focus Attention	JPS	Engage in Joint Problem Solving
P2	Explain Task	IS	Build Inter-subjectivity
P3	Model Task	WR	Maintain Warmth & Responsiveness
P4	Assist Performance	ZPD	Stay in the Zone of Proximal Development
P5	Provide Practice	SR	Promote Self-Regulation
P6	Monitor Independent Performance		

Prior research (Rosemary et al., 2002) on the use of the TLI showed positive results in helping teachers see how their specific teaching moves influence a student’s behavior and scaffold student learning throughout instruction. A research team from eight universities, from which two of us participated, investigated teacher learning in 10 different classroom and university clinical settings wherein a teacher and literacy coach used the TLI process to closely examine teaching (Rosemary et al., 2002). The study focused on three interrelated questions regarding what

teachers learn about reading instruction through engaging in the TLI process, what changes occur in teaching, and the viability of the TLI as a tool for improving reading instruction. A cross-site analysis was conducted to identify common themes in the findings of each study as related to the research questions. The findings showed that as teachers used the TLI over several consecutive instructional episodes, they were more attuned to their specific teaching actions, (e.g., modeling, explaining), and increased their awareness of teacher talk that provided scaffolds for students' learning, (e.g., giving specific feedback, prompting the student to elaborate on their ideas). Overall, we found the TLI to be a viable tool for assisting teachers in improving reading instruction in multiple teaching contexts because it provided a structure for fine-grained analysis of teaching, engaged teachers in a continuous process of self-examination of their teaching skills to improve student learning, and supported a context for collaborative inquiry between a teacher and a literacy coach. Our prior experiences developing and using the TLI with practicing teachers, coupled with the results of the research study described, led us to continue to use the tool within the context of this online practicum course to facilitate teacher reflection.

### **Methods**

We situated our definition of reflection (a systematic, meaning-making process that brings coherence to an unclear situation) within the context of the TLI as a tool to support reflection on teaching. This definition, along with the tool, framed our methodology, specifically the data analysis process.

To examine the research question, an instrumental, collective case study approach framed the qualitative data collection and analysis. In instrumental case study research, “a particular case is examined mainly to provide insight into an issue or to redraw a generalization” (Stake, 2000, p. 437). In this study, we purposefully selected two instrumental cases to conduct an in-depth analysis of how teachers engaged in reflection utilizing the TLI as a metacognitive tool. In a collective case study, cases are “chosen because it is believed that understanding them will lead to better understanding, perhaps better theorizing, about a still larger collection of cases” (Stake, 2000, p. 437). This close examination of two cases can inform future analyses of a larger set of teaching cases that utilize the TLI. Specific reasons for selecting the cases in this study are discussed in detail in the following section.

### **Context and Participants**

The study took place within a graduate level practicum course in a master's degree program at a mid-sized Midwestern university. The first author taught the course, which focused on assessment and instruction of reading difficulties. The participating teachers implemented one-on-one reading intervention for 20 hours over 16 weeks, which included instruction and assessments to determine areas of strength and need for improvement. During that time, they completed lesson plans utilizing a specific literacy lesson structure, the Literacy Lesson Framework (Tancock, 1994), to guide their instruction. This framework is designed for one-to-one teaching with struggling readers. The lesson is divided into five components of literacy instruction including familiar reading, guided reading, word work, writing, and book sharing to insure balanced instruction throughout the intervention.

Five licensed teachers were enrolled in the course, and all five gave consent to participate through IRB procedures. However, we purposefully selected two teachers, Georgia and Ann, (pseudonyms) for the in-depth level of analysis for several reasons. First, initial review of the data demonstrated a need for close, microanalysis of the reflections to adequately address the research question. Limiting the data set to two participants made this type of analysis feasible within the time constraints of the study. Second, as this is the first phase of a larger research study on reflection using the TLI, understanding the coding and analysis process using two cases as exemplars provided anchors for future analysis. Finally, each of these cases is rich and nuanced, in that both participants described with specificity their thinking processes as they occurred throughout their analyses of the three teaching episodes. We selected these particular cases because they offered unique opportunities for in-depth examination of the teacher reflection process (Stake, 2000).

