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## Using Gifted Student Perceptions of Motivational Techniques to Inform Teacher Reflection

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**USING GIFTED STUDENT PERCEPTIONS OF MOTIVATIONAL  
TECHNIQUES TO INFORM TEACHER REFLECTION**

by

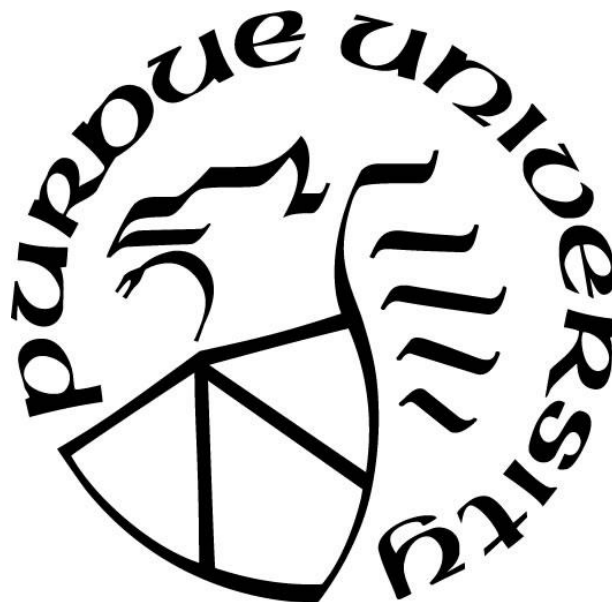
**Kristen K. Seward**

**A Dissertation**

*Submitted to the Faculty of Purdue University*

*In Partial Fulfillment of the Requirements for the degree of*

**Doctor of Philosophy**



Department of Educational Studies

West Lafayette, Indiana

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*"For the glory of God and my neighbors' good"*

*-- Christopher Sauer (1695-1758)*

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## ABSTRACT

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Title: Using Gifted Student Perceptions of Motivational Techniques to Inform Teacher Reflection

Major Professor: Marcia Gentry

This mixed methods research investigated the relationship between student and teacher perceptions of five motivational components of instruction—appeal, challenge, choice, meaningfulness, and academic self-efficacy—and how teachers’ knowledge of their students’ perceptions informed their reflection on the quality of instruction. The *Student Perceptions of Classroom Quality* (SPOCQ; Gentry & Owen, 2004) and *Teacher Perceptions of Classroom Quality* (T-POCQ; Seward, 2016) survey results of students with gifts and talents ( $n = 306$  for a total of 518 administrations of the SPOCQ) and teachers ( $n = 23$  for a total of 39 administrations of the T-POCQ) who participated in a summer academic enrichment program were analyzed. Significant negative but weak correlations existed between these two groups in appeal and meaningfulness, and their perceptions did not significantly correlate on challenge, academic self-efficacy, and choice. The strengths of all five correlations are weak. Ten teachers who represented various demographic groups participated in guided reflection interviews during which teacher and student survey results were compared. Teachers who did not hold degrees in education and/or lacked previous teaching experience felt a tension between content and motivation, viewing teaching as delivering content efficiently, not necessarily motivationally. All teachers perceived that they provided choice but were surprised when their students’ perceptions suggested otherwise, causing them to reevaluate their actual use of choice in instruction. Overall, teachers valued the addition of the student perspective during their reflections, indicating that it

shifted their focus away from the content and learning activities toward the social-emotional aspects of learning. In addition, teachers valued guided reflection with a supportive peer as it kept them focused, helped them “think through” the data, and provided a sounding board for potential instructional improvement. Implications for instructional practices and professional development in other K-12 settings are discussed in the summary.

## CHAPTER 1. INTRODUCTION

Improving instruction has been formally and informally considered in many ways and from many angles, including teacher reflection, administrator observation, professional development workshops, and professional growth plans. However, teacher reflection distinguishes itself from the other forms of evaluation due to its use by teachers on a daily basis. As a largely solitary act, conscientious teachers reflect on the quality of their instruction several times throughout the day, often adjusting “in the moment” based on their assessment. However, two important sources of information for improving instruction have been largely untapped during this time of reflection. First, students who are actively involved in the educational process day after day can provide valuable feedback to teachers regarding quality of instruction and of overall classroom characteristics (Bill and Melinda Gates Foundation, 2012a, 2012b; Chae & Gentry, 2007; Gentry & Owen, 2004; Weller & Weller, 2001). As recipients of instruction, students are uniquely situated to provide information that no other group can, especially with regard to the motivational components of instruction (e.g., appeal, challenge, choice, meaningfulness, and academic self-efficacy). Further, teachers can collect student feedback immediately rather than waiting several days to receive feedback from an administrator’s observation or to implement and test individual professional growth plans. Second, teacher reflection is more effective when done in pairs or in groups (Schon, 1983; 1987). Teachers who practice reflection alone become short-sighted, failing to consider other perspectives and trying to solve their instructional issues on their own (Pugach & Johnson, 1990). Considering the high-stakes accountability measures to which teachers are obliged to subscribe, which include their students’ academic achievement, teachers would be wise to incorporate student feedback in their

reflection with knowledgeable peers on how to improve instruction. This study addressed this issue and showed how the inclusion of gifted students' perceptions of motivation informed teachers' peer-supported reflection on the quality of their instruction.

Motivation is central to this study; it is a component of teaching and learning on which teachers and students have distinct opinions. According to the self-determination theory (SDT) of motivation, autonomy, competence, and relatedness form the basis for motivation and personal development, and when all three needs are met within any given social context, including and especially the classroom, optimum growth and well-being is achieved (Deci & Ryan, 1985, 2000). Therefore, teachers that support autonomy, competence, and relatedness motivate students by prompting engagement, persistence, and high achievement (Ryan & Deci, 2000). Because students with gifts and talents often outpace their same-age peers in ability, task commitment, and creativity (Renzulli, 1978; 2002), instruction designed for the general education classroom often induces boredom and disinterest (Young & Balli, 2014). Broadly speaking, gifted students' intrinsic motivation suffers when coursework is academically unchallenging, unengaging, and unoriginal. Although students with gifts and talents are generally self-motivated, self-directed learners, they might be like other students regarding their level of motivation to learn in areas where their gifts are not manifest (Whitmore, 1986). For those students with gifts and talents who are self-motivated in their area of talent, their levels of expectation regarding their teachers' ability to motivate and instruct them increase dramatically, making it more burdensome for the teacher to provide more engaging and challenging instructional tasks (Siegle, Rubenstein, & Mitchell, 2014).

In gifted education, student-centered instruction is paramount (Tomlinson, 1996; 2014). Teachers throughout the brief history of gifted education have been encouraged to create



enjoyable classroom learning experiences in which students are appropriately challenged, make meaningful choices in relation to what and how they learn, and develop their interests within the content areas (Gentry & Springer, 2002). Gifted education, regardless of the context in which it takes place, intersects with self-determination theory in its emphasis on students' needs for appeal, challenge, choice, meaningfulness, and academic self-efficacy (e.g., Colangelo, Assouline, & Gross, 2004; Deci & Ryan, 1985, 2000; Gentry, Rizza, & Owen, 2002; Gentry & Owen, 2004; Gentry & Springer, 2002; Hockett, 2009; McCoach & Siegle, 2003; Patrick, Gentry, Moss, & McIntosh, 2015; Tomlinson, 2014). Appeal results when teachers intentionally link academic content to student interests and daily lives in an engaging fashion (Deci & Ryan, 1985; Gentry & Owen, 2004; Schiefele, 1991). Students are also intrinsically motivated when allowed to make choices in how and what they learn and when the content is presented at a suitable level of challenge classroom (Csikszentmihalyi, 1990a; Deci, 1995; Pintrich & DeGroot, 1990; Ryan & Deci, 2000). And when appropriate academic challenges are combined with students' requisite skills, academic self-efficacy flourishes (Bandura, 1997; Pintrich and DeGroot, 1990). Students' and teachers' perceptions of these five motivational constructs and how teachers incorporated student perceptions into their reflections of instructional effectiveness were the focus of this study.

When student voice is afforded more influence in the educational process, the gap between ideal and actual teaching practice can be closed as teachers reflect upon their students' relevant, insightful perceptions and consider their students as valuable partners in the curriculum-planning and learning process (Borland, 2003; Davalos & Griffin, 1999; Fielding & Ruddock, 2002; Manefield, Collins, Moore, Mahar, & Warne, 2007; Matthews & Kitchen, 2007; Prior, 2011). As gifted programs in various settings are becoming more diverse and as teachers

are being held accountable for the academic growth of every student in their classrooms, more research into “the interaction of curriculum, student, teacher, and program from varying perspectives” is needed (Prior, 2011, p. 125; see also Coleman, Guo, & Dabbs, 2007). Because all students matter and because every student deserves to learn something new every day, gifted students’ educational needs should be addressed and met in the classrooms around the world. Even though all students can provide constructive feedback regarding many facets of their learning experiences, gifted students’ feedback regarding instructional effectiveness not only benefits their own educational experiences, but also the experiences of other students and of the teachers themselves (Redford, 1957; Tomlinson, 1996). Genuine, appropriate student participation in instructional planning, however, must translate to meaningful, effective instructional change. In other words, when students with gifts and talents have an authentic voice in their education and teachers use their expertise to modify the instructional approach in response, the students and the teacher become more motivated and engaged (Fisher & Frey, 2012). This motivating, engaging cycle of student feedback and teacher response has the potential to transform educational experiences for all students and for all teachers. In particular, teachers who implement changes based on gifted students’ assessment of the motivational components of instruction not only breathe life into gifted students’ educational experiences, but they also likely invigorate instruction and learning for all students. It is time to redress the silencing of their voices by soliciting their perspectives regarding what works and what needs to be improved in classrooms today.

Educational researchers encourage all teachers to incorporate student interests and other student-specific intrinsic motivators in differentiated lesson planning to create meaningful, relevant, and engaging learning experiences and increase achievement outcomes (Clinkenbeard,

1994; Hoekman, McCormick, & Gross, 1999; Prior, 2011; Schlechty, 1997; Tomlinson et. al., 2003; 2014). Students with gifts and talents are generally eager to share their educational needs with their teachers, and teachers are encouraged to solicit their gifted students' input into instructional decision-making (Hughes, 1999; Kanevsky & Keighley, 2003; Prior, 2011; Van Tassel-Baska & Johnsen, 2007). However, few empirical studies in the last twenty years explore teachers' use of gifted students' perceptions to inform reflection with specific links to the motivational aspects of that instruction. Four dissertation works (Esparza, 2015; Gentry, 2005; Merriman, 2012; Wood, 2006) and three empirical studies (Rayneri, Gerber, & Wiley, 2006; Shaham, 2013; Thompson & McDonald, 2007) link motivational benefits for students with gifts and talents when instruction includes ability grouping, student-generated assignments, challenge, choice, learning preferences, and hands-on, real-world problem solving. Further, Gentry, Rizza, and Owen (2002) found little or no relationship between students' and teachers' perceptions of the motivational components of instruction used in the general education classroom. This key study provided strong evidence that students likely perceive what goes on in the classroom differently than their teachers do. Yet, none of these studies extend their results to teachers' intentional use of student perceptions and feedback in their reflection on the motivational aspects and overall quality of instruction.

Teachers who fail to deeply reflect on their practice will resort to the methods in which they were taught and may inadvertently propagate ineffective teaching and mediocre learning (Akbari, 2007; Braun & Crumpler, 2004). In the United States, reflection has been an educational practice for over one hundred years, having been introduced by John Dewey near the turn of the 20<sup>th</sup> century. However, the act of teaching today has seemingly become void of thinking due in part to high-stakes accountability measures and to standardized practices of

teaching and testing that emphasize “conformity and uniformity in curricular choice and instructional practice” (Scot, Callahan, & Urquhart, 2008, p. 46). Indeed, some school districts in the United States and elsewhere have answered the call to school reform by requiring teachers to read from scripted lessons that stifle teacher creativity and ability to respond to individual students’ needs (Ross, 2014). Curriculum pacing guides dictate what, when, and how teachers address particular content standards, and enervated teachers are evaluated by their ability to stay on track (Scot et al., 2008). Recognizing that pacing guides narrow curriculum and stifle critical and creative thinking for both teachers and students, teachers of students with gifts and talents feel especially disempowered by this assembly-line approach to teaching and learning. Their students’ potential has been squelched; their engagement has been smothered; and their love of learning has been devitalized as teachers lower their standards to meet the needs of the lowest achievers (Scot et al., 2008).

Ironically, Dewey wrote in 1933, “The path of least resistance and least trouble is a mental rut already made” (p. 30). With so many demands on teachers’ time in schools today, taking the already established path with worn-out or scripted lesson plans and drill-and-kill exercises has become commonplace. Over time, teacher reflection has become ill-defined and ineffective. Reflection has become a neglected skill, and the act of reflective thinking has become as difficult to define as it has to teach in teacher education programs. In an effort to revive Dewey’s original intentions, contemporary scholars (e.g., Rodgers, 2002) have attempted to recapture the meaning of teacher reflection and reestablish its effective use. Rodgers (2002), for example, identified four criteria that captured Dewey’s conception of reflection: meaning making, rigor, collaboration, and positive attitudes. In the present study, meaning making was strengthened through collaboration as a knowledgeable, supportive peer led the teachers in

guided reflection interviews. In this way, teacher reflection on the motivational components of instruction not only included their students' perceptions, but also the perceptions of a fellow educator who had examined and thought critically about the data prior to a structured reflection interview and who guided the interview to ensure key points were addressed.

In this study, I addressed the motivational constructs that relate most directly or meaningfully to gifted students' motivation in a class they selected in an academic enrichment summer camp then used the perceptions in guided reflection interviews with their teachers. These dimensions of appeal, challenge, choice, meaningfulness, and academic self-efficacy resonated with students with gifts and talents who are already academically motivated by the subject they have selected to study. They likely had sufficient background knowledge to make these independent choices, so they were likely enthusiastic about the academic content of the course. However, if the teachers of these courses failed to provide content in appealing and challenging ways, or if the teachers did not meaningfully relate the content to their students' lives outside of the classroom, or if the teachers did not allow or support student-selected content, processes, or products related to the class, then their students may not have been motivated. In addition, if students did not feel confident in their depth of knowledge in the content or believe in their abilities to accomplish quality work in the class, their motivation to participate and perform, especially in front of other students with gifts and talents, diminished greatly. Teachers who reflected with a knowledgeable peer about these motivating components in the classroom from their students' and their own perspectives improved the depth and breadth of their reflection as well as the quality of consequent actions.

## **Purpose of This Study**

Research that examines the perceptions of students with gifts and talents and their teachers in the same study is difficult to find in gifted education literature, and many studies that contain both groups' perceptions seem to be written for program-level decision making rather than classroom-level improvements (Callahan, 2000; Matthews & Kitchen, 2007). Even more, studies that examine the perceptions and expectations of middle and high school high-ability students are quite rare (Prior, 2011). This study analyzed the relationship between gifted students' and their teachers' perceptions of instructional quality for improving teacher reflection with a knowledgeable, supportive peer in a summer enrichment program. Purdue University Gifted Education Resource Institute's (GERI) Summer Residential (Residential) program, which provides challenging enrichment classes for students with gifts and talents from all over the world in 5<sup>th</sup> through 12<sup>th</sup> grades, served as an ideal setting for this study.

Because classrooms are complex systems, perceptions of the motivational components of instruction likely differ among teachers and their students. Measuring the subjective experiences of teachers and students seems difficult, but objective means exist that can assess their distinct perceptions with accuracy. To provide more precise comparisons between teacher and student perceptions, parallel quantitative surveys can be administered and the results analyzed using correlations and descriptive statistics. Using these results in pairs or small groups, teachers can reflect upon any differences that were observed in the data. Guided reflection that remains focused on and explores the survey results has the best chance of positively influencing subsequent instructional improvement. In this way, the quantitative survey results are not only analyzed, but they also inform a broader reflection that includes knowledgeable peers and richer contributions regarding alternative instructional choices.