**Georgia** is a mid-career teacher who took a pause from teaching after five years to pursue advanced studies in literacy. She was taking the practicum course as part of the reading endorsement and dyslexia certificate programs offered at the university. Georgia tutored a student with dyslexia, which correlates with her interest in refining her expertise in multisensory teaching methods for students with dyslexia. Throughout her tutoring sessions, Georgia integrated multisensory techniques in alignment with the Orton-Gillingham instructional method (Gillingham & Stillman, 1997; Henry, 1998; Ritchey & Goeke, 2006), while also incorporating other word analysis techniques, such as word sorts (Bear, Invernizzi, Templeton, & Johnston, 2015).

**Ann** is an early career teacher in her third year of teaching. Ann received an undergraduate degree in education from the same university in which the practicum course took place. The practicum course was part of Ann's reading endorsement and Master of Science in Literacy programs. She was at the end of her program with the completion of this course. At the time, she was teaching fourth grade in a private, suburban school and was tutoring a struggling reader in her class. Ann integrated techniques and activities from her classroom teaching to bring consistency to the learning context for the student. She utilized guided reading, word sorts, and writing activities designed to address the student's instructional needs while also providing a comprehensive literacy intervention (Tancock, 1994).

### **Data Sources**

As part of the TLI process, the teachers conducted three iterations of the TLI across their lessons. They selected a research-based teaching strategy based on the student's targeted needs and taught the strategy three times to the student. In this context, a strategy is defined as "research-based" if it originates in professional or scholarly literature, or if clear ties to research can be identified for the strategy. The TLI process included video recording the lesson, transcribing a 10-minute segment, coding the transcript using the protocol and scaffolding codes (see Table 1), analyzing the coded transcript for patterns in the codes, and writing a reflection on the process. Consistent with the goals of the TLI, the teachers received initial feedback and coaching from the instructor (first author), and subsequently from their colleagues in the class to gain additional perspectives on the teacher-student interactions, the coding of the transcript, and decisions about next steps based on the patterns in the codes.

## FACILITATING TEACHER REFLECTION

The data sources included the teachers' written reflections on three literacy lessons with two individual students and their coded transcripts. The teachers focused their reflections on an analysis of their teaching based on the TLI coding process. They also discussed the meaning of the codes in relation to the specific lesson and context, including context from the parts of the lesson that were not transcribed, rationale for key decisions, and explanations of their coding. The reflections also included their thoughts on the lesson itself, next steps based on the results of the coding, and informal assessment data. Table 2 illustrates a sample segment of a teacher-coded transcript for the TLI and the corresponding written reflection on the lesson.

Table 2  
*Transcript and Reflection Excerpt: Georgia.*

Speaker	Transcription	Scaffolding Codes	Protocol Codes
T	This one's your last one.	ZPD	
J	(reads and sorts) "brain"		
T	Very nice. Hmm... What do you notice? (pauses)	WR, ZPD	P4, P5
J	The main column has more.		
T	And which category is this? The long or short vowel?	ZPD	P4
J	Long.		
T	(confirms) Long. And then there are just a couple short vowels. So what are we really going to be learning about today? . . . We're going to look at two different ways to do...? What type of <a>?	ZPD, JPS	P1, P4
J	Short vowel signals?		
T	So here are our short vowels and here are our long vowels. So you told me, which one has more in its category? The short or the long vowel?	ZPD	P4
J	Short. No, long		
T	(confirms) Long. So we're going to look at ways that we can sort the long /a/.	JPS, IS, ZPD	P1, P2, P4

*Georgia's Reflection on the Transcript:* The lesson protocol codes seemed to support what I found in the scaffolding coding and extended my reflection a bit more. The highest protocol area I utilized was by far (P4) - Assist Performance. As stated earlier, I believe this is due to the fact that J was completing the sort/spelling with me for the first time. Several prompts and much assistance were needed to keep the lesson flowing smoothly. The lowest protocol use in this lesson was (P2) - Explain task. This involves explaining and describing the task so I'm actually relieved that I spent less time within this description. As I work towards more student guided learning and less direct instruction from me in future lessons, I hope to increase in the protocol areas of (P5)- Provide practice and (P6)- Monitor independent performance. If J is going to truly internalize and

utilize these spelling patterns/choices regularly and efficiently, he needs to learn to do so independent of direct examples and instruction. My hope is that our time together will provide J with some more tools to make use of automatically when spelling and reading independently.

### Data Analysis

We analyzed the written reflections utilizing open coding procedures (Merriam, 1998) with a focus on the teacher's perspective. A codebook, developed from the emergent categories, provided a roadmap for data analysis (see Appendix A). Our codebook was distinct from the protocol and scaffolding codes the teachers used to code their teaching segments, which were inherent to the TLI process. Our codebook focused on the analysis of the written reflections to address our research question, not an analysis of the teaching episodes. Throughout our data analysis process, we drew on Clarà's definition of reflection to develop and refine our categories (Merriam, 1998).

Merriam (1998) discusses three levels of qualitative data analysis. The first is descriptive, the second is interpretive, and the third is theorizing. Developing categories, creating a codebook, and applying the codes to the data oriented our analysis towards interpretation as defined by Merriam (1998): "... the process of systematically classifying data into some sort of schema consisting of categories, themes, or types" (p. 187). We derived emergent categories through multiple readings of the data and organized the categories into a codebook. The themes, which emerged from the codes, include descriptions of the interrelationships between our interpretations of teacher reflection within the specific context of the TLI.

Our coding process involved a series of iterations (Merriam, 1998). First, we independently read the transcriptions of three cycles of reflections and constructed codes for segments of text. For example, one of the codes that emerged in this first round of analysis was *Teacher Decision*, in which we noted the decisions the teachers made as part of the reflective process.

The specific coding unit was at the sentence level within the transcripts. In sentences that provided important context about the teacher's thinking, we used multiple codes to identify specific contextual features of the reflection. Next, we shared our individual analyses, discussing each reflection line by line and comparing individual codes. In many instances, we applied the same codes to segments of text. When we did not have agreement, we discussed our codes until we reached a common understanding and consensus on subsequent coding, and thereby aligned our thinking with the theoretical framework guiding the study, i.e., Clarà's (2015) assumptions of how reflection works.

The initial codebook contained two broad categories of codes, one related to the TLI structure and the other to instruction. After the first round of individual analysis and consensus building, we applied these initial codes to the data set again. Applying these broad codes resulted in our development of more specific codes to clearly define our observations. For example, the broad category of *Instruction* remained a code, but other codes, such as *Materials*, *Teacher Action*, *Student Action*, *Teacher Goal*, and *Student Goal* were used for this finer grained analysis of the reflection data. We recorded the details of our coding conversations and decisions in a research



journal. Following the two rounds of individual data analysis and consensus building, we constructed a codebook, which contained 13 different codes and definitions. An example of our coding process, including our initial coding at the sentence level, is illustrated in Table 3.

Table 3  
*Example of Researchers' Codes.*

Line #	Transcription	Researcher #1 Codes	Researcher #2 Codes
1	My TLI strategy is based around where my student, K, scored on the Words Their Way spelling inventory.	1-TLI reference 3 - Materials 4 - Decision 11- Student Evidence	1 - TLI reference 4 - Decision 11 - Student Evidence 3 - Materials

Our conversations about emergent themes and patterns within each case led to a cross-case analysis (Merriam, 1998; Stake, 2000). We discussed the points of convergence and divergence in the codes across both cases, which informed the refinement of our codebook to include dominant themes from both sets of data. For example, one code that emerged in the sub-categories related to *Student Performance*, which referred to the teacher’s comment on the performance of the student in relation to the objectives for the lesson. As we read the examples of this code within and across the cases, we found instances where the teachers referred to artifacts indicating the level of competence and we relabeled it *Student Evidence*, since it represented more precisely what the teachers were conveying. At the same time, we added a code for *Data*. Through this process of cross-case analysis, we more accurately defined the codes to describe the thinking process of the teachers with more specificity.

We began our data analysis process by constructing two broad categories. We then conducted a finer-grained analysis in which we identified twelve codes. Based on our analysis, we generated four broad theoretically and methodologically grounded themes to describe how the process of reflection works within the one-on-one reading intervention context of this study.