Thus, the purposes of this study were a) to understand the differences that existed in gifted students' and teachers' perceptions about whether teachers used motivational techniques in instruction; and b) to explore how guided reflection with a knowledgeable peer that included student perceptions of the motivational components of instruction informed teachers' reflection on the quality of instruction. The following research questions served as guides for this study:

1. How do gifted students' perceptions of the motivational techniques used in instruction compare with their teachers' perceptions as measured by parallel surveys?

2. How can the survey data be used to inform teacher reflection on the motivational components of instruction? Three related questions were also examined to support further analysis:

2a. What differences, if any, exist among teachers' individual motivation profiles based on years of teaching experience in GERI's Residential program, years of teaching experience in other settings (e.g., K-12 schools, college), years of teaching students with gifts and talents in any setting other than GERI, and amount of training in gifted education?

2b. For those teachers whose motivational profiles show discrepancies between students' and teachers' perceptions of the motivational techniques used in instruction, how can using their students' perceptions in guided reflection interviews with a knowledgeable peer affect the quality of that reflection and lead to probable instructional improvement?

2c. How do GERI staff members' evaluation of teachers' motivational techniques through two classroom observations corroborate students' perceptions and/or teachers' perceptions?

## **Significance of This Study**

This study focused on the interaction of gifted student and teacher perceptions of instructional effectiveness through the lens of motivation theory and how this interaction informed reflective teaching practice and intended instructional improvements. By doing so, students and teachers become more motivated and engaged, and their educational experiences become more effective and enriched. As teachers continue to solicit and use feedback from their students, a continuous instructional improvement cycle repeats itself indefinitely. This cycle may be effectively replicated in general education classrooms, for when students of any ability level have genuine input into educational effectiveness, and their teachers respond with appropriate adjustments, mutually beneficial partnerships are forged which results in highly effective instruction for maximum learning. If the motivational process begins with interest-provoking engagement with the content and culminates in the ideal of self-initiated learning (Matsko & Thomas, 2014), then the most effective self-regulated learning experiences can occur when teachers incorporate students' input into their reflection and subsequent curriculum planning and the motivational components of learning.

The significance of this study transcends students with gifts and talents and university-based enrichment programs. All teachers would likely benefit by including students' perceptions of the motivational constructs of appeal, meaningfulness, choice, challenge, and academic self-efficacy at work (or not) in the classroom in their reflections with one or more peers about instructional quality. The systematic, concurrent use of the two parallel instruments used in this study has the potential to strengthen classroom motivation for both teacher and student. Transforming thinking and teachers' reflective practice that includes their intentional consideration of students' perceptions will not be easy, but as teachers make instructional



decisions based on the interaction of teaching, learning, and motivation with serious consideration for their students' perspectives, all stakeholders in the classroom will benefit (Prior, 2011).

## CHAPTER 2. LITERATURE REVIEW

Possibly more than any other time in the history of education in the United States, teacher performance is under scrutiny (Harris, Ingle, & Rutledge, 2014). The accountability measures ushered in by No Child Left Behind (NCLB; U.S. Department of Education, 2001) compelled all teachers to reflect on the quality of their practice with the end goal of raising achievement for all students, especially those who were falling behind grade-level expectations. Standardized achievement test results that had once become integral to the high-stakes atmosphere for students' remediation and graduation have now become indicators of teacher quality and performance. These accountability measures became more cutthroat with Race to the Top legislation (RTTT; U.S. Department of Education, 2009), which emphasized competitive teacher merit pay based on performance, A to F grades for schools, and dismissal of teachers and administrators in chronically low-performing schools. Standardized achievement test results, again, played a definitive role in student, teacher, and now, school assessment (U.S. Department of Education, 2009). When more students met or exceeded grade-level expectations, teachers and schools received passing grades. Because administrators and teachers feared for their livelihoods, raising the achievement of the so-called "bubble kids" (i.e., students who tested just below the grade-level standard; McNeil, 2000, p. 254) became the priority.

Although the spirit of these educational improvement acts is admirable (i.e., raising achievement for struggling students and schools), miseducation on a large scale has been the result (Kauffman, 2010). Teachers began to teach to the test, to cheat by changing students' incorrect answers on standardized tests, to compete with their fellow teachers for hard-earned merit pay, and to sideline the educational needs of some students in their classrooms (Gentry,

2006a; Gentry, 2006b; Nichols & Berliner, 2005). In particular, one group of students has been left behind altogether, for they are neither low-performing nor on the bubble: they are our nation's students with gifts and talents (Beisser, 2008). Because most of them are taught in mixed-ability classrooms and because showing academic growth in a population that has already reached standardized test ceilings is virtually impossible, teachers simply have not focused on the educational needs of students with gifts and talents (Booher-Jennings, 2006; Howley, Rhodes, & Beall, 2009). Additionally, shrinking school budgets have forced the reduction in or discontinuation of gifted programming in many schools, further marginalizing the educational needs of these students (Hymes, 2014). Most importantly, students with gifts and talents, who are likely more cognizant of the instructional and motivational techniques teachers use in their classrooms, are being overlooked as providers of important information that teachers need to improve instruction not only for themselves, but for all students (Fisher & Frey, 2012). Our neglected students with gifts and talents likely have much to say regarding the quality of instruction they are receiving in their classrooms daily.

### **The Role of Motivation in This Study**

Because gifted education is more student-focused than traditional, teacher-centered models of educating children (Tomlinson, 1996), motivation theory plays an integral role in curriculum and instructional planning. Teachers learn about motivation in their preparation programs and use this knowledge to prepare lessons that inspire their students. Students may not have pedagogical knowledge regarding motivation, but their lived experiences in the classroom provide enough information for them to know whether they are motivated to learn. Although teachers have their own perceptions about their use of motivational strategies in their classrooms, students often have different perceptions (Gentry et. al., 2002). Based on this understanding

of motivation, self-determination theory (SDT; Deci & Ryan, 1985, 2000; Ryan & Deci, 2000) provides the theoretical foundation for this study because “intrinsic motivation is the highest form of self-determination in SDT and results in consistent and volitional learning behaviors” (Garn & Jolly, 2014, p. 8-9).

SDT maintains that all people have three innate psychological needs—autonomy, competence, and relatedness (Deci & Ryan, 1985, 2000; Ryan & Deci, 2000). The first need, autonomy, reflects people’s need for control as they interact with their environments, including a sense that what they are motivated to do matters (Pintrich & Schunk, 2002). In the classroom, however, autonomy is more than simply giving students *choices*. Teachers also support autonomous student behavior when they consider and incorporate their students’ perspectives; address their students’ needs, *interests*, and learning preferences when planning instruction; individualize academic *challenge*; relate learning goals to their students’ lives in *meaningful* ways; and implement learning activities designed to inspire and enrich their students’ lives (Jang, Reeve, & Deci, 2010). In this study, four of the constructs (italicized above) support autonomy in the classroom and contribute to students’ *academic self-efficacy* (the fifth construct of interest in this study).

The second need, competence, is closely related to autonomy but focuses more on the feelings and beliefs associated with control over one’s environment and relationships. In the classroom, students become more motivated, persistent, and mentally and behaviorally focused on learning when they believe they can perform well. If students do not feel competent, motivation and consistent, focused effort suffers (Pintrich, 2003, p. 667). Competence relates most closely to the construct of academic self-efficacy in this study.

Relatedness or connection with others, the third SDT need, can be satisfied through the development of respectful, caring relationships with others. In classrooms, genuinely warm and caring relationships between teachers and students and between the students themselves promotes a strong sense of community that supports motivation and maximum learning (Pintrich, 2003, p. 674). Relatedness is the forerunner of and foundation to all the other motivating components of the classroom. The context of this study provides a social setting highly supportive of relatedness as students bond quickly through common academic interests as well as team-building activities in the evenings.

### **Summer Enrichment Programs**

A summer residential enrichment camp for students with gifts and talents, where autonomy, competence, and relatedness are encouraged and supported, serves as a rich testing ground for studying students' and teachers' perceptions of the motivational aspects of classroom instruction. Generally speaking, student participation in enrichment programs has fostered creative thinking (Renzulli & Reis, 1991), enhanced motivation (Frost, 2005), bolstered self-confidence and self-regulation (Neber & Heller, 2002), and richer relationships with intellectual peers who share the same passion (Putallaz, Baldwin, & Selph, 2005).

With regard to summer enrichment programs, researchers found positive short- and long-term effects, including increased knowledge and enthusiasm in a particular discipline followed by professional achievements (Autenrieth, Lewis, & Butler-Perry, 2017; Hany & Grosch, 2007; Newman, Gregg, & Dantzler, 2009), broader exposure to and favorable perceptions of specific career fields (Cannon, Broyles, & Anderson, 2009), increased self-confidence and openness to others (Jen, Gentry, & Moon, 2017; Kaul, Johnsen, Witte, & Saxon, 2015; 2016; Lee, Olszewski-Kubilius, & Peternel, 2009), and preparation for future endeavors (Kunkel, Pittman,

Hildebrand, & Walling, 1994). Kim (2016) conducted a meta-analysis of 26 studies (conducted from 1985 to 2014) that measured the effects of enrichment programs on the achievement and socioemotional development (including self-concept, academic motivation, self-confidence, and career goals) of gifted students. Findings of this study show that enrichment programs in general promote scholastic achievement and socioemotional development of gifted students. More importantly for this study, Kim found that summer residential programs have the most influence on gifted students' achievement and socioemotional development when compared to other types of enrichment programs (e.g., academic year—weekday programs, academic year—Saturday programs, and summer day programs).

In this study's university-based, summer enrichment camp, teacher, student and parent expectations are high. The students selected academically appealing and challenging enrichment classes they expected to provide fun yet meaningful activities. In short, the students want to have summer-camp fun in their academically challenging enrichment classes. The summer enrichment program teachers are very aware of their students' high expectations, and they designed high-quality, advanced curriculum they believed would interest and challenge students. In addition, teachers preassessed their students at their first class meetings in order to differentiate curriculum and instruction in relation to students' specific learning needs, including their individual interests, strengths, readiness levels, and learning preferences (Roberts & Inman, 2007; Tomlinson, 2014). Student-focused differentiation that is grounded in SDT focuses on the motivational components of instruction from the students' perspective. The five motivational constructs highlighted in this study—appeal, choice, challenge, meaningfulness, and academic self-efficacy—provided various means of differentiating instruction that students and teachers can evaluate easily and accurately. The comparison of these evaluations, then, provided

meaningful information for teachers as they reflected on instructional effectiveness. These constructs are defined below.

### **Teachers' Use of Student Feedback**

While many teachers welcome student feedback, some may be less enthusiastic. For teachers who are accustomed to providing feedback to students, the thought of receiving feedback from those same students may seem disconcerting. Indeed, some teachers may even fear and adamantly oppose the use of student feedback on the grounds that it may be used against them (Weller & Weller, 2001). Granted, students' evaluation of instruction may reflect more the students' levels of maturity and/or achievement in the class rather than providing useful information to improve instruction (Haefele, 1980; Weller & Weller, 2000), but to some degree, all evaluations are subjective. And even though students are not trained in educational pedagogy and may not be able to devise specific solutions, their perceptions and feelings related to instruction are still important. In particular, students recognize when they are motivated to learn, and this feedback can inform teachers' reflections about improving instruction. Additionally, when students are asked specific questions about classroom characteristics they are knowledgeable about and in ways that value their unique input into the learning process, most students rise to the occasion by providing meaningful feedback (Bill and Melinda Gates Foundation, 2012a; Cangelosi, 1991).

An important part of any successful program is its evaluation, and in education, each teacher's quality of instruction is an important measure related to school, teacher, and student success. While various teacher evaluation tools and procedures exist across P-16 contexts in education today, choosing the right evaluation tool is as important as choosing *what* to evaluate. Current teacher evaluation procedures that emphasize students' scores on the end-of-the-year

achievement test fail to measure the more important aspects of day-to-day learning and instruction in these students' classrooms (Akhavan, 2005). In addition, this information does not provide feedback on the "how" and "why" of teaching, only on the "what." Further, the information provided about the "who" (the student) is very narrowly conceived: the student becomes a test score. Many would argue that some of the tools used today to evaluate teacher quality are inadequate; in other words, students' standardized test scores cannot accurately or fully measure what they were never intended to measure, and administrators' limited time spent in teacher observations cannot provide a clear picture of overall classroom quality (Bill and Melinda Gates Foundation, 2012b; Marzano, 2012; Papay, 2012). Although administrators' evaluations based on classroom observations have the potential to more accurately measure teacher quality than standardized test results, they can be subjective and incomplete due to the limited time spent in classrooms and due to the adult-only perspective concerning learning and instruction.

Previous researchers have studied student or teacher perceptions in a number of ways including:

- Surveys and interviews (e.g., Bourgeois, 2012; Gentry, Rizza, & Owen, 2002; Midgley, Anderman, & Hicks, 1995; Richer, 2012);
- Questionnaires (e.g., Hagborg, 1994; Hansen & Feldhusen, 1994; Richer, 2012);
- Classroom observations and recordings (e.g., Bourgeois, S. J., 2012; Hansen & Feldhusen, 1994; Scager, Akkerman, Pilot, & Wubbels, 2013);
- Focus groups (e.g., Scager, Akkerman, Pilot, & Wubbels, 2013; Siegle et. al., 2014); and
- Document scans (e.g., lesson plans, instructional materials) (e.g., Scager, Akkerman, Pilot, & Wubbels, 2013).



However, much of this research focuses on either student perceptions or teacher perceptions, but not in a comparative fashion. Even fewer studies focus on both groups' perceptions of motivational constructs in the classroom, and further, very few highlight how teachers use this information to inform reflection about instructional improvement and student learning. This study intends to fill this gap in the literature.

Questions regarding who should evaluate teacher quality (e.g., administrators, parents, students, students' test scores) and what constructs reflect teacher quality (e.g., expertise in subject area, expertise in pedagogy, quality of relationships with students and/or classroom qualities such as choice, challenge, and appeal) need to be addressed before evaluation procedures and tools are selected. Because previous teacher evaluation systems did not sufficiently differentiate levels of teacher quality, consensus among educational researchers calls for a multidimensional evaluation system that combines several reliable and valid components, allowing for a fuller picture of overall teacher quality (Bill and Melinda Gates Foundation, 2012b; Marzano, 2012; Papay, 2012). For example, the Measures of Effective Teaching (MET) project of the Bill and Melinda Gates Foundation (2012b) promotes the combination of high-quality observations, student surveys, and student achievement gains for the most effective teacher feedback. In fact, the MET project strongly supports student feedback as potentially the most reliable measure of teacher feedback since multiple perceptions based on more classroom contact hours would be included (Bill and Melinda Gates Foundation, 2012b).

### **Teacher Reflection**

The Council for the Accreditation of Educator Preparation (CAEP; previously the National Council for Accreditation of Teacher Education or NCATE) establishes professional standards for teacher preparation programs. The role of reflection is prominent in NCATE's

(2008) definition of professionalism, specifically in pre-service teachers' continual evaluation of the effects of their practice on students, their families, and the larger school community.

Standards 3 (Field Experiences and Clinical Practice) and 5 (Faculty Qualifications, Performance, and Development) include reflection as an important skill. Standard 3 defines the role of teacher preparation programs in insuring the quality of K-12 field experiences, emphasizing the need for set-aside time for reflection as part of the assessment-reflection-action process:

The unit and its school partners design, implement, and evaluate field experiences and clinical practice so that teacher candidates and other school professionals develop and demonstrate the knowledge, skills, and professional dispositions necessary to help all students learn. (NCATE, 2008, p. 12)

Standard 5 emphasizes the important role of teacher preparation program faculty in developing pre-service teachers' skills of reflection:

Faculty are qualified and model best professional practices in scholarship, service, and teaching, including the assessment of their own effectiveness as related to candidate performance. They also collaborate with colleagues in the disciplines and schools. The unit systematically evaluates faculty performance and facilitates professional development. (NCATE, 2008, p. 38)

Researchers have also promoted the inclusion of reflection as an important skill in teacher education programs, but they have been critical of these programs' ability to develop it. Hall, Quin, and Gollnick (2008) viewed continual, multi-faceted reflection as a prerequisite to the development of teacher intuition, and Kauchak and Eggen (2008) recognized that teachers must be skilled in continually and critically self-assessing their practice. Because pre-service teachers

have complained about the large gap between theory and the skills needed in actual practice, teacher education programs were charged with connecting theory with field experiences through integrated, reflective strategies (Darling-Hammond, 2006; Grossman, Hammerness, McDonald, & Ronfeldt, 2008; Levine, 2006; Volante, 2006). Before exploring the current state of teacher reflection more fully, however, some history about the practice is in order.