### Findings

How do teachers engage in reflection when using the Teacher Learning Instrument (TLI)? Our findings represent a close look, a microanalysis, of the aspects of the reflection process made visible in the written reflections of Georgia and Ann. We organized our findings within the framework of Clarà’s (2015) assumptions of how reflection works (p. 267). It is important to note that although our coding process was not constrained by Clarà’s (2015) assumptions, our findings address those assumptions. Excerpts from the transcriptions provide examples for each theme. The parenthetical information at the end of each excerpt references the teacher participant, followed by number of the reflection (1, 2, or 3), and the sentence number of the transcription (e.g., G2:6 refers to Georgia’s second reflection, sentence 6).

#### Theme One: Observation - Focused Attention on the Situation

The process of reflection requires a situation or an observation that calls for clarification or meaning-making. Ann and Georgia’s written reflections were replete with clear and precise

descriptions of all that was encompassed within the scope of the tutoring sessions with their students. In their reflections, they described what they observed about the student, about themselves, and about the TLI process, with close attention to specific situations in the instruction. For example, Ann described what she observed about her student's patterns of literacy behavior during the tutoring session:

My case study student has demonstrated early on in the year a habit of quickly guessing words that are unknown to her. Commonly, she took the first two or three letters and used a word that she knew to state that word (A2: 2-3).

She then continues to describe what transpired in the context of instruction, with focused attention on her student and on her own actions:

At the very first sort, I told her that she needed to monitor her words by saying them out loud and talking through the sorts so I could hear her thoughts. As we continued through the lesson, she began to slip back into old habits. . . .I developed an extension part on this activity after the initial sort was completed that *Words Their Way* had given (A2:9-12).

We saw similar descriptions on student and teacher observations in Georgia's reflections. She wrote, "He took his time but overall grasped the concept of the <a> spelling patterns: short a, ai, a\_e" (G1: 4). In a later reflection, she commented, "I adjusted the amount of support needed throughout the lesson and frequently used instructional language which prompted the student to speak, share more, or add to my own observations/comments" (G2:6).

One characteristic of the written reflections that became apparent early in the coding was how the teachers used verbs to describe how they were focusing attention on the experience. Verbs such as *see*, *notice*, *felt*, *being*, and *believe* represent the awareness of the experience (emphasis added):

- In this final TLI process I was pleased to *see* progress both in the way I interacted with J as well as his response to me (G3:1).
- Throughout this lesson it still *felt* as though I was talking too much or that J's engagement was limited (G3:4).
- While looking at the video I *noticed* that I did a large portion of the talking and explaining (A1:21).

Analyzing their written reflections enabled us to discern how Georgia and Ann focused attention and brought clarity to the observation or situation.

### **Theme Two: Interpretation - Bringing Observation and Inference Together**

We noticed in our iterative process of coding the reflections that Georgia and Ann often wrote about how they were making sense, revealing their inferences about their observations. We coded these statements *interpretation* because we recognized that the teachers were considering some aspect of experience, and once that experience was brought to conscious and focused attention, they made interpretive judgments, or inferences, about their experiences. Our coding

patterns indicated that these interpretive statements were typically coupled with descriptions of the experience (observation), which suggested an interplay between observation and inference. We conducted a follow-up analysis of the data for a better understanding of those few instances where the interpretation was not directly connected with evidence, and we found that these statements were often summary or concluding statements that brought some closure to the reflection. In the next paragraphs, we provide examples illustrating the interplay between observation and inference.

In her second reflection, Ann was describing when she tried to prompt the student to be more independent in the word sort activity.

I tried to promote her self-regulation by having her say the words out loud and talking through them so that she could hear herself. Commonly, these sorts can be difficult for me to have the student self-regulate more often. [I believe this because many times she would get off track and began to slip more and more, which led to create a wrong learning experience]. (A2:27-29, inference in brackets)

Ann struggled with attempts to step back with the amount of direct support she gave over the course of the lessons, and by the end of the third reflection, she commented on her student's progress: "When K came across a word she did not understand, she would stop and regulate herself [by using what she knew to tackle the problem]" (A3:31, inference in brackets). By coupling the observation with the inference, Ann was able to clearly trace the progression of her student's ability to self-regulate over time.