**John Dewey and Donald Schon.** John Dewey is frequently recognized as the educator-scholar who introduced reflection to teachers in this country. In *Democracy and Education* (Dewey, 1916) suggests that reflection requires both concern and fairness toward an issue: concern for the issue and for our role in the outcomes of our reflection and our subsequent actions based on it while remaining fair to the ideas and solutions generated and ruminated upon. He states, “From this dependence of the act of thinking upon a sense of sharing in the consequences of what goes on, flows one of the chief paradoxes of thought. Born in partiality, in order to accomplish its task, it must achieve a certain detached impartiality” (1916, p. 172-173). Dewey does not observe a conflict between concern and fairness in reflection, however. While teachers are personally involved in the problematic issue that initiates reflection, they have the ability to “keep themselves out of the data,” and as they consider and integrate others’ perspectives surrounding the issue, their thinking becomes less self-serving, “a fact of great significance for education” (p. 173). Dewey exalts reflective thinking to research in action. “Thinking is research, and all research is native, original, with him who carries it on, even if everybody else in the world already is sure of what he is still looking for” (Dewey, 1916, p. 174). Believing that knowledge is subordinate to and a consequence of thinking, Dewey (1916) claimed that if persons couldn’t think for themselves, they weren’t thinking at all.

In his book *How We Think*, Dewey (1933) further exalts reflection as “the better way of thinking” (p. 3) that consists of serious ruminating on a topic, “involving not simply a sequence of ideas, but a *con*-sequence—a consecutive ordering in such a way that each determines the next as its proper outcome, while each outcome in turn leans back on, or refers to, its predecessors” (p.4) while moving toward a substantiated conclusion. This conclusion steers the flow of ideas and compels self-examination and critical inquiry. Dewey (1933) conceives reflection as a process initiated by an intellectually perplexing state followed by information gathering for the purpose of resolution or dismissal of the originally confounding ideas with the result of purposeful action. He identifies three attitudes necessary for meaningful reflection: open-mindedness, whole-heartedness, and responsibility. Open-mindedness calls for seeking and honoring multiple-perspectives, seriously considering alternative solutions, and accepting that cherished beliefs may need to be modified based on new information (Dewey, 1933). Open-mindedness implies reflecting on the issue with knowledgeable others. Whole-heartedness implies total commitment to the reflective process. However, teachers who teach in competitive environments and who fear for their livelihoods may be inhibited in their ability to commit fully to meaningful reflection. Responsibility means accepting the consequences of behavior and insuring the integrity of belief and action. Teaching and learning become more meaningful and effective for teachers and students when personal responsibility guides thoughts and actions.

Dewey (1933) delineated five aspects of reflective thought within three phases: pre-reflective phase (suggestion and intellectualization of the problem), question phase (the guiding idea or hypothesis and reasoning), and post-reflection phase (testing the hypothesis through action). The aspects involved in reflection are not lock-step, however; one aspect informs

another in recursive and progressive fashion until resolution is achieved and a plan of action is determined (Dewey, 1933).

When teachers reflect with a knowledgeable, supportive peer, they recognize and likely adopt alternative ways of thinking about a phenomenon of interest; in other words, teachers' metacognition leads to the consideration of multiple perspectives, deeper questions, and conflicting ideas (Pugach & Johnson, 1990). As reflection with this skilled peer progresses and disrupts the teachers' former ways of thinking and knowing, creative and innovative solutions result. Schon (1983; 1987) calls this process "reflection-in-action."

Donald Schon (1983; 1987) used many of Dewey's ideas about reflection in his conceptualization of the reflective practitioner, but where Dewey encouraged reflection with others, Schon necessitated it by formalizing the roles of coach and novice practitioner as partners in reflection-in-action. Schon asserts that competent professional practice involves

a core of artistry...an exercise of intelligence, a kind of knowing, though different in crucial respects from our standard model of professional knowledge.... There are an art of problem framing, an art of implementation, and an art of improvisation—all necessary to mediate the use in practice of applied science and technique. (1987, p.13)

This tacit knowledge (Polanyi, 1967) cannot be taught preparatorily; it can only be coached in and through experience. Schon (1987) proposed a reflective practicum whereby practitioners who encounter "indeterminate zones of practice" (p. 6) that cannot be solved by previously learned technical skills or theory are coached by artful practitioners to "see on [the novices'] own behalf and in their own way what they need most to see" (p. 17). This reflective practicum incorporates learning by doing with coaching in a design-studio format where novices encounter

problems related to practice, lack sufficient “knowing-in-action” (and possibly technical knowledge), then interact with a competent practitioner who reframes the problem and assists the novice in figuring out what to do (Schon, 1987, p. 25). Through this interaction, novices and artful practitioners construct meaning through reflection-in-action—questioning assumptions made in knowing-in-action, alternating thinking about the parts of the problem and about the overall problem, experimenting with new solutions/behaviors, developing reasoning skills in practice, and “reaching convergence of meaning” in solution-finding while adding to their own tacit knowledge (Schon, 1987, p. 118). Through repeated rounds of the reflective practicum, novice reflective practitioners become designers who perform the art and science of their craft competently and professionally.

**Reflection in education today.** The practice of reflection among professional educators today has become anomalous. Akbari (2007) and Fendler (2003) bemoaned the fact that current practice seems to blur the distinctions between the two primary forerunners of reflection, characterizing Dewey’s style of reflection as professional, rational, and scientific while Schon’s style as personal, intuitive, and practical. The resulting confusion not only weakened professional practice at all levels, but also weakened teacher preparation programs that boast teacher reflective practice as an important goal. Akbari (2007) and Conway (2001) argued that current reflective practice focuses largely on past events and the memory’s recollection of it rather than on imagination, creativity, and the future. Ironically, teachers need imagination and creativity to fulfill one of the primary goals of reflection, namely, to produce independent, autonomous decision makers with the foresight and courage to test alternative solutions to the problems they face daily (Akbari, 2007). To strengthen the practice of teacher reflection, Akbari

(2007) called for a common definition of meaningful, effective reflection that included critical and creative thinking and acknowledged the personality of the teacher.

An earlier critic of the diluted practice of reflection in teaching, Conway (2001) described current reflective practices' preoccupation with the past "temporally truncated" (p. 89), and proposed a balance of imagination with remembrance for "a more expansive focus of the reconstruction of the professional self" (p. 90). Conway added:

I argue that what is meant by 'looking back' is turning inward, examining one's own remembered experiences and/or anticipated experiences, not exclusively looking back in time. Looking back in the reflective sense is about gaining some reflective distance to understand better the meaning of lived experience, one's relationship within and to the world. Reflection is not only about taking the long view backward in time, but also, and this is borne out in experience, about looking forward toward the horizon. Looking toward the future with knowledge of the past from the viewpoint of the present, I am suggesting, is a particularly salient aspect of novice teachers' everyday experience. (2001, p. 90)

Conway (2001) promoted a temporally distributed nature of reflection—one that includes at once the past, present, and future—that involves "memory and imagination, the past and future as stories that student teachers tell themselves in the present" (p. 92). Further, critically reflective teachers continually examine their goals, values, and assumptions within the social, moral, and political context of the classroom; they recognize that their personal development as critical, reflective thinkers influences the greater good (Akbari, 2007; Jay & Johnson, 2002; Zeichner & Liston, 1996).

**Constructivism in teacher reflection.** Professing that individuals construct the meaning of their experiences, cognitive psychologists emphasize that learning is constructed through the individual's interaction with knowledge, instruction, thinking, interpretation, and meaning (Resnick & Klopfer, 1989). Teachers as learners construct meaning through their content and pedagogical knowledge, their knowledge of their students' academic and social-emotional needs, their previous instructional experiences, and their desire for their students' achievement. Even though teachers plan their lessons, they often make on-the-spot adjustments based on their own perceptions and/or on feedback they receive from others. Reflection on the level of success of lessons involves the construction of new meaning, especially when students' perceptions and opinions are included in the reflection. In this time of reflection, thinking and learning are combined measure-for-measure as the teacher constructs new instructional knowledge and meaning, including aspects of timing and context-specific application.

Knight (1996) identifies several misconceptions related to reflective practice and argues that rigorous evaluation of the information used in reflection is necessary, especially as it relates to decisions regarding subsequent action. The first misconception is that even low levels of reflection are sufficient for effective change. All teachers will likely acknowledge that they practice reflection, but few go to the breadth and depth necessary to efficiently and effectively reflect and enact productive change. "Reflective practice' entails a genuinely critical questioning orientation, and a deep commitment to the discovery and analysis of positive and negative information concerning the quality and status of a professional's designed action" (Knight, 1996, p. 165). Teachers who practice inefficient reflection bring premature closure to their time of reflection (whether alone or with others), thereby restricting information and precluding deep thinking. In addition, these teachers usually become defensive when others



evaluate their work, tending to rationalize their beliefs and actions rather than critically examining them (Knight, 1996). The second misconception is that reflection is overly academic, passive, and arbitrary rather than practical, active, and intentional (Knight, 1996). Teachers who view reflection as a waste of time likely lack the necessary skills needed for true reflective practice. The third misconception is that the teacher's beliefs, thoughts, feelings, and interpretations are sufficient for reflective practice (Knight, 1996). While these things are important and should be included in reflection, they are not sufficient for planning effective future actions. Through a constructivist lens, true reflection requires teachers to collect as much valid and reliable information as possible as it relates to the problematic situation. This implies the inclusion of diverse perspectives and alternative interpretations (Knight, 1996). The fourth misconception is that only incompetent teachers need to reflect when, in fact, all teachers, regardless of their levels of expertise, need to practice reflection—to critically think about and more deeply understand the processes of teaching and learning (Knight, 1996). The last misconception is that reflection need involve only those aspects of the situation of which the teacher is aware; however, increasing the teacher's awareness of other aspects and/or reframing the known aspects by a supportive peer during the reflection process can be highly productive (Knight, 1996).

The role of constructivism in teacher reflection is to introduce cognitive dissonance in the teacher so that new information and perspectives will be sought and successful integration and construction of new knowledge can occur (Yost, Sentner, & Forlenza-Bailey, 2000). Dewey referred to this state of perplexity as disequilibrium (Rodgers, 2002), a term later adopted by Piaget (1964) in his cognitive development theory. In this study, I hoped to transform teachers'

thinking through the use of dialogue by challenging them to analyze their beliefs in light of potentially discrepant information from their students and GERI observers (Yost et al., 2000).

**Colton and Sparks-Langer Framework for Teacher Reflection.** Colton and Sparks-Langer (1993) developed a “Framework for Teacher Reflection” based on the cognitive psychology concepts of constructivism and experiential learning. Described as “a cognitive apprenticeship” (p. 51), the framework includes seven components of a professional knowledge base that not only center on content and pedagogical knowledge but also include knowledge of students, the educational context, prior experiences, personal values, and scripts. These components are simultaneously enacted “in the moment,” resulting in a teacher’s emotional reaction to any given classroom experience which subsequently transforms that teacher’s reconstruction of professional knowledge (pp. 47-48). The mental processes involved with this reconstruction of professional knowledge and meaning relate to three actionable decisions—planning, implementing, and evaluating. These actions, then, provide the fodder for subsequent, continuous cycles of reflection and construction of professional knowledge (p. 49).

The framework’s process pairs a novice or pre-service teacher with a trained mentor who guides the teacher through the teacher reflection and decision-making process, beginning with the teacher’s professional knowledge base, including knowledge of content, students, pedagogy, context, prior experiences, personal and social values, and automatic and metacognitive scripts (Colton & Sparks-Langer, 1993). Next, as the teacher teaches, context-specific feelings influence interpretation, response, reflection, meaning, and subsequent learning based on experience. The wise teacher recognizes that negative emotions preclude considering alternative interpretations and constructing new knowledge. At this stage, the teacher is also making decisions by collecting information related to the experience, analyzing and interpreting the information, and developing

hypotheses to explain events and to guide future actions. Finally, the teacher decides which action to take, and the teacher reflection and decision-making process begins again (Colton and Sparks-Langer, 1993).

Colton and Sparks-Langer (1993) also identified four attributes that describe the cognitive processes of reflective teachers and drive their effective decision making: efficacy, flexibility, social responsibility, and consciousness. First, reflective teachers are efficacious; they believe they can create educational experiences that result in maximum learning that has direct, positive influence on students' lives. Second, the flexibility of reflective teachers allows them to consider and, if deemed appropriate, immediately act upon others' perceptions regarding what all classroom members just experienced in the learning environment. Third, socially conscious teachers communicate and act in ways to demonstrate that they care about their students, school, community, and beyond, inspiring their students to imitate these democratic principles in their own behavior in and out of school. Finally, reflective teachers are conscious of the reasoning involved in the instructional decisions they make; they have thought through and consciously create deeper meaning for their practice (Colton and Sparks-Langer, 1993). These autonomous teacher states of mind are best encouraged within school systems where safety, trust, and respect are practiced.

A critical component for the Framework for Teacher Reflection involves training mentors who facilitate the reflective process with novice or pre-service teachers (Colton and Sparks-Langer, 1993). Mentors receive 24 hours of training during which they "understand the characteristics of a reflective professional decision maker, use observation and conferencing techniques to diagnose and promote reflective decision making in the novice, and become more reflective and aware of their own thinking" (p. 51). The mentor uses interpersonal

communication skills, collaborative problem-solving skills (including consideration of multiple perspectives), cognitive coaching (Costa & Garmston, 1992), and developmentally structured teaching assignments and activities that promote skillful and meaningful reflection and decision making. Fettig (1999) utilized Colton and Sparks-Langer's (1993) Framework in her descriptive study of elementary teachers' reflection practices. Fettig reported that the teachers participated enthusiastically in the analysis of professional knowledge, reflection on their experiences, and development of effective action plans. She identified five themes in the qualitative data: four of the themes concerned students' achievement, motivation, morality/citizenship, and conflicts; the last theme concerned teachers' varying emotions.

**Reflection and reflective thinking.** Hrevnack's (2011) distinction between reflection and reflective thinking provided additional evidence that the practice of teacher reflection per Dewey and Schon has become ineffective, largely due to the failure of teacher education programs to develop this skill. Hrevnack (2011) believed that teachers' reflection simply involves recall of events, often without judgment or evaluation of teacher actions while reflective thinking involves metacognition—thinking about the act of teaching, analyzing the reasons involved in instructional choices, evaluating the effectiveness of instruction, and creating new strategies for practice. Teacher reflection on current practice is most effective when reflective thinking is grounded in research-based practices framed by solid educational theory (Hrevnack, 2011; Sparks-Langer, Simmons, Pasch, Colton, & Starko, 1990). Reflective thinking honors teachers as professionals who possess professional knowledge and a desire to improve their teaching practices (Kim & Silver, 2016). In short, the goal of meaningful teacher reflection is to bring professional knowledge to bear on the effective evaluation of practice (Hrevnack, 2011). Teacher reflection, when practiced effectively, can provide the bridge from theory to practice

(Hrevnack, 2011). From my own experiences in K-12 settings, novice teachers tend to teach according to how they were taught by their K-12 teachers, not necessarily how they have been instructed to teach in their university teacher preparation programs, especially when they perceive those programs as high on theory and low on practical significance. Structured reflection guided by a comprehensive framework that focuses on meaningful instruction and student learning outcomes can result in more effective change in the practice of teacher reflection (Hrevnack, 2011).

Recognizing that the meaning of reflection had become diluted and indistinct, Carol Rodgers (2002) attempted to clarify Dewey's conception of reflective thinking. She asserted that lack of a clear definition failed to distinguish reflective thinking from other kinds of thinking; made reflective thinking difficult to teach, assess, and research; and endangered its practice as a viable tool for teacher improvement. Rodgers (2002) identified four criteria in Dewey's writings that clearly define reflection and reestablish its intended practice.