We saw a similar pattern in Georgia's reflections. At the beginning of her tutoring sessions with her student, she observed her own behavior: "There is a lot of prompting and encouraging as well as adjusting level of support as needed." In her next statement, she provides an interpretation, or inference, regarding her observation. "I feel this is an important component to my lesson time but would like to level it out more on instruction in the ZPD (Zone of Proximal Development)" (G1: 9-10).

The previous excerpts illustrate that segments representing details of a situation typically occurred in conjunction with the interpretive comments. In other words, the teachers were recalling and describing details, which supported or led to interpretation or inference. We discuss the interplay between observation and inference more fully in the discussion. In the next section, we explain how they described actions that were often based on their observations and interpretations.

### **Theme Three: Taking Action - Coming Full Circle**

As we analyzed the teachers' written reflections, we saw patterns in how they considered what they had observed and then planned or took action based on interpretation. The action was often a plan for instruction at a future point in time (typically the next lesson) or a statement of a goal, either for the teacher, the student, or both. Georgia commented:

After analyzing the assessment data collected for this student, I decided to implement and focus my TLI work on a word sorting strategy based off the *Words Their Way* (WTW) spelling system. J has a lot of gaps to fill where spelling is concerned and my hope is that the organization systems of *WTW* will be a benefit to his internal reading and spelling processing (G1:1-2).

Georgia continues throughout this first reflection with a more specific goal that was beginning to take shape for J: “If J is going to truly internalize and utilize these spelling patterns or choices regularly and efficiently, he needs to learn to do so independent of direct examples and instruction” (G1:28). She follows this with a goal for her instruction that is connected to the goal for J: “My hope is that our time together will provide J with some more tools to make use of automatically when spelling and reading independently” (G1:29).

The written reflections also revealed those instances when the teachers focused on adjusting their actions in the moment during the tutoring sessions. One example of this in-the-moment action can be found in Ann’s reflections.

The beginning of the sort was initially very smooth with not too many bumps. At the very first sort, I told her she needed to monitor her words by saying them out loud and talking through the sorts so I could hear her thoughts. As we continued through the lesson, she began to slip back into old habits. At that point, I stepped in and supported her by reminding and guiding the practice until I could release back to her (A2:8-11).

This segment illustrates the multi-faceted dimensions of reflection and the interplay among observation of evidence, interpretation, and action. This segment of instruction shows that she recalled and examined her strategic adjustments to support student progress.

In both cases, the written reflections provide a window into how Ann and Georgia determined action steps, based on interpretation or inference, which were derived from making sense of their experience. We observed in the teachers’ reflections two distinct, but interrelated aspects of their reflections: the observations and interpretation of what occurred during tutoring lessons. We also observed their use of the protocol and scaffolding codes on each lesson transcript as part of using the TLI tool. In the next section, we describe how their use of the TLI supported their engagement in the reflection process.

#### **Theme Four: Facing the Complexity of Teaching through the TLI Analysis**

We began to see in each TLI reflection how the teachers were making sense, or bringing coherence to teaching, which, by nature, is complex activity. They specifically and frequently used the protocol and scaffolding codes of the TLI, which they adopted as a metalanguage and framework for interpretation, or in Clarà’s description, a conversation between the subject and the situation to be clarified (p. 267). For example, Georgia commented, “The highest protocol area I utilized was by far P4–assist performance” (G1:22) and “As for the lesson protocol codes, I noticed that I most often employed P5–provide practice” (G2:13). Ann’s written reflections include similarly focused attention. She comments: “When observing the codes, I *saw* that many times I used the self-regulation code...” (A1:12) and “Through looking through my transcript,

there were many times in the protocol codes where P4 and P6 were being utilized” (A3:13). Ann and Georgia used the TLI codes to focus on and describe specific features of their lessons and also to enhance the process of examining their teaching.