First, reflection involves meaning making that motivates the teacher to search for understanding from one experience to another while connecting the present with other experiences and ideas (Rodgers, 2002). "The creation of meaning out of experience is at the very heart of what it means to be human" (Rodgers, 2002, p. 848). Two elements are important in meaning making: interaction and continuity. Interaction refers to the necessary meeting of the teacher and the environment (including the students, the subject matter, and the contexts in which the actions of teaching and learning occur), and continuity refers to the linkages of past experiences, developed skills, and prior knowledge to the present interaction in order to make sense of it (Rodgers, 2002). "Without interaction, learning is sterile and passive, never fundamentally changing the learner. Without continuity, learning is random and disconnected,

building toward nothing either within the learner or in the world” (Rodgers, 2002, p. 847).

Making meaning of experience lends value to the experience, gives the teacher control over sometimes unpredictable or unavoidable circumstances, and propels the teacher forward to informed, productive action (Rodgers, 2002).

The second criterion for reflection is disciplined rigor that begins with the teacher’s open, in-the-moment awareness of “the potential significance inherent in an experience” (Rodgers, 2002, p. 850). This awareness introduces perplexity or disequilibrium that urges the teacher to meaning making or equilibrium (Rodgers, 2002). Although the need to resolve perplexity can be strong, the teacher may also be motivated by curiosity or a desire to improve, more positive impetuses for reflection. Without making time to rigorously reflect, teachers may become paralyzed by the overwhelming perplexity they encounter in their work; as a result, they may become indifferent and blame themselves or others for their difficulties (Rodgers, 2002). Curiosity, however, inspires a teacher to approach perplexity with the attitude of a learner who explores the experience with a set of positive attitudes (see the fourth criterion below).

Reflection with others in order to find strengths and weaknesses in ideas is the third criterion for meaningful reflection (Rodgers, 2002).

The experience has to be formulated in order to be communicated. To formulate requires...seeing it as another would see it, considering what points of contact it has with the life of another so that it may be got into such form that he can appreciate its meaning.... One has to assimilate, imaginatively, something of another’s experience in order to tell him intelligently of one’s own experience.

(Dewey, 1916. p. 6)

Teachers who reflect in pairs or groups affirm and value others' experiences, increase the potential for deep understanding, and strengthens accountability that results in inquiry toward resolution and intelligent action (Rodgers, 2002). Collaborative learning and mutual growth result when practitioners reflect together.

The fourth and final criterion for effective reflection is a set of positive attitudes that acknowledges the affective components of teaching and learning. These attitudes include wholeheartedness, directness, open-mindedness, responsibility, and readiness; they distinguish productive reflection from that which is uninspired, ingenuine, anticreative, unrealistic, and unintentional (Rodgers, 2002). The most effective reflection involves instruction-related affect—when teachers' reflective practices are confidently and enthusiastically grounded in content and readily prepared to accept the consequences of the teaching and learning interactions in their classrooms. Like other aspects of productive reflection, these attitudes take time to develop. Beginning teachers often overlook the affective components of instruction because teaching content takes precedence over their students' responses to that instruction. "One common preoccupation for beginning teachers is the subject matter itself or, to be more precise, lack of subject matter knowledge" (Rodgers, 2002, p. 861). Dewey also explains:

"The teacher must have his mind free to observe the mental responses and movement of the student.... The problem of the pupils is found in the subject matter; the problem of the teachers is what the minds of pupils are doing with the subject matter. Unless the teacher's mind has mastered the subject matter in advance, unless it is thoroughly at home in it, ...he will not be free to give full time and attention to observation and interpretation of the pupils' intellectual reactions." (1933, p. 275)

**Teacher reflection as critical and active.** Two issues surrounding Dewey's concept of reflection concerned whether reflection is thinking about action or thinking in action and whether reflection consciously addresses larger issues related to the context in which the reflection occurs (Hatton & Smith, 1994). Three essential kinds of thinking involved in reflection as outlined by Van Manen (1977) include technical reflection ("the efficiency and effectiveness of means to achieve certain ends"), practical reflection ("the assumptions upon which [means and goals] are based, and the actual outcomes"), and critical reflection ("judgements about whether professional activity is equitable, just, and respectful of persons...within wider socio-historical and politico-cultural contexts") (Hatton & Smith, 1994, p. 35). Schon's (1987) conception of reflection encompasses these kinds of thinking in his own modes of reflection: reflection-on-action, reflection-in-action, and reflection-for-action. Later, Jay and Johnson (2002) proposed a three-dimensional typology of reflection that includes descriptive reflection (describing the problem situation), comparative reflection (reframing the situation from other perspectives, theory, research, etc.), and critical reflection (considering implications of action and establishing an integrated perspective). In this study, my focus was reflection-on- and for-action (Schon, 1983) in which dialogic reflection addressed teaching acts and outcomes through multiple perceptions of the motivational components of instruction and through exploration of alternative ways to achieve instructional improvement (Hatton & Smith, 1994). Similar to Jay and Johnson's typology and Van Manen's levels of reflection, I engaged the teachers in dialogue that included others' perspectives on instruction (i.e., their students and the observers) and in synthesizing the information for deep understanding. Although multiple perspectives were considered, my interviews were not intentionally critical in the sense that they did not challenge societal, historical, or ideological structures that dominate education in the broader sense.



**Barriers to effective reflection.** Reflection is not a simple skill to acquire, and several barriers exist that prevent meaningful, effective reflection skills to develop. Researchers who studied teacher reflection identified five such barriers. First, novice teachers tend to minimize the importance of reflection, preferring instead to focus on technical skill development and content expertise (Hall, 1985; Reiman, 1999; Zeichner, 1990). In addition, novice teachers' stubborn notions of teaching based on their past experiences in schools as students inhibited deep thinking about practice (Yost et al., 2000; Valli, 1992). Challenging these ideas in collaborative reflection is prerequisite to meaningful change (Yost et al., 2000). Second, recognition that meaningful reflection is a developmental task that is strengthened through experience and continued professional development is key (Hatton & Smith, 1994). In this study, professional development on the five motivational constructs was provided to teachers prior to the act of teaching on which they would be evaluated, and teachers were fully informed of the purposes of the study prior to consent. I used guided reflection was employed to facilitate deeper reflection and to instruct teachers regarding the kinds of thinking involved in it.

A third barrier to effective reflection involves teachers' feelings of vulnerability and potential for self-blame for perceived failures (Hatton & Smith, 1994). Vygotsky's zone of proximal development (ZPD; 1962, 1978) provided a theoretically sound framework from which to work collaboratively with the GERI teachers to promote growth. In this study, I served as a supportive peer who guided reflection in a non-judgmental yet structured fashion and who encouraged thinking toward instructional improvement rather than on personal or instructional weaknesses. I also encouraged the teacher to listen to their own voice as well as other voices in non-judgmental ways—the voices of their students, the GERI observer(s), and me as supportive peer.

A fourth barrier involves time; the demands for teachers' time seem endless, favoring tasks that seem necessary and crowding out those tasks that seem less expedient. Time for meaningful reflection is a luxury teachers find it difficult to afford. Schon (1983) rejected the idea that professionals act in segmented repetitions of acting followed by reflecting, and Webb (1995) suggested that "reflection is a part of our being and diagrams of spirals, boxes and arrows do it little justice. But reflection-on-action remains the endangered species of reflective practice. It is the most easily lost due to pressure of work and its loss has no immediate, transparent effect" (p. 77).

A fifth barrier revolves around the difficulty some teachers have with identifying problems because they are not able to see what is wrong in their practice (Akbari, 2007; Schon, 1983). In this study, some of the teachers were surprised to see that their positive perceptions of the motivational components of instruction were not shared with their students. Recognition that a problem exists often involves looking beyond our own perceptions and interpretations of events, and this skill takes time and experience to develop (Akbari, 2007). Fuller (1970) described this development in three stages: stage one focuses on the idealized teacher-self; stage two emphasizes classroom management and discipline as a means of survival and as forming a more realistic teacher identity; the final stage focuses on students and the teaching strategies and mindsets that promote achievement. I witnessed these stages in the guided reflection interviews when novice teachers admittedly focused on content and learning activities and more experienced teachers felt more comfortable grappling with the motivational components of instruction and how students' perceptions affected their views.

### **Collaboration in Teacher Reflection.**

The guided reflection performed in this study assisted teachers in reflective thinking about their own and their students' perceptions of the motivating components of instruction rather than provide evaluative feedback or force instructional change. The style was more conversational rather than evaluative (Kim & Silver, 2016; Orland-Barak, 2006). Researchers have suggested that reflection performed in dialogue with informed others, as opposed to individually, likely results in deeper understanding and more effective changes in practice (Husu, Toom, & Patrikainen, 2008; Lortie, 1975; Mann & Walsh, 2013; Schon, 1988; Tillema, 2005; Walsh, 2011). Lortie (1975), for example, applied a structured, collaborative approach to reflection in a teacher education program, successfully pairing a pre-service teacher with a university supervisor who engaged the novice teacher in targeted areas of strength and weakness.

The interactions that occur during collaborative reflection, however, can foster or stifle effective and meaningful change. Researchers suggest that politeness, positive processing of negative feelings (e.g., anxiety or embarrassment), and advice-giving contribute to reflection that promotes change (Copland, 2010, 2011; Vasquez, 2004; Waring, 2013, 2014). Acheson and Gall (1992) emphasized that specific feedback based on prior observations strengthened collaborative reflection and assisted in the development of reflective thinking in the novice teacher. In my role, I wanted to minimize my previous role as Residential Coordinator in order to operate as an "information source, co-thinker, inquirer...and learning companion" (Orland-Barak, 2006, p. 14). My goal was to facilitate the GERI teachers' reflection on students' perceptions of the motivational components of instruction and how that affects future practice, not to evaluate their teaching by pointing out weaknesses and recommending specific changes.

The cognitive coaching process influenced my role in the guided reflection interviews as I assisted the teachers in reflecting on the motivational aspects of their teaching using open-ended, exploratory questions (Colton & Sparks-Langer, 1993; Costa & Garmston, 1992). Analyzing their reasons behind and consequences of certain teaching acts, their conscious decision-making processes, and the perceptions of others involved in the learning environment were key to effective, transformative reflection. Costa and Garmston's cognitive coaching (Costa and Garmston, 1992) is a non-evaluative process that applies cognitive psychology to teacher reflection. The helping process emphasizes that teachers are life-long learners whose practice is continually evolving through a four-phase cycle of instruction—planning, interacting, reflecting, and applying. The coach is a knowledgeable and skilled colleague who “mediates a teacher's cognitive processes and therefore the teacher's perceptions and decisions which produce the resulting teaching behaviors” (Costa & Garmston, 1992, p. 92). Coaches and teachers engage at three key points in the instructional process: a conference prior to teaching during which learning goals and student monitoring skills are addressed (planning), an observation of teaching during which the coach collects specific data (interacting), and another conference post teaching during which teachers self-assess and self-correct (reflecting and applying). The goals of cognitive coaching include trust through a respectful, nonthreatening, cooperative relationship; learning through the application of higher-order thinking and expanded perspective-taking; and autonomy through the development of critical, self-reflective skills that improve practice (Costa & Garmston, 1992).

Several studies address the benefits of collaborative reflection. Diss, Buckley, and Pfau (1992) assessed the value of interactive teacher reflection in their study of professional development in a school-college partnership. Preservice teachers completing early field

experiences used ethnographic research strategies during several observations of a classroom teacher. Then preservice teachers, the classroom teachers, school administrators, and college personnel met in interactive seminars where pre-service teachers discussed their field notes and questioned teachers about instructional behaviors and other classroom events. All participants reported benefits in this model: preservice teachers became aware of the realities of the classroom, increased professional knowledge, and were introduced to reflective teaching; classroom teachers reflected with others about their instructional decision making and added to their professional knowledge; administrators gained insight into the professional development needs of their staffs; and college education personnel reconnected with issues involved in K-12 teaching (Diss et al., 1992). Lloyd (1999) proposed a five-stage, cyclical model of guided teacher reflection that involved a teacher pair in guided reflection and card sorting activities regarding their beliefs, principles, actions, and roles as teachers. The two teachers in the qualitative study valued the guided reflection process, including the card sorting activities that encouraged more structured and focused reflection.

Research also supports the use of peer collaboration during reflection as a means to promote teacher professional development and to support instructional improvements (Yost et al., 2000). For example, Pugach and Johnson (1995) successfully utilized a four-step peer collaboration process to improve teaching and learning conditions in 88% of the problematic situations discussed during structured dialogue sessions, noting a reduction in office referrals, an increase in teacher's confidence in classroom management skills, and more positive teacher attitudes toward teaching in general and in working with struggling learners. Their study highlighted the fact that teachers' expertise and ability to support one another have been overlooked in solving many of the problems teachers and schools face.

## Using Student Perceptions to Inform Teacher Reflection

“Only recently have many policymakers and practitioners come to recognize that—when asked the right question, in the right ways—students can be an important source of information on the quality of teaching and the learning environment in individual classrooms” (Bill and Melinda Gates Foundation, 2012a). Student evaluations of teachers can provide timely, practical feedback that can inform teacher reflection of instruction effectiveness (Weller & Weller, 2001). In international settings, positive instructional change has been initiated by students’ genuine input into the quality of their learning experiences (Manefield et al., 2007; Prior, 2011), and no reason exists why this cannot occur in United States’ classrooms, especially if students are viewed as partners in the educational process. To state it bluntly, if teachers and students are not partners in day-to-day learning and instruction, then learning and instruction are not effectively executed in the classroom.

However, teachers are sometimes unreceptive to using student feedback to improve instruction, especially those who perceive the classroom as a teacher-centered space where education is delivered to, not constructed with, students (Brown, 2003). This traditional, *tabula rasa* approach to instruction effectively blocks students’ input and active participation in the educational process, sometimes without the teachers’ realization. Other teachers fear negative repercussions when students are allowed to provide feedback regarding what goes on in the classroom, such as being threatened with disciplinary action due to noncompliance with administrative demands unrelated to teaching (Weller & Weller, 2001). Indeed, researchers have reported that the subjective nature of student evaluations often reduces them to teacher popularity contests and often more accurately reflects the student’s level of performance, for better or worse, in the classroom (Ginsberg & Berry, 1990; Murphy, 1987; Popham, 1988). In

addition, the (im)maturity level of the students as well as their lack of knowledge about quality teaching practices in the content areas also works against teachers' fair evaluations by students (Haefele, 1980; Weller & Weller, 2000). However, these concerns can be addressed through the ways in which student feedback is collected, the kinds of questions they are asked, the ways in which their feedback is shared with teachers and administrators, and teachers' intentional use of that feedback to improve instruction.

Research also supports the use of student evaluations, especially when they are used as one component of a multidimensional approach to measuring teacher quality. Weller and Weller (2000) suggested that students should focus evaluative feedback on teaching skills only, and they further advocate for teachers' confidential use of student feedback with administrators only gaining access after the teacher grants permission. Popham (1988), on the other hand, promoted student feedback regarding teachers' interpersonal skills and ability to establish and maintain positive relationships with students—topics about which students can report on with confidence. Regardless of the focus of the feedback, students need to be knowledgeable and appropriate judges of what they are being asked to judge (Cangelosi, 1991). Sarah Brown Wessling, 2010 National Teacher of the Year, stated:

[The students] are the experts about what goes on in the class. Even if I intended it to come out one way, if that's not how they perceive it, that's not reality. Certainly, students also bear responsibility for that reality, but their perception is our reality. So, my intentions are not as important as their expertise (Bill and Melinda Gates Foundation, 2012c, p.1).

When student feedback is solicited through well-devised instruments or other means, invaluable information for improving teaching and learning can be gained.