The TLI also supported reflection through their iterative use of this metacognitive tool. In the first reflection, Georgia stated “Where the scaffolding elements are concerned, I was definitely stronger within the area of staying in the zone of proximal development (ZPD) –33 occurrences for this lesson” (G1:7). In reflection three, she wrote, “As with the SR [Self-regulation] in scaffolding elements, I was pleased that I utilized P6, Monitoring Independent Performance, more frequently in this lesson” (G3:9), suggesting that she had shifted from more support for the student in the Zone of Proximal Development to Monitoring for Independent Practice, which was a goal she set early in the TLI cycle. Thus, her iterative use of the TLI may have invoked a higher level of reflection toward her end goal of the student’s independence in using spelling patterns regularly and efficiently.

Ann also followed a systematic process in describing and reflecting on her teaching actions over three cycles of the TLI. At the beginning of the process, Ann stated, “When observing the codes, I saw that many times I used the self-regulation code, as well as P5 [provide practice], and P6 [monitor independent performance] which demonstrated that I was constantly giving feedback and support...” (A1:12). By the third reflection, Ann stated, “... there were more P6 codes in this transcription than in the last two TLIs” (A3-16). Ann had worked throughout three cycles to provide more independent practice within her lessons.

Both teachers referred to the TLI itself when writing their reflections. For example, Georgia reported that she relied upon the TLI process to reveal patterns in her lessons, “. . . upon transcribing, coding, and reflecting, I was pleased to see that I had met most of my goals” (G3:5). Ann also referred the TLI to notice details of the experience, “While looking at the video, I noticed that I did a large portion of the talking and explaining” (A1:21).

The teachers utilized the TLI to guide and facilitate their reflections, and by observing aspects of the teaching situation, gained insight into the influence of their teaching on the student and were able to use their observations to plan their next steps in their instruction. It was the systematic use of the TLI that supported a close analysis of the teaching, and presented Georgia and Ann with the opportunity to make sense of their own teaching as complex activity.

### Discussion

Based on our findings, we discuss what we learned about how reflection works and the role of the TLI in the reflective process. Grounded in Clarà’s definition of reflection and theoretical framework (2015), we understand reflection as a process of bringing coherence to an initially incoherent or unclear situation. In this study, the situation refers to two related but distinct contexts for reflection: a series of teaching episodes and the teachers’ close analysis of transcripts of teaching. Like Gelfuso (2016), we were able to identify where our findings aligned with Clarà’s (2015) work. We found support in our case analyses for Clarà’s assumptions about how reflection works: (a) reflection works as a continuous interplay between inference and observation; (b) reflection works as a conversation between subject and a situation to be

clarified; (c) five aspects of interplay can be distinguished, and these aspects follow Dewey's description of reflection very closely; and (d) some reflections reach a conclusion leading to action, but some do not (p. 270). We address each of these assumptions in the following sections.

The written reflections provided details of the teachers' observations and interpretations of teacher actions and student actions in the context of instruction. The interplay between the observations and interpretations brought coherence. Over the three cycles of the TLI, we saw in the reflections that the teachers engaged in a series of conversations between their own thought processes (subject) and the situation to be clarified, which either occurred in the lessons or in the process of coding the TLI transcript. Gelfuso (2016) also found evidence of this interplay and suggested that it also supports the move from analysis to synthesis. She noted "synthesis is needed in order to reflect on field experience so that 'warranted assertabilities' about teaching and learning are generated that are helpful in making wise instructional decisions across many contexts" (Gelfuso, 2016, p. 77).

Although the teachers did not often describe conflicting, or incoherent aspects of what occurred in the lessons, their iterative use of the protocol and scaffolding descriptive codes helped to make explicit a dissonance between what they each observed in their respective student's performance and what they intended to see based on their lesson design. Bringing the dissonance, or incoherence, to the surface through the descriptive coding process invited the interplay between observation and inference. Coding the transcripts with protocol and scaffolding codes created dissonance for the teachers in our study much like the teacher educator created dissonance during the reflective conversations in Gelfuso's research. Gelfuso (2016) noted, "...when attempting to reflect on and learn from field experiences, preservice teachers do not yet know a good deal about the nuances of literacy teaching/learning and therefore need support as they develop (through reflective thought) professional understanding" (p. 77), and this support is the teacher educator. In our study of experienced teachers, we observed that the teachers grounded their assertions in their professional knowledge aided by their use of the TLI metacognitive tool to help them closely examine and reflect on their teaching to improve student learning.

This complex interplay does not occur in discrete steps or even phases, but is cyclical and comprised of multiple aspects (Clarà, 2015). Both Clarà and Rodgers (2002a, 2002b) discussed the possibility of phases of reflection based on Dewey (1901, 1933) and came to different conclusions. Clarà maintained that reflection does not occur in sequence, but rather is a process involving interplay between inference and observation. While Rodgers, drawing on Dewey, did describe phases, she emphasized their cyclical and iterative nature. In this study, we observed this interplay between inference and observation, as well as the cyclical nature of reflection. However, we observed the process to be more fluid and cyclical than the discrete phases as described by Rodgers. With each new cycle of the TLI, teachers reflected on the teaching situation in dynamic, multifaceted ways, and used the TLI descriptors of teaching actions (codes) to guide the process.

Clarà (2015) posited that some reflections reach a conclusion that lead to action and some reflections do not; furthermore, he argued that reflection is not a decision-making process. In our analysis, we discovered that attention to the interplay between inference and observation did lead to teacher decisions and subsequent action. Actions were either direct, taken with students in the

moment, or were stated goals for subsequent lessons. In either case, the reflective process led to intentional action in order to improve support of student learning. We note the importance of context in our study of reflection. The teachers were enrolled in a master's level reading intervention practicum course that continually assessed and monitored their learning. This may have pressed the participating teachers to engage in reflective teaching to adapt instruction in order to boost student learning.

In sum, the findings of this study clarify how the process of reflection can be understood as a metacognitive process that (a) brings coherence to an initially incoherent situation, (b) involves complex interplay between observation and inference, and (c) leads to action, be it immediate or goal-oriented. We agree with Clarà (2015), i.e., reflection does not need to embrace a “pedagogic ideal;” however, we do suggest that the use of metacognitive tools to support the process is beneficial.

We do not see that prescribed steps are necessary to support reflection or are contradictory to the notion of reflection as a naturally occurring process. It could be argued that the TLI's protocol and scaffolding features prescribed what the teachers looked for in their lessons. On the other hand, the metalanguage they adopted in the process of reflecting gave them a way to interpret and describe their teaching moves and to aim for more precise teaching. We argue that a tool such as the TLI can play a role in prompting close observation and inference, which seem to be integral to how reflection works.

In this study, the TLI provided a structure for the reflective process. Based on the assumption that teaching as an intentional process, the TLI facilitates a “sharper awareness of teaching actions as evidenced through more precise analysis of the transcripts” (Rosemary, 2005, p. 375). The TLI facilitated the teacher reflection process in ways that helped to make visible (clear or coherent) what is often invisible (or incoherent) in teaching. The teachers in this study utilized the TLI as a tool to understand specific teaching situations in more depth to inform future actions.

The transcription component is an aspect of the TLI as a reflective tool that helps teachers think more deeply about their teaching. There is no “right” way to teach reflection to teachers, and we do not see the TLI as a “pedagogic ideal” (Clarà, 2015, p. 262). Rather, we view the TLI as one tool teachers can use to facilitate the reflective process. The instrument as a whole, along with transcription, coding, reflection, and feedback, presses teachers to consider the cognitive and sociocultural aspects of teaching, going beyond the performance of the student to think deeply about their own actions in teacher-learner interactions. Just as reflection is a process of bringing coherence to an initially incoherent situation, the TLI supports “a macro-level synthesis of what is learned about teaching” (Rosemary, 2005, p. 358). It is often a challenge for teachers to shift their reflections on teaching from a focus on student performance in response to their teaching to the influence of their language and actions on student performance. The TLI is designed to support teacher reflection on teaching moves by raising awareness of specific aspects of teaching that may not have been previously considered.

Facilitation of reflection outcomes that influence student performance is a critical consideration, and tools can be useful to support the process (Rosemary, 2005). The TLI provides a tool to aid

in the reflective process. Within the research on reflection, there is debate about whether reflection needs to be prescribed or taught. In our study, we saw that the TLI, as a reflective tool, clearly supported the teachers' shift from less to more precise teaching. Teachers do not necessarily need instruction in reflection to be able to reflect; however, the use of the metacognitive tool (TLI) helped teachers in our study to make specific inferences about their teaching to improve their instruction.