Students with gifts and talents often feel a more urgent need than their non-gifted peers to verbalize their learning preferences and needs as well as their beliefs and experiences with their teachers (Chae & Gentry, 2011; Gentry, Peters, & Mann, 2007; Knight & Becker, 2000; Prior, 2011), and experts in the field encourage teachers of students with gifts and talents to allow student participation in instructional decision making (Hughes, 1999; Kanevsky & Keighley, 2003; Prior, 2011; Van Tassel-Baska & Johnsen, 2007). However, Vialle, Ashton, Carlson, and Rankin (2001) observed disparate notions among students with gifts and talents and their teachers regarding students' need for differentiation in the classroom and noted that decisions to accelerate students with gifts and talents were sometimes made for administrative reasons rather than for gifted students' need for it. When students with gifts and talents provide feedback regarding instruction and learning, practical, visible alterations in instruction based on the teachers' expertise and agreement must be experienced by students. Otherwise, students with gifts and talents quickly realize that their opinions, feelings, and perceptions are not taken seriously, and they stop providing valuable feedback. Teachers need this feedback to create learning environments that truly meet the teachers' and the students' educational needs. And if this can occur in gifted classrooms, it can surely be replicated in all classrooms, thereby improving instruction and learning outcomes for all students (Fisher & Frey, 2012).

### **Specific Motivational Constructs of Interest in This Study**

Motivation in the classroom has been an important topic for educators and educational researchers for many decades. Seminal studies that have moved thinking forward in this area include Bandura's (1977, 1997) self-efficacy theory and Brophy's (1981) role of teacher praise. Early psychological researchers, however, examined motivation independently, without an intimate connection to learning or the thinking processes involved in learning (Resnick &



Klopfer, 1989). In much of this research, adult perspectives and perceptions are highly influential and definitive, driving much of what we know about student motivation. Since the 1980's, however, researchers have been analyzing the role of motivation in thinking and learning (see Dweck & Elliot, 1983, achievement motivation theory; Eccles, 1983, value beliefs; Pajares, 1996b, self-efficacy beliefs; Weiner, 1986 & 2004, attribution theory), the value of constructing meaning with others as opposed to in solitude (see Ames, 1992, goal orientations; Resnick, 1987, thinking curriculum; Deci & Ryan, 1985, self-determination theory) and the students' perspectives about what is motivating to them (see Csikszentmihalyi & Rathunde, 1993, emergent motivation theory).

Motivation research was later applied to the field of gifted education (see Chan, 1996; Dai, Moon, & Feldhusen, 1998; Pajares, 1996a; Ziegler, Heller, & Broome, 1996) and the students' voice became more prominent in teacher decision making (see Gentry, Rizza, & Owen, 2002; Gentry & Owen, 2004; Malpass, O'Neil, & Hocevar, 1999; Pope, 2001). Because the field of gifted education purports a more student-centered approach, teachers of students with gifts and talents began to differentiate content, process, and product based on information they obtained from their students through test results, interest inventories, learning preference profiles, and other assessment strategies. This kind of traditional differentiation is appropriate and effective; however, another method of differentiation exists—a more student-centered form that differentiates content, process, and product in more meaningful and motivating ways for the purpose of more fully engaging students in the learning process (Gentry, 2014). Through differentiation that highlights appeal, challenge, choice, meaningfulness, and academic self-efficacy in content, process, and product, “teachers turn the learning back over to the students and help [them] take responsibility for their own learning” (Gentry, 2014, p. 174). In some ways,

student-focused differentiation is quicker and potentially easier to implement, yet it can accomplish much.

Because teacher reflection is often a solitary activity, reflecting with students (in person or with student feedback in another form) and/or with another education professional may be more productive and meaningful. Few studies, however, have compared teachers' and students' perceptions in the same study, and even fewer explore how teachers can use this information to inform their reflection about instructional improvements. This study extends prior research (Chae & Gentry, 2007; Gentry & Owen, 2004; Gentry & Springer, 2002) that highlights adolescent students' perceptions about motivational constructs that contribute to classroom quality. Each construct contributes to different components of motivation, and, taken together, they relate to the overall quality of classroom instruction. The five constructs of interest in this study are discussed briefly below. Because this study utilized a proven instrument that yields valid and reliable results, the *Student Perception of Classroom Quality* survey (SPOCQ; Gentry & Owen, 2004) provided the operational definitions for each construct, as stated below. The constructs were similarly defined in the *Teacher Perception of Classroom Quality* survey (T-POCQ; Seward, 2016); survey items were reworded from the teacher's perspective to closely align with SPOCQ items. In short, the T-POCQ was constructed as a partner assessment to SPOCQ.

**Appeal.** The motivational concept of appeal involves several cognitive and affective elements, such as interest, engagement, enjoyment. Educational thought and research focusing on the idea of student interest most accurately informs this discussion of appeal since researchers for over a century suggest that interest is prerequisite to learning; without interest, little motivation exists and classroom performance suffers (Csikszentmihalyi, 1990b; Deci & Ryan, 1985; Dewey, 1916; Renzulli, 1978; Schiefele, 1991; Whitehead, 1929/1967). A. Harry Passow,

the Jacob H. Schiff Professor Emeritus of Education at Teachers College, Columbia University, reflected on one of his most memorable teaching events, “I did what a good teacher of the gifted does by guiding him to use his ability to explore his interests as deeply as possible” (Kirschenbaum, 1998, p. 198). Clearly, interest or appeal is highly individual and motivating; when activated and guided by the teacher, significant learning can occur.

In his book *Interest and Effort in Education* (1913), Dewey suggested that interest is dynamic (as active involvement with an object), objective (in relation to specific concern or affair), and personal (of value to the individual). Interest “simply means that a person has identified himself with, or has found himself in, a certain course of action” (p. 43). Dewey emphasized the moral obligation of the teacher to combine interest with purposeful effort for meaningful learning to occur. Schiefele (1991) further defined the role on interest in education, stating that interest is content-specific, related to cognitive theories of learning, directed by students’ choices, unrelated to personality attributes, and influenced by domain-specific instructional quality. Schiefele’s hypothetical model of causal relations (1991, p. 315) clearly exalts interest as a key cognitive and affective influencer in a student’s depth of comprehension, use of learning strategies, and emotional involvement in the learning process.

At the same time, Renninger (1992), who acknowledged that previous interest research often focused on typical groups of students performing typical tasks in typical settings, highlighted individual interest through the individual’s level of involvement in learning experiences and how this interaction helps us understand variations in motivation in the classroom. By examining interest at the individual level, Renninger posited that interest is a psychological state that involves the “particular relation of the individual in engagement with the play object/task, relative to the other activities with which he or she engages” (1992, p. 362). In

this view, interest is related to an individual and to an object or activity, but it is not found in either alone; interest is found in their interaction.

Today, researchers grapple with various conceptualizations of interest, although Dewey's, Schiefele's, and Renninger's conceptions remain strong. For example, neuroscience researchers assert that interest stimulates the reward centers of the brain, thus providing a physiological component for this important construct (Renninger & Hidi, 2011). Student "passion" for a topic is seldom fostered in K-12 education; researchers recently found that traditional school climates suppress passion, especially among gifted youth who often feel bored and unchallenged (Fredricks, Alfeld, & Eccles, 2010). These researchers purport that gifted youth who are grouped with and supported by similarly able and motivated peers and who are taught by enthusiastic teachers who provide complexity and appropriate challenge in purposeful learning tasks are more likely to experience passion in the classroom. Based on the above discussion, interest or appeal plays an unquestionably important role in meaningful learning and effective instruction. For a review of recent research on interest, see Renninger and Hidi (2011).

In this study appeal means that the teacher creates satisfying, pleasant learning experiences and typically incorporates students' interests. Within a learning context that is safe, interesting, and enjoyable, the teacher fashions an environment that often reflects students' preferences for topics and activities and is positively engaging (Gentry & Owen, 2004). In addition to incorporating students' interests, student-focused differentiation by appeal can be accomplished through laughter, humor, and opportunities for all (including the teacher) to share their interests (Gentry, 2014). SPOCQ items that measure this construct are found in Table 1.

**Challenge.** Not surprisingly, challenge is a frequent concern for students with gifts and talents, parents, and educators. Indeed, underachievement is fostered by long-term,

Table 1

*SPOCQ Items Measuring Appeal*

Item #	
3	I find the contents of my class interesting.
9	The assignments for this class are interesting.
19	The material covered in this class is interesting.
20	The instructor provides examples of how the material relates to society and daily living.
25	I look forward to learning new things in this class.
26	I find class content pleasurable.
31	I like going to my class each day.

unchallenging learning environments (Davis, Rimm, & Siegle, 2010; Rimm, 2003). Challenge is highly individualistic as it relates to both the cognitive and emotional needs of the student. With too much academic challenge, students become frustrated or anxious and may avoid the learning task; with too little academic challenge, students become bored and may find other less productive ways to spend their learning time (Csikszentmihalyi, 1990a). Exposing students to appropriately advanced curriculum and learning strategies promotes academic achievement regardless of any educational barrier(s) that might exist (Swanson, 2006). Teachers' expertise in pre-assessment for prior knowledge, readiness, interest, and learning profile and in differentiating instruction based on the results of these assessments is paramount (Tomlinson & McTighe, 2006).

Vygotsky's ZPD (1962, 1978) provides guidance for the teacher who differentiates content and instruction to provide an appropriate amount of challenge that will lead to optimal learning for each student. Because students are motivated by appropriately challenging tasks (i.e., those that are moderately difficult), lack of or overabundance of challenge will stagnate intellectual development and hinder persistence and motivation (Brophy, 2004; Gentry & Owen, 2004; Turner & Meyer, 2004). High-challenge tasks, tasks characterized by open-endedness with

multiple plausible responses or solutions, prolonged effort, and collaboration, tend to motivate students as well (Kear, 2009). Interestingly, high challenge incorporates other motivational constructs, including appeal, choice, and academic self-efficacy. However, teachers must consider students' affective and social readiness for highly open-ended learning tasks and provide support as needed. Even high achieving students may struggle with these high-challenge tasks due to fear of failure and of not living up to their own or others' expectations (Dai, 2000). Providing appropriate challenge is not easy, but the need for daily, individualized challenge is clearly needed for all students to learn something new every day (Rogers, 2007).

In this study, challenge is defined as engaging students in optimal learning experiences that incorporate rigor, depth, and complexity based on individual student needs (Gentry & Owen, 2004). Student-focused differentiation by challenge includes offering the opportunity to do fewer but harder problems, throwing away the rubric and providing minimum requirements instead, and beginning in the back of the book (Gentry, 2014). Table 2 contains SPOCQ items that measure this construct.

Table 2

*SPOCQ Items Measuring Challenge*

Item #	
4	I find class time instruction appropriately challenges my intellectual abilities.
8	I find my class assignments a good challenge.
11	I learn best when I am challenged.
15	This class content is an appropriate challenge for me.
18	I like the challenge of the projects in this class.
27	I use my critical thinking skills in my class.
33	I like the way my teacher challenges me in this class.

**Choice.** “Without the student making the choice to learn, no learning can occur” (Prior, 2011, p. 124). Over 100 years ago, John Dewey (1916) encouraged teachers to motivate students

through choice, and its usefulness in planning meaningful educational experiences has not waned over time. For example, William Glasser (1996) developed Choice Theory, a comprehensive, applied theory promoted in schools, businesses, and counseling offices. The basic premise of Choice Theory is that people choose their own behavior based on their need for autonomy, freedom, power, and fun. In a school context, teachers can motivate students to achieve and behave appropriately when they recognize and intentionally construct learning experiences that will meet these needs. Interestingly, one of the GERI teachers who participated in this study stated, “When it comes to choice, that’s pretty much what my first master’s degree is in. It’s differentiated instruction and it’s focused on William Glasser’s idea of choice” (Teacher H, p. 4). Other researchers suggest that autonomy, intrinsic motivation, and self-regulated learning are enhanced when student choice is promoted in the classroom (Deci, 1995; Pintrich & DeGroot, 1990; Ryan & Deci, 2000). When choice is not promoted, students may make the choice not to learn. For example, a mother in the Young & Balli (2014) study commented, “When Shawn asked his teacher if he could do a PowerPoint for his project instead of the poster, his teacher let him have full rein and there were no parameters. But, the last class he was in, the kids had to do it a certain way and if they didn’t do it that way, then they were wrong. It wasn’t a good year for Shawn” (p. 240). Csikszentmihalyi, Rathunde, and Whalen (1993) proposed that students’ perception of the choices they are afforded in the classroom leads to personally rewarding behaviors that promote learning or personally demoralizing behaviors that undermine learning.

In this study, choice means giving students the right or power to select educational options that matter to them, thereby directing their own learning (Gentry & Owen, 2004). Student-focused differentiation highlighting choice includes allowing students to choose content,

products, audiences, ways of presenting what they know and ways of working—alone or collaboratively (Gentry, 2014). Choice is measured with the SPOCQ items listed in Table 3.

Table 3

*SPOCQ Items Measuring Choice*

Item #	
1	I am given choices regarding how to show the teacher what I have learned.
5	My teacher lets me choose the resources I use for projects.
6	When there are different ways to show what I have learned, I can usually pick a good way.
12	I am given lots of choices in my class.
16	I feel responsible for my learning because I am allowed to make choices in my class.
17	The teacher uses a variety of instructional techniques that make this class enjoyable.
22	I am encouraged to pursue subjects that interest me in this class.

**Meaningfulness.** “Why do I have to learn this?” and “Are we ever going to use this?” are questions students ask themselves or their teachers more frequently as they progress through school. Relating curriculum content to students’ daily lives helps students to understand why learning particular content is important and worthwhile. Further, educator’s intentional and meaningful involvement of students in instructional design will create a highly motivating classroom and school climate. Learning experiences become more meaningful to students when they are afforded the opportunity to choose or develop their own learning approach to course content. Matsko and Thomas (2014) utilized a student-developed, problem-creation approach to teaching concepts in math and found that students with gifts and talents made meaningful connections to personally significant experiences. Incorporating student voice and affording autonomy to students in the classroom have their roots in Piaget’s (1964) cognitive development theory where prior knowledge is modified and extended (i.e., accommodated) based on new information and experiences and in constructivist learning theory (Bruner, 1966) where teachers and students share the responsibility of education, acting together to create and direct personally



meaningful learning experiences (Prior, 2011). In short, infusing curriculum, teaching, and learning with authentic connections to students' lives and with meaningful opportunities for students to participate in the educational process will motivate students and enrich their learning experiences.

In this study instruction is meaningful when learning activities are relevant to and important in the students' daily lives, and students make practical connections to topics worth caring about (Gentry & Owen, 2004). Meaningful, student-focused differentiation strategies include students' direct involvement in instructional decision making and in community service, service learning, and other meaningful community-based experiences (Gentry, 2014). SPOCQ items that measure meaningfulness are listed in Table 4.

Table 4

*SPOCQ Items Measuring Meaningfulness*

Item #	
7	The teacher applies the lessons to practical experiences.
10	My teacher makes connections between the course material and society.
13	In my class my teacher relates current issues to the material we are learning.
24	In my class I explore real issues that affect the world around me.
29	I can relate the material discussed in my class to my daily life.

**Academic self-efficacy.** Academic self-efficacy is arguably one of the most important motivational constructs in this study. What students believe about their ability to perform and the degree to which they will achieve success in relation to those around them affects the amount of interest they invest, the level of challenge they are willing to assume, the choices they make about their actions, and the meaning or value they attribute to the learning task. Bandura (1997) proposed a causal link between an individual's self-efficacy beliefs and their behaviors that relate to those beliefs. For example, an adolescent male who lacks confidence in his ability to

write a persuasive speech and believes he will make a fool of himself in the delivery of it, will hold low self-efficacy beliefs that hinder his effort toward and ability to achieve at this task to the level he desires. Pintrich and DeGroot (1990) identified self-efficacy as one of the best predictors of classroom academic performance, noting that self-efficacy was also positively correlated to cognitive engagement in a learning task. More recently, research has suggested that what students think about their abilities to perform influences the learning strategies they employ to engage in learning tasks; in turn, this determines their levels of current and future academic achievement (Covington, 2000; McInerney, Cheng, Mok, & Lam, 2012; Watkins, McInerney, Akande, & Lee, 2003; Watkins, McInerney, Lee, Akande, & Regmi, 2002).

Over the last 50 years, studies in achievement motivation have highlighted three motivational components—mastery and performance goal orientations, task valuations, and competence beliefs (Atkinson, 1957; Bandura, 1997; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). Taken together, these relate directly to a student's academic self-efficacy in any given situation. For example, the adolescent male mentioned above may enjoy and have advanced skills in drawing anime. The wise speech teacher might apply elements of anime and of drawing to the persuasive speech writing and delivery task, likening the visual elements of anime that evoke certain feelings or ideas to the affective elements of persuasive speech. Further, the teacher might suggest that the student create an anime character that symbolizes the speech's topic, including the emotions attached to it. In this way, the student will likely feel more capable as he is channeling his efficacy in one area to bolster it in another, and he may even choose to use his drawing as a prop to enhance his persuasive speech and improve his achievement level on this task.

In this study, academic self-efficacy is enhanced when teachers promote students' confidence in classroom performance and ability to achieve (Gentry & Owen, 2004). Because academic self-efficacy affects all our students do (or don't do and everything in between) in the classroom, wise teachers will incorporate appropriately challenging, student-directed, and personally meaningful learning experiences that build confidence and support high achievement, preferably in the student's area of interest. Examples of this kind of student-focused differentiation include offering students choices concerning due dates and facilitating classroom discussions that include metacognition (Gentry, 2014). Table 5 contains SPOCQ items used to measure this important construct.

Table 5

*SPOCQ Items Measuring Academic Self-Efficacy*

Item #	
2	I'm good at helping other kids understand concepts.
14	I am good at connecting material from this class with the real world.
21	I am good at answering questions in this class.
23	It is pretty easy for me to earn good grades.
28	I'm good at taking tests in this class.
30	I can easily understand assignments for this class.
32	I can usually discover interesting things to learn about in this class.
34	I can express my opinions in this class.

These five constructs relate directly to students' achievement gains or losses and other important educational outcomes, such as satisfaction with school and motivation (Gentry & Owen, 2004). In other words, students who assess the quality of their classrooms as high are likely eager to attend class, complete assignments, and participate in learning. Even though students do not have the pedagogical expertise of their teachers or an academic understanding of the learning process itself, they do perceive whether they are motivated to learn. Matsko and Thomas (2014) stated, "Motivation may be understood as a process that begins with initial

engagement and moves toward sustained engagement and self-regulated strategies” (p. 155). In the context of the classroom, teachers foster independent, purposeful learning when they spark students’ interest in the content and create subsequent learning experiences that intentionally connect the student’s interests, ability, and learning needs with that content. The results are intrinsically motivated students, widespread academic achievement, and highly satisfied teachers.

## CHAPTER 3. METHODS

The purpose of this applied research study was to examine the usefulness of students' perceptions of motivational constructs to improve the quality of teachers' intentional reflection with a supportive peer on improving instruction. The following research questions guided the study:

1. How do gifted students' perceptions of the motivational techniques used in instruction compare with their teachers' perceptions as measured by parallel surveys?

2. How can the survey data be used to inform teacher reflection on the motivational components of instruction? Three related questions were also examined to support further analysis:

2a. What differences, if any, exist among teachers' individual motivation profiles based on years of teaching experience in GERI's Summer Residential (Residential) program, years of teaching experience in other settings (e.g., K-12 schools, college), years of teaching students with gifts and talents in any setting other than GERI, and amount of training in gifted education?

2b. For those teachers whose motivational profiles show discrepancies between students' and teachers' perceptions of the motivational techniques used in instruction, how can using their students' perceptions in guided reflection interviews with a knowledgeable peer affect the quality of that reflection and lead to probable instructional improvement?

2c. How do GERI staff members' evaluation of teachers' motivational techniques through two classroom observations corroborate students' perceptions and/or teachers' perceptions?

### **Research Design**

Through an explanatory, sequential, mixed-methods design, students with gifts and talents and their teachers completed parallel surveys to gather their perceptions of the motivational aspects of instruction in use during their Residential classes. Survey results were used to create teacher motivational profiles that depicted mean scores of the appeal, challenge, choice, meaningfulness, and academic self-efficacy for teachers and their students. These profiles allowed the teachers to easily compare their T-POCQ mean scores to their students SPOCQ mean scores during the reflective interview. Motivational profiles and observational data were then discussed with selected teachers in a guided reflection interview to explore the value of including student perceptions in reflection on instructional improvement. This study is sequential in that qualitative data collected through interviews and quantitative data collected through teacher and student surveys were collected and analyzed at different times. I analyzed the quantitative survey data first to look for patterns and interesting perceptual comparisons and used this analysis to select teachers for the qualitative interviews. Finally, I integrated the quantitative data and the teacher observation data into the guided reflection interviews (Johnson & Onwuegbuzie, 2004) to inform teachers' reflections. Specifically, quantitative data (SPOCQ & T-POCQ results) were first collected, analyzed, and used alongside demographic data to select ten teachers who would take part in qualitative interviews that solicited their feedback regarding the inclusion of students' perceptions in reflection. Incorporating the quantitative survey results in the qualitative reflection enhanced the level of understanding of the motivational components

of instruction and potential improvements for each individual teacher (Cresswell, 2014). In addition, the inclusion of quantitative data in the guided reflection interviews assisted in determining the utility of including students' perceptions in teacher reflection. By combining quantitative and qualitative methods in this study, the strengths of each can be optimized and the weaknesses can be minimized (Johnson & Onwuegbuzie, 2004).

**Theoretical framework.** Constructionism and pragmatism provided the philosophical underpinnings and development of this mixed methods study.

*The role of constructionism.* Because this study highlights a qualitative approach to research, constructionism plays a major role. The constructionist worldview professes that meaning is constructed through our interaction with our world, encompassing both objective and subjective experience (Crotty, 1998). Three assumptions frame this philosophy (for more on these assumptions, see Crotty, 1998). First, as stated above, meaning is constructed individually and collectively (i.e., social construction) through openness to our own and others' experiences in and interpretations of the world. Second, meaning is highly influenced by individuals' cultural, historical, and social points of view; thus, understanding participants' interpretations is vital, as is understanding how my interpretations influence all aspects of the research process. Finally, meaning is constructed socially through a primarily inductive process that synthesizes multiple sources of information (Crotty, 1998). In this study, the teachers and I constructed the meaning and value of reflection that includes student perceptions of appeal, challenge, choice, meaningfulness, and academic self-efficacy during the guided interview.

*The role of pragmatism.* While the constructionist philosophy provided the justification for the qualitative component, the pragmatic worldview guided the overall research approach in this mixed-method study. The pragmatist's "logic of inquiry includes the use of induction (or

discovery of patterns), deduction (testing of theories and hypotheses), and abduction (uncovering and relying on the best of a set of explanations for understanding one's results)" (Johnson & Onwuegbuzie, 2004, p. 17). Pragmatism not only provided the best approach for answering the research questions in this study, but it also allowed me to combine quantitative and qualitative data in ways that inform the other, providing for a fuller, more useful construction of meaning.

In this study overall, I attempted to help the teachers to better understand motivation through the concepts of appeal, challenge, choice, meaningfulness, and academic self-efficacy. Their understanding (as well as my own) would be informed or illuminated by including and considering their students' perceptions, measured by quantitative means and in a similar fashion as their own perceptions. Teachers would then examine their philosophical positions of motivation through reflection in guided interviews and formulate next steps that would improve the motivational quality of their instruction. As a result of this reflection, the teachers would arrive at a fuller meaning of motivation by examining the consequences of their motivational teaching styles through their own and their students' eyes. This is the essence of pragmatism—"a practical and outcome-oriented method of inquiry that is based on action and leads, iteratively, to further actions and the elimination of doubt...[It] takes an explicitly value-oriented approach to research" (Johnson & Onwuegbuzie, 2004, p. 17). Ideally, teachers who were informed about their students' perceptions and how they compared to their own perceptions would learn to value their students' feedback and use their new understanding to make modifications in the motivational components of instruction with more confidence than when relying on their perceptions alone.

**Participant and Researcher Roles.** The teachers who participated in the guided reflection interview were presented with information that had the potential to compel them to



redefine their perceptions of the motivational components of their classrooms—a new perspective on their lived reality of the classroom. Similarly, my role as investigator in this worldview forced me to keep my own beliefs regarding the value of students’ perceptions to improve instruction at bay and to remain open to new, richer understandings of the phenomena under study here. Further, the social construction of meaning in this study involved synthesizing teachers’ and the students’ perceptions measured by the surveys and reflective interview data with my own prior knowledge, beliefs, attitudes, cultural experiences, and perceptions in recursive, reflective acts of meaning making.

***Researcher context.*** As an educator with over 20 years in the field, I have shared the burden of many colleagues who have felt overly scrutinized by a public untrained in education and who have been wrongly evaluated by standardized test results meant to tell us far more about the academic achievement of our students than about our performances as educators. Teachers are constantly seeking best-practice solutions to this problem, whether these so-called solutions have been studied or proven in practice. Sadly, this leads administrators and educators to follow faddish, entertainment-oriented “teaching” practices that have not been shown to result in prolonged and positive student achievement or, worse, that have not been studied at all (Harwell, 2003; National Staff Development Council, 2001). This pragmatic study was rooted in practice and in what works in this particular research setting. It was undertaken to examine the usefulness of student feedback, specifically, student perceptions of the motivational components of instruction, to teachers’ reflection with a knowledgeable, supportive peer on the quality of instruction. It makes sense that the students have as much to say about these components than the teacher involved in the educational transaction; students are the receivers of instruction and constantly judge its effectiveness, for better or for worse. Teachers who incorporate these

judgments into their reflection on instructional effectiveness construct new understandings about what transacted in the classroom and generate new solutions that may not have been thought of with reflection that did not include the students' perceptions. In addition, my role as a knowledgeable, supportive peer focused the reflection on the motivational components of instruction (as opposed to the content of the courses) and facilitated the teachers' idea-generating for instructional improvement.

The use of quantitative data in subsequent qualitative interviews provided a more credible source of information for teachers to reflect upon for two reasons. First, the two quantitative instruments were parallel in content and construction; the T-POCQ was created for this study as a modified teacher-oriented version of the SPOCQ. This allowed for common definitions and systematic measurements of the important motivational constructs (appeal, challenge, choice, meaningfulness, and academic self-efficacy) central to this study; these constructs were described almost verbatim in each item across the two instruments. In this way, teachers were not able to disregard students' perceptions based on the assumption that students must have defined the constructs differently when discrepancies arose. Second, quantitative results provide more objective, solid information that teachers could put more trust in than simply collecting students' comments about the motivational components of the classroom in a less standardized way. For example, teachers might be tempted to just "explain away" students' subjective comments about appeal or level of challenge without "taking them in," engaging with them, and incorporating them into their own understanding of the particular situation. Finally, adding the teacher observation data during the guided reflection interviews strengthened the teachers' analysis of the quantitative results as they wrestled with the new information and constructed new meanings from it. In the interviews, I could address the research questions directly and hear

the teachers' perspectives, including the meaning they attributed to including the students' perceptions in their reflection.

### **Setting and Locations of Data Collection**

**Summer enrichment programming for students with gifts and talents.** Students with gifts and talents often participate in university-based summer enrichment programs to supplement the regular school curriculum. The many benefits of these programs include living and studying on a college campus for a few days or for several weeks, developing friendships with like-minded peers, increasing skills in a self-selected talent area, and developing independence (Pereira, Jen, Seward, & Tay, 2016). Purdue University's GERI hosts Residential academic enrichment programs for Comets (5th and 6th graders), Stars (7th and 8th graders), and Pulsars (9th through 12th graders) from the United States and several other countries (Pereira et al., 2016). These all-inclusive camps were designed to meet gifted students' needs for autonomy, competence, and relatedness through challenging, engaging enrichment classes during the day and small group discussions and friendly competitions at night.

The conditions that exist in a summer enrichment setting obviously differ from traditional school settings, but these differences create a unique setting that demands high-quality pedagogical practice to meet the expectations of the students with gifts and talents who attend. Because learning is the goal of all educational endeavors, these motivational practices can provide inspiration for all teachers regardless of setting as they strive to create learning environments that are foster autonomy, competence and relatedness through appeal, challenge, choice, meaningfulness, and academic self-efficacy.

The first difference involves students' choice to attend summer camp and select classes that they, assumedly, are already highly interested in or curious about; they cover topics of

interest to youth that are not generally addressed in the regular school curriculum, such as *3-D Geometric Design in Math* or *Toy Design in Mechanical Engineering*. This initial condition implies the existence of the motivational constructs of appeal, choice, meaningfulness and academic self-efficacy. Second, the summer classes are challenging and enrichment-oriented, usually exploring content more deeply through purposeful, hands-on activities. The primary motivational construct implied here is challenge, while elements of appeal and meaningfulness are also present. Third, GERI's summer enrichment programs are student-centered learning environments. We encourage teachers to pre-assess their students academically and to get to know their students on a personal level. The first class meeting (a shortened evening session prior to the first full day of camp) is provided for the purpose of acquainting students to the content, the instructor, and to one another. Teachers typically assess (formally or informally) students' content knowledge as well as their interests and learning preferences. Fourth, students' expectations about a summer academic camp experience versus their regular school experiences are markedly different, especially with regard to the motivational aspects of the camp. Many characteristics of summer camp highlight this difference in expectations—the students do not receive a grade for their classroom performance (no tests or homework); attend classes designed by expert teachers for active, project-based, higher-level learning experiences; and hang out with other high-ability students. Situating this study in this unique educational setting with high-ability students and teachers magnifies the motivational components of instruction and helps us to understand the relationship between student and teacher perceptions more fully. SPOCQ serves to give a voice to the students and may be used for multiple purposes, such as informing school-improvement studies and educators' goal setting and growth (Gentry & Owen, 2004).

Summer enrichment classrooms should also be considered as appropriate settings for the use of this instrument.

**Residential course selection.** GERI's Residential program features multi- and cross-disciplinary enrichment courses in students' areas of interest at each of the three levels. Because Comet students attend Residential for only one week, one course is selected; whereas, Star and Pulsar students, who stay for two weeks, select one morning course and a different afternoon course. Regardless of the level, all campers receive thirty hours of instruction and enjoy small class sizes (ranging from 8 to 18 students) in which individualized instruction takes place and relationships among teachers and students grow (Pereira et al., 2016).

## **Participants**

GERI teachers and a national and international, ethnically diverse sample of high-ability adolescents in grades 5 – 12 who attend GERI 2016 Residential programs participated in this research.

**Residential students.** The students in this study ( $n = 306$ ) applied to the GERI Residential program by completing an application form and by providing 2 academic qualifying documents (described below). Along with the program application, high-ability students submitted a personal essay or multimedia presentation in which they discussed their course selections and elaborated on how they will contribute to and be impacted by their participation in camp. Two of the following five forms of documentation were required as evidence that students qualified academically for Residential:

- Student grade transcript showing a GPA of 3.5/4.0 in the talent area related to the applicant's choice of GERI class(es).
- Official individual or group intelligence test results with a minimum score of 120.

- Official national or state achievement or aptitude test results at or above the 90th percentile in a specific area of study.
- Recommendation letter from a teacher or mentor in the talent area.
- Documentation of involvement in the talent area, such as awards, certificates, service, or recognition letters documenting involvement (Pereira et al., 2016, p. 131).

Two sessions of each program level (Comet, Star, and Pulsar) were offered, resulting in over 400 students in attendance over the course of the summer. For more information about GERI Residential, refer to Pereira et. al., 2016. Demographic information for the 306 students who participated in the study are recorded in Table 6.

**Residential teachers.** Residential teachers often return year after year as long as their performance in previous years has met GERI standards for quality and rigor and their course content continues to interest students (Pereira et al., 2016). New teachers submit a program application, course proposal, and letter of recommendation. GERI staff review these documents before new teachers are invited to a formal interview. Two GERI staff members conduct the interview and must be in agreement for the new teacher to be hired (Pereira et al., 2016).