Further, the TLI supported the teachers in adopting a metalanguage, a way to specifically describe their observations of students' learning during the tutoring sessions and to express their thought processes about instruction. The language of instruction is embedded in the TLI codes, including definitions for concepts of modeling, independence, scaffolding, and independence. This metalanguage provides a bridge between theory and practice within the reflective process. Clarà (2015) discussed the ambiguity inherent in the notion of linking theory and practice through reflection, and cited Schön (1987) in stating that theory plays a role in supplying language to build description and themes within reflection.

As used in this study, the TLI provided a structure and language for teachers to connect theory (what should occur in teaching to support student learning) with practice (what does occur) as evidenced in their descriptions and explanations. This research demonstrates that the TLI provides a supportive context to facilitate reflection and lays a foundation for understanding other contexts in which reflection can be meaningful and informative.

### **Implications**

Our findings point to implications regarding the place of reflection in teacher education programs and in the related research agenda. First, we agree with Clarà (2015) that it might be useful to adopt a notion of reflection as commonplace in the field of education with the essential outcome of reflection being to bring coherence to the often incoherent situation of educating. Preparing and supporting teachers to act based on knowledge best practices in the profession, and at the same time on the context of the situation, is at the core of what we do. In revisiting our teachers' written reflections over time, we were struck by how their thinking path to teacher action was a decisive one. This decisive path was likely a product of retelling the reflective process after the fact. We wonder if we are asking our preservice and in-service teachers to be attuned to what is incoherent as they are making meaning of observation.

A common message to our preservice candidates and practicing teachers is to focus on student learning. The TLI transcript analysis of video-recordings of teaching created a context for incoherence, and the teachers' reflections revealed insights that may not have occurred otherwise. We believe it makes sense to frame reflection as commonplace thinking, but that supporting preservice and in-service teachers in bringing incoherence in teaching to the surface for close examination is an essential aspect of reflection.

A second implication suggests that although we do not prescribe using the TLI as essential for reflection to occur, we do see promise in embedding tools such as the TLI to support teachers' self-examination of teaching. The TLI assumes a focus on the teacher-student interaction within the situation. The descriptive codes are designed to be applied to the teacher talk throughout the



lesson, as well as to encourage reflection on the influence of this talk on how a lesson unfolds. Practicing teachers can benefit from this type of close analysis of their teaching and from identifying their own role and actions in the situation as integral and critical to student success. By requiring teachers to be present to the experience, interpreting the experience, and taking action based on the interpretation, tools such as the TLI assist teachers in adjusting instruction toward greater precision in assisting student learning. Deeper understanding of the reflective process can inform the teaching of reflection practice in teacher education programs. This study can, along with future research on reflection, build upon the recent work of Clarà (2015), Gelfuso (2016), Gelfuso and Dennis (2014), and others to bring clarity to reflection in teacher education.

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**Appendix A**

**Researchers' Codebook**

	<b>Code</b>	<b>Description</b>
<b>1</b>	TLI	specific reference to the TLI, including language from protocol and scaffolding codes
<b>2</b>	Instruction	description of instruction or instructional plans; excludes reference to TLI
<b>3</b>	Materials	instructional or assessment materials
<b>4</b>	Decisions	past tense description or reference to decision, implied or explicit.
<b>5</b>	Interpretation	a statement of judgment or conclusion
<b>6</b>	Student Goal	desired future action or competence for student
<b>7</b>	Student Action	Description of "in the moment" student behavior; excluding reference to patterns of student behavior indicating level of competence or performance.
<b>8</b>	Teacher Action	teacher action not in the context of instruction. The intent of this code is to capture the verbs other than those describing instruction.
<b>9</b>	Teacher Goal	desired future action or competence for teacher
<b>10</b>	Time Reference	reference to a set time context
<b>11</b>	Student Evidence	patterns of student behavior or observed performance indicating a level of competence. Could refer to scores or descriptive, detailed observations of behavior.
<b>12</b>	Teacher Evidence	patterns of teacher behavior or performance indicating a level of competence. Could refer to references to TLI or other details of patterns.