During the 2016 residential program, GERI employed 31 teachers. Seventeen were returning teachers and fourteen were first-time GERI teachers. Of these 31 teachers, 39% were women and 61% were men. Ten were K-12 teachers (practicing, retired, or now otherwise employed), five were Purdue professors, and 16 were Purdue graduate students. All were experts in the content they taught. From this group of 31 teachers, 23 agreed to participate in the study. Of the 23 participants, 11 (48%) had education degrees and seven (30%) had experience teaching

students with gifts and talents prior to teaching for GERI. In addition, only five (22%) of the 23 teachers had any kind of training in gifted education (see Table 7).

From the group of 23 teachers, a purposive sample (Patton, 1987) was selected for reflective interviews based on their demographic information and motivational profiles. In particular, teachers whose demographic information and motivational profiles that compared SPOCQ and T-POCQ means were markedly different from the rest of their demographic group and/or who had motivational profiles that showed discrepancies between students' and teachers' perceptions of the motivational techniques used in instruction were identified as potential candidates for the reflective interviews. Even though all teachers who participated in the study received feedback regarding their motivational profiles in written form, ten teachers were selected for the reflective interviews. These ten teachers represented certain demographic groups with one teacher selected from each of the following groups. Two teachers were selected from the ninth group; they represented experienced K-12 teachers who have an interest in teaching for GERI (based on the number of summers they taught in the program) but seemingly do not have an interest in certification in Gifted, Creative, and Talented Studies. I was interested in how they responded to their Residential students' perceptions of the motivational aspects of their instruction:

- 1) teachers with one to two summers of GERI teaching experience but no other K-12 teaching experience,
- 2) teachers with one or two years of K-12 teaching experience in any setting,
- 3) teachers with three or more years of K-12 teaching experience in any setting,
- 4) teachers with one or two years of teaching students with gifts and talents in any K-12 setting other than GERI,

- 5) teachers with three or more years of teaching students with gifts and talents in any K-12 setting other than GERI,
- 6) teachers with no graduate level training in gifted education,
- 7) teachers with certification, licensure, M.S., or PhD in Gifted, Creative, and Talented Studies (GCTS),
- 8) teachers with six or more years of K-12 teaching experience in any setting with a Master's degree in Education but no graduate level training in GCTS,
- 9) teachers with six or more years of K-12 teaching experience in any setting with a Master's degree in Education who have taught for GERI for more than three summers but have no graduate level training in GCTS.



Table 6

*Residential Student Demographic and GERI Course Information*

Program	Grades	Female	Male	Total	Ethnicity	Courses taken
Comet	5 <sup>th</sup> & 6 <sup>th</sup>	39	41	80	5% Hispanic 15% Native American 16% African American 16% Other/No response 22% Asian 26% Caucasian	3D Geometric Design in Math Brain Teasers & Logic Puzzles Fire! Fire! Fire! Paper Circuitry The Game of Business
Star	7 <sup>th</sup> & 8 <sup>th</sup>	48	56	104	4% African American 8% Other/No response 11% Hispanic 15% Native American 22% Caucasian 40% Asian	Abnormal Psychology: Should Mickey Mouse Be Medicated? Airplane Tracking with Raspberry Pis Brain Teasers & Logic Puzzles Breaking News: Current Problems, Issues, and Events Fun with Programming Is That True? Evaluating Everyday News Though Data Leadership 101 Physics and Airplanes Rocket Science? Yes, You Can! Short Form Improv STEAM Labs STEM Problem Solving Toy Design Lab in Mechanical Engineering Vet Med Videography & Photojournalism

(continued)

Program	Grades	Female	Male	Total	Ethnicity	Courses taken
Pulsar	9 <sup>th</sup> – 12 <sup>th</sup>	30	92	122	2% African American 6% Hispanic 11% Native American 22% Caucasian 22% Other/No response 37% Asian	Active Exercise Science Anime and Manga 101 Breaking Brands Exploding Cell Phones: Deconstructing Sustainability Introduction to Engineering Design Leadership 101 Magnetism: The Invisible Force Murders That Changed History Programming and Computation Thinking Rocket Science? Yes, You Can! Serious Gaming in the Classroom Statistics Unchained: Discovering the Power of Information STEAM Labs STEM Problem Solving Videography and Photojournalism
All programs	5 <sup>th</sup> – 12 <sup>th</sup>	117	189	306	7% Hispanic 7% African American 14% Native American 15% Other/No response 24% Caucasian 33% Asian	

Table 7

*Participating Teacher Demographics*

Teacher	Highest degree held/ discipline	Gifted credential	Grade level(s) taught (K- 12)	Positions held (K-12)	No. years taught, any setting	No. years taught, gifted students	No. years taught with GERI
1	Bachelor's/Psychology	Doctoral Student	None	None	0	0	0
2	Master's/Statistics	None	None	None	0	0	1
3	Master's/Education	None	All	Elem/Middle/High school teacher	6-10 years	0	0
4	Master's/Education	Ph.D. Candidate	All	Elementary teacher	6-10 years	0	0
5	Bachelor's/Engineering	None	None	None	0	0	0
6	Master's/Education	None	Grades 2-5	Elem. teacher & administrator	3-5 years	0	0
7	Bachelor's/Behav. Science	None	PreK-1, 4-8	Elem/Middle/High school teacher	11+ years	3-5 years	0
8	Master's/Education	Certificate	Grades 9-12	Middle/High school teacher	6-10 years	6-10 years	8
9	Master's/Physics	None	PreK-K, Grade 6-12	Middle/High School teacher	1-2 years	0	1
10	Ph.D./EdPsy	Ph.D.	All	Middle/High School teacher & administrator	11+ years	11+ years	5
11	Master's/Engineering	None	None	None	0	0	0
12	Master's/Education	None	Grades 2-12	Middle/High School teacher	11+ years	6-10 years	6
13	Master's/Int'l Economics	None	None	None	0	0	0
14	Master's/Education	None	Grades 7-8	Middle/High School teacher	1-2 years	1-2 years	1
15	Master's/Engineering	None	None	None	0	0	0

(continued)

Teacher	Highest degree held/ discipline	Gifted credential	Grade level(s) taught (K- 12)	Positions held (K-12)	No. years taught, any setting	No. years taught, gifted students	No. years taught with GERI
16	Master's/Engineering	None	None	None	0	0	0
17	Bachelor's/Engineering	None	None	None	0	0	0
18	Master's/Education	None	7	Middle/High school teacher	1-2 years	0	0
19	Master's/Education	None	Grades 7-12	Middle/High school teacher	11+ years	0	0
20	Ph.D./Chemistry	None	None	None	0	0	0
21	Master's/Education	None	Grades 8-12	Middle/High school teacher	11+ years	0	3
22	Master's/Education	None	Grades 6-12	Middle/High school teacher	3-5 years	3-5 years	2
23	Master's/Education	Certificate	Grades 6-12	Middle/High school teacher	1-2 years	1-2 years	2

*Note.* Teachers who were selected for the guided reflection interviews are highlighted.

To understand differences in motivational profiles that may be related to various teacher characteristics, the final 10 teachers selected for reflective interviews were placed into pairs based on demographic data that distinguished them from other pairs (see paired sample list below and Table 8). The motivational profiles and qualitative data from the guided reflection interviews for each teacher pair were analyzed side-by-side to better understand how degree (in education or in another field), number of years teaching (in K-12 and in gifted education), and amount of training in gifted education (none to Ph.D. level) may have influenced the teachers' perceptions and their students' perceptions. However, these teachers were interviewed individually, not in pairs. The ten teachers were paired for closer analysis as follows (see Table 8 for more detailed information):

Paired Sample #1: Teachers 2 and 14 (differ in degree and number of years K-12 teaching);

Paired Sample #2: Teachers 3 and 8 (differ in gifted training, number of years K-12 teaching students with gifts and talents, and number of years teaching at GERI);

Paired Sample #3: Teachers 7 and 16 (differ in degree, number of years K-12 teaching, and number of years K-12 teaching gifted students);

Paired Sample #4: Teachers 4 and 23 (differ in gifted training, number of years K-12 teaching, number of years K-12 teaching gifted students, and number of years teaching at GERI); and

Paired Sample #5: Teachers 12 and 21 (differ in number of years K-12 teaching students with gifts and talents).

Table 8

*Demographic Characteristics of Teachers in Paired Samples*

		Paired sample				
		#1	#2	#3	#4	#5
Status--GERI Residential teaching						
	Returning	XX	X		X	XX
	New		X	XX	X	
Current Position						
	K-12 Teacher		XX	X		XX
	Professor					
	Graduate Student	XX		X	XX	
Highest Degree Held						
PhD						
	Education					
	Other					
Master's						
	Education	X	XX		XX	XX
	Other	X		X		
Bachelor's						
	Education			X		
	Other					
Training in Gifted Ed.						
	None	XX	X	XX		XX
	Certificate or equiv.		X		X	
	Adv. Degree or equiv.				X	
K-12 Teaching Experience						
	None	X		X		
	1 - 2 years	X			X	
	3 - 5 years					
	6 - 10 years		XX		X	
	11+ years			X		XX
K-12 Gifted Teaching Experience						
	None	XX	X	X	X	X
	1 - 2 years				X	
	3 - 5 years			X		
	6 - 10 years		X			X
	11+ years					
GERI Teaching Experience						
	None		X	XX	X	
	1 - 2 years	XX			X	
	3 - 5 years					XX
	6 - 10 years		X			
	11+ years					

## Data Collection Instruments

Quantitatively, a group-administration survey completed by students using the *Student Perceptions of Classroom Quality* (SPOCQ; Gentry & Owen, 2004) garnered the perceptions of students regarding the quality of appeal, challenge, choice, meaningfulness, and academic self-efficacy in their classes. A parallel instrument, *Teacher Perceptions of Classroom Quality* (T-POCQ; Seward, 2016) designed for this study, provided quantitative results of teachers' perceptions of the same five motivational constructs. Qualitatively, a guided teacher reflection interview served as the primary data source. The open-ended questions used during the interview solicited each teacher's thoughts in detail as they related to the quantitative survey results and the research questions. In addition, classroom observation data using the *Teacher Observation Form-Revised* (TOF; Peters & Gates, 2010) were collected as an additional data source during the guided reflection interviews. More specifically, in the guided reflection interviews, comparisons were made between the students' SPOCQ results and the teachers' T-POCQ results, resulting in a motivational profile for each teacher. The TOF data generated through observations by center staff were also discussed as an additional source of information by a presumably more objective source to determine whether the motivational components of instruction were observed, to further explore the motivational constructs, and provide concrete ideas regarding how these constructs may be used in instruction.

**Student Perceptions of Classroom Quality (SPOCQ; Gentry & Owen, 2004).** While many assessments exist to gauge student achievement, few instruments measure students' perceptions of the quality of their learning experiences. Students' first-hand knowledge of teaching and learning has the potential to transform their learning experiences and to bolster school improvement efforts (Prior, 2011). SPOCQ measures student perceptions of learning

experiences in relation to five motivational constructs: choice, challenge, appeal, meaningfulness, and academic self-efficacy. In the 38-item scale, thirty-four of these items relate to the five motivational constructs, and the final four items are attribution items unrelated to the five constructs. SPOCQ serves to give a voice to the students and may be used for multiple purposes, such as informing school-improvement studies and educators' goal setting and growth (Gentry & Owen, 2004). With regard to this study, SPOCQ has been used for many years to accurately and effectively assess Residential campers' classroom perceptions as part of the yearly program evaluation.

***SPOCQ validation studies.*** An initial validation study of SPOCQ was conducted with a sample of 420 ethnically diverse, urban high school students (Gentry & Springer, 2002). Scree Plots examination was conducted; this revealed four factors—appeal (a new construct that combined interest and enjoyment), meaningfulness, challenge, and choice—that had item coefficients  $> .35$  and none of the 31 Items cross-loaded at  $> .35$  (Gentry & Springer, 2002). The Factor Intercorrelation Matrix showed large correlations among the factors except challenge and appeal (.20), and alpha reliabilities estimates of internal consistency for all constructs were at .80 or greater which is notable for an instrument that measures perceptions (McCoach, Gable, & Madura, 2013). These four factors explained 89% of the total variance and aligned with classroom motivation theory (Gentry & Springer, 2002). The factors loaded in the following order with this population of students: meaningfulness, challenge, choice, and appeal (Gentry & Springer, 2002).

A confirmatory analysis of SPOCQ was conducted with 7,411 middle and high school students from across the United States and from an American school in Poland (Gentry & Owen, 2004). In this study, the authors added items to assess academic self-efficacy, bringing the



revised SPOCQ to 38 items (Gentry & Owen, 2004). Strong CFA results, including a CFI of .997, RMSEA of .051 (.90 confidence interval = .048 - .055), and standardized factor loadings with values ranging from .71 to .90 were reported (Gentry & Owen, 2004). Alpha reliability coefficients ranged from .81 to .85, and although the five constructs were highly correlated to one another (intercorrelation coefficients ranging from .565 to .735), the researchers argued that overlap among the constructs is to be expected when measuring students' perceptions of overall classroom quality (Gentry & Owen, 2004). Group comparisons between honors and nonhonors students' SPOCQ results were also analyzed; two constructs (*challenge and meaningfulness*) "were statistically significant predictors of group status" (Gentry & Owen, 2004, p. 23). Honors students found their classrooms to be more challenging and meaningful than nonhonors students, but the two groups were similar in *choice, self-efficacy, and appeal* measures. CFA item loadings for each of the five constructs based on item numbers (Gentry & Owen, 2004) are depicted in Table 9 below.

SPOCQ has since been studied in three distinct contexts. Gentry, Rizza, Peters, and Hu (2005) disaggregated the results of the 2004 CFA study and found that students' SPOCQ scores at one high school's career-technical education (CTE) center "averaged more than .5SD above the mean scores of the sample on every construct," with the overall sample comprising largely of traditional secondary schools (Gentry et al., 2005). An in-depth qualitative study and analysis of six students in each of nine CTE programs at this center, three of which (CNA, Criminal Justice, and Information Technologies) had admission criteria; of administrators and teachers; and of school-wide documentation sources revealed three major themes: professionalism, sense of community, and reason to learn (Gentry et al., 2005). These broad themes address the reasons why this CTE school rated so highly by students' SPOCQ scores. The other two contexts

involved international applications of translated SPOCQ instruments in Korea (Chae & Gentry, 2007) and China (Yang, 2012); both studies produced reliable and valid results. Overall, across school settings and cultures, the SPOCQ consistently and accurately assesses students' perceptions of classroom quality. Refer to Appendix A for a copy of SPOCQ.

Table 9

*SPOCQ Item Loadings*

<i>Construct</i>	<i>Item Number</i>
Appeal	3, 9, 19, 20, 25, 26, 31
Meaningfulness	7, 10, 13, 24, 29
Self-efficacy	2, 14, 21, 23, 28, 30, 32, 34
Challenge	4, 8, 11, 15, 18, 27, 33
Choice	1, 5, 6, 12, 16, 17, 22

**Teacher Perceptions of Classroom Quality (T-POCQ; Seward, 2016).** The T-POCQ is a parallel instrument to the SPOCQ; each of the 38 items mirrors questions used on the SPOCQ, but they are written from the teacher's perspective rather than the student's perspective. For example, SPOCQ items such as "I am given choices regarding how to show the teacher what I've learned," "The teacher applies the lessons to practical experiences," and "This class content is an appropriate challenge for me" have been reworded for the T-POCQ as "I provide choices regarding how students can show me what they've learned," "I apply the lessons to practical experiences," and "My class content is appropriately challenging for my students." Like the students, teachers rated each item on a 5-point Likert scale (strongly disagree, disagree, undecided, agree, and strongly agree). For a comparison of SPOCQ and T-POCQ items, refer to Figure 1. Refer to Appendix B for a copy of the T-POCQ.

Because this instrument was designed for this study, a draft of the T-POCQ was sent to 10 researchers in gifted education who were also familiar with summer youth programs and to

six teachers who had previous GERI Residential teaching experience. These experts were charged with evaluating the content validity of the instrument by focusing on word choice and meanings and by judging how well the items aligned with GERI Residential teaching experiences. Feedback was used to revise the T-POCQ prior to its use in the study. Because the T-POCQ was constructed from the teacher's perspective with items parallel to SPOCQ, an instrument that has yielded reliable and valid data in numerous studies, validation studies were not conducted prior to its use in this study due to the small number of teachers who responded to a validation study call. I recognize this is a weakness and am in the process of collecting additional data to enable a confirmatory validity investigation into the T-POCQ.

**Teacher Observation Form-Revised (TOF; Peters & Gates, 2010).** Beginning in the late 1970's, Purdue University's Gifted Education Resource Institute founder and director John Feldhusen initiated a teacher observation form to evaluate teachers of an on-campus, Saturday enrichment program for students with gifts and talents. This form evaluated teachers on a scale from 1 (low) to 5 (high) on nine elements: subject matter coverage, clarity of teaching, student motivation, pace of work scheduling, chance for self-determination of work (student), student involvement in a variety of experiences (projects, reports, etc.), interaction between teacher and student generally appropriate to the program objectives, opportunity for student follow-through of activity outside class, and higher-level thinking skills (see Feldhusen & Sokol, 1982, p. 54, for a reproduction of this form). This basic observation form evolved over time into a 12-item observation checklist with a 5-point ranking scale (not satisfactory, needs improving, satisfactory, high, outstanding) based on a significant review of teacher competencies believed necessary to teach students with gifts and talents (see Feldhusen & Hansen, 1988, p. 88, for a reproduction of this version).

SPOCQ Item	T-POCQ Item	Related TOF Statements
<b>Construct: <i>APPEAL</i></b>		
3. I find the contents of my class interesting.	3. I try to make the content of my class interesting.	Variety of warm-ups, hooks, or brain-teasers are used to gain student interest.
9. The assignments for this class are interesting.	9. The assignments I give in my class are interesting.	Teacher encourages student enthusiasm and persistence.
19. The material covered in this class is interesting.	19. I make the material covered in my class interesting for my students.	Multiple learning styles are considered.
20. The instructor provides examples of how the material relates to society and daily living.	20. I provide examples of how the material relates to society and daily living.	Individual interests are accommodated.
25. I look forward to learning new things in this class.	25. I make sure my students look forward to learning new things in my class.	A variety of assignments and/or activities are included.
26. I find class content pleasurable.	26. I try to make class content appealing to my students.	Discussions, small-group activities, technology, field trips, and/or learning centers are incorporated.
31. I like going to my class each day.	31. I want students to like coming to my class.	Lessons emphasize student involvement.
<b>Construct: <i>CHALLENGE</i></b>		
4. I find class time instruction appropriately challenges my intellectual abilities.	4. My instruction appropriately challenges my students' intellectual abilities.	Content is advanced for grade level.
8. I find my class assignments a good challenge.	8. My assignments provide difficult challenges for my students.	Instructional techniques are appropriately advanced for the group.
11. I learn best when I am challenged.	11. I challenge students so that they will learn the material better.	Problem-solving and independent-study processes are encouraged.
15. This class content is an appropriate challenge for me.	15. I provide appropriately challenging content for the students in my class.	Critical thinking activities are included.
18. I like the challenge of the projects in this class.	18. I try to make projects challenging in my class.	Upper levels of Bloom's Taxonomy are evident.
27. I use my critical thinking skills in my class.	27. I require students to use critical thinking skills in my class.	Considerations for individual student differentiation are included.
33. I like the way my teacher challenges me in this class.	33. I challenge my students academically in meaningful ways.	

*Figure 1. Crosswalk of Motivational Constructs: Student Perceptions of Classroom Quality (SPOCQ), Teacher Perceptions of Classroom Quality (T-POCQ), and Teacher Observation Form (TOF).*

Figure 1 continued

Construct: **CHOICE**

1. I am given choices regarding how to show the teacher what I have learned.	1. I give my students choices regarding how to show me what they have learned.	Adequate choices offered.
5. My teacher lets me choose the resources I use for projects.	5. I allow my students to choose the resources they want to use for projects.	Student-directed activities are available when appropriate.
6. When there are different ways to show what I have learned, I can usually pick a good way.	6. I allow students to choose different ways to show me what they have learned.	Instructor promotes open-endedness, allowing for creativity and individual interests.
12. I am given lots of choices in my class.	12. I provide lots of choices in my class.	
16. I feel responsible for my learning because I am allowed to make choices in my class.	16. I allow students to make choices in my class so they become more responsible for their own learning.	
17. The teacher uses a variety of instructional techniques that make this class enjoyable.	17. I use a variety of instructional techniques to make my class enjoyable.	
22. I am encouraged to pursue subjects that interest me in this class.	22. I encourage students to pursue subjects that interest them that relate to my class.	

Construct: **MEANINGFULNESS**

7. The teacher applies the lessons to practical experiences.	7. I apply lessons to practical experience.	Topics of instruction are related to other subjects/content areas.
10. My teacher makes connections between the course material and society.	10. I make connections between the course material and society.	Appropriate illustrations and examples are used.
13. In my class my teacher relates current issues to the material we are learning.	13. I relate current issues to the material students are learning.	Instructor provides opportunities for inquiry into authentic questions generated by the students.
24. In my class I explore real issues that affect the world around me.	24. In my class, I explore real issues that affect the world around us.	Activities are based on real-world applications.
29. I can relate the material discussed in my class to my daily life.	29. I encourage students to relate material discussed in my class to their daily lives.	Extended activities are focused/purposeful.

Figure 1 continued

**Construct: *ACADEMIC SELF-EFFICACY***

2. I'm good at helping other kids understand concepts.	2. Because I explain material well, my students are able to clearly explain course concepts to others.	Student comprehension is evident.
14. I am good at connecting material from this class with the real world.	14. I make sure my students are consistently connecting class material from my class with the real world.	Activities are included that promote social and/or emotional development.
21. I am good at answering questions in this class.	21. I provide comprehensive answers to my students' questions pertaining to my class.	Students are encouraged and offered assistance for further study of topics of interest.
23. It is pretty easy for me to earn good grades.	23. I make students earn the high grades they receive in my class.	Metacognitive thinking is encouraged.
28. I'm good at taking tests in this class.	28. I provide appropriately challenging classroom tests that allow students to show me what they have learned.	Sufficient time is spent on open-ended discussion or other process activities.
30. I can easily understand assignments for this class.	30. I make sure students can easily understand assignments for my class.	Instructor encourages risk-taking.
32. I can usually discover interesting things to learn about in this class.	32. I encourage students to bring in interesting topics to learn about that relate to the content in my class.	Creative-thinking skills are incorporated.
34. I can express my opinions in this class.	34. I encourage my students to express their opinions in my class.	Instructor models creative behavior when appropriate. Opportunities for the students to develop and employ technological skills are provided.

***ATTRIBUTION ITEMS***

35. Good grades are mainly the result of my hard work.	35. Generally speaking, good grades are mainly the result of a student's hard work.	Not applicable
36. Good grades are mainly the result of my ability.	36. Generally speaking, good grades are mainly the result of a student's innate ability.	
37. I can improve my intelligence by working hard.	37. I think students can improve their intelligence by working hard.	
38. I plan to go to college.	38. I believe all of my students should plan to go to college.	

This observation checklist was further revised, including the addition of subcategories (Feldhusen & Huffman, 1988), field-tested, and evaluated by experts in gifted education (Peters & Gates, 2010). Hansen (1988) utilized this version, now called the *Teacher Observation Form* (TOF), to evaluate 82 teachers of students with gifts and talents in various school settings (i.e., pull-out programs, cluster grouping, self-contained classrooms, and general (mixed-ability) classrooms). Hansen found high correlations between TOF ratings with all teachers except those in general school settings and with teachers who were trained in gifted education practices. TOF interrater reliability (.877,  $n = 8$ ) was established after four hours of training using a 15-minute video segment (Hansen, 1988). In addition, the TOF's overall alpha reliability of .86, with individual item-total correlations ranging from .64 to .83, supports the TOF's use as a valid tool for evaluating teachers effective use of gifted education practices (Hansen, 1998; Peters & Gates, 2010).

The TOF was updated to its current form in 2010 to address its outdated items, categories, and descriptors and then analyzed for reliability and validity regarding teachers' use of gifted education pedagogy in the classroom (Peters & Gates, 2010). First, gifted education content experts reviewed the TOF items for importance in gifted education and clarity of language and provided helpful comments regarding needed revisions (Peters & Gates, 2010). The TOF rating scale was also revised at this time to a seven-point scale (excellent, very good, above average, average, below average, poor, unacceptable) for the purposes of fine-tuning observers' judgments of teacher behaviors and of computing enhanced statistical analyses (Peters & Gates, 2010). Subsequent analysis of the newly revised TOF was conducted over a 2-year period with 107 teachers participating in Saturday and summer enrichment programs for gifted K-12 youth (Peters & Gates, 2010). The updated TOF results yielded stronger item-total

correlations for 75% of the items and an improvement in overall reliability (from .86 to .95) (Peters & Gates, 2010). Refer to Appendix C for a copy of the TOF. Electronic versions of the SPOCQ and TOF, as well as other useful instruments created at Purdue University, are available in GERI's Instrument Repository at <http://purduegeri.wixsite.com/instrument>.

Although teachers were evaluated on all 12 TOF categories, five are of particular interest in this study due to their close relationship to SDT and the five motivational constructs measured on SPOCQ: content coverage (challenge), motivational techniques (appeal), opportunity for self-determination of activities by student (choice/autonomy), student involvement in a variety of experiences (meaningfulness)], and clarity of instruction as evidenced by student comprehension (academic self-efficacy/competence) (Peters & Gates, 2010). Table 10 contains selected TOF items that describe the teacher behaviors in each of these categories. In addition, the TOF assesses another component of SDT—relatedness—through observing the interaction between teacher and student and student and peers (Peters & Gates, 2010). The motivational construct of relatedness, however, is not a focus of this study.

Results of the TOF were used in this study to further support and deepen meaningful reflection, especially when teacher and student perceptions of the motivational components of the classroom differed. TOF information provided additional insight from a more objective observer into the classroom experience, including specific contextual information, teacher behaviors, instructional techniques, learning experiences, and direct commentary regarding areas of strength and suggestions for improvement. Use of the TOF during the guided reflection interview also assisted the teachers in recollecting specific classroom experiences and in determining what observed behaviors were motivating. Motivational constructs of interest based on the teachers' motivational profiles were highlighted on the TOF forms, and discussion



centered on when specific, motivating teacher behaviors were or were not observed. For example, when a teacher's T-POCQ mean for choice was markedly different from his/her students' SPOCQ mean, items on the TOF that specifically relate to the construct of choice were reviewed with the teacher to deepen reflection on this difference. This allowed teachers to link theory and practice in meaningful ways and to critically reflect on the quality of their instruction. In a sense, during the guided reflection interview, the teacher became his/her own case study in an experimental analysis. Refer to Figure 1 for the Crosswalk of Motivational Constructs among SPOCQ, T-POCQ, and TOF.

Table 10

*Selected TOF Items Relating to the Motivational Constructs*

TOF Category	Related Motivational Construct	TOF Item
Motivational techniques	Appeal	Variety of warm-ups, hooks, or brainteasers are used to gain student interest. Individual interests are accommodated. Lessons emphasize student involvement.
Content coverage	Challenge	Content is advanced for grade level. Instructional techniques are appropriately advanced for the group. Upper levels of Bloom's Taxonomy are evident.
Opportunity for self-determination of activities by student	Choice	Adequate choices offered. Student-directed activities are available when appropriate. Instructor promotes open-endedness, allowing for creativity and individual interests.
Students involvement in a variety of experiences	Meaningfulness	Topics of instruction are related to other subjects/content areas. Appropriate illustrations and examples are used. Activities are based on real-world applications.
Clarity of instruction as evidenced by student comprehension	Academic Self-efficacy	Student comprehension is evident. Metacognitive thinking is encouraged. Sufficient time is spent on open-ended discussion or other process activities.

### **Guided Reflection Interviews Using Student Perceptions of Motivational Constructs**

Teacher business and busyness often squeeze out time for meaningful reflection; therefore, scheduling regular, focused times for reflection with a colleague is necessary for teachers to make lasting, effective changes to their teaching practices. This study examines the usefulness of guided reflection with a knowledgeable peer and the use of student perceptions collected through a quantitative survey in teacher reflection. As stated above, the use of student perceptions in teacher reflection provides important information that teachers need to comprehensively examine classroom quality. Guided reflection interviews focus on meaningful, relevant content, promote discussion and collaboration on specific concerns, and prevent reflection from wandering to other topics that may or may not be related to teaching.

The use of interviews in qualitative research spans several decades with styles ranging from highly structured, controlled surveys to unstructured, stream-of-consciousness life stories (Platt, 2012). In this study, a semi-structured approach was taken to focus the dialogue while not squelching the teachers' desire to speak freely. I conducted all the interviews and described my role as a "peer" who has looked at the data to be discussed and who will facilitate conversation about that data. Historically, interviewers assumed detached roles that remained stoic and unopinionated regarding the respondents' contributions (Platt, 2012). However, I assumed a more contemporary role in the interviews; one in which I reacted and interacted with the teachers nonjudgmentally yet naturally, "as fellow human rather than as detached professional" (Platt, 2012, p. 20). In this way, I encouragingly supported the teachers in sharing their genuine thoughts and feelings in a conversational, peer-to-peer style.

In this study, I conducted guided reflection as described in Reiman (1999) and incorporated the work of Piaget and Vygotsky. The strength of this framework lies in the

combination of cognitive dissonance and developmental readiness of Piagetian theory and zone of proximal development and co-constructed knowledge of Vygotskian theory. Refer to the *Guided reflection interviews* section for a more detailed description of how these theories functioned in this study. In the guided reflection interviews, I reviewed the definitions of motivational constructs of interest in the study, reviewed T-POCQ results as a way of establishing "the starting point/where the teacher is at," used SPOCQ results to introduce cognitive dissonance, used questioning techniques that focused reflection and facilitated a conversational flow to the interview, assessed the teacher's "zone of proximal reflection" (Reiman, 1999), and through dialogue including student, my own, and the teacher's perceptions, co-constructed meaning of how the motivational constructs can be enacted in the classroom more effectively. Overall, teachers were eager to see the comparison between their students' perceptions with their own and willing to wrestle with the discrepancies that may have existed as well as explore areas for improvement.

**An Analysis of Myself.** In this study, I assumed the role of the "capable peer" (Reiman, 1999). I had studied the survey and TOF results beforehand and determined potential talking points. In general, I believe this was an appropriate approach, especially when the data clearly indicated certain talking points and the teachers also identified the same points. However, when the data was not as clear, I relied on the teachers to direct our dialogue and co-construction of meaning. This was not as difficult as I originally thought. Simply asking, "What do you think about this?" opened the door for their permission to lead while I remained supportive and encouraging. My goal was that the teachers and I would create meaning together and would co-construct or co-reframe their GERI teaching from their, my, and their students' perceptions of motivation. The validity of this approach is strengthened by me, as researcher, conducting the

interviews and by use of “less rigidly structured methods” (Platt, 2012, p. 21). Further, I believe I established sufficient rapport with the teachers to determine that they spoke honestly when responding to my questions and that I have interpreted their responses accurately. For example, on several occasions I asked for clarification, “Do you mean...?” or “What I think I hear you saying is...?” Finally, the follow-up questions or comments I made extended the narrative begun by the teachers and further clarified what their responses mean. For example, I asked, “So based on your past experiences, you believe that you are a good motivator?” and in another interview, I stated, “Sounds like you are thinking differently about choice now that you’ve seen your students’ feedback.” All of this was an effort to increase the validity of the interview data collected.

Historically, interview guidelines regarding number of respondents has ranged from two to 25 or until “thematic redundancy” or “theoretical saturation” has been reached (Beitin, 2012, p. 244). The number of interviews I conducted was purposively chosen based on my desire to analyze demographically representative pairs for qualitative differences in their responses to my questions. I was looking for diversity in teaching experience (in general and in gifted education) and in academic degree (in major and in gifted education study)—pairing teachers with many years’ experience with teachers with none, pairing teachers with gifted education study with teachers who have none, etc. In particular, I was looking for rich, potentially conflicting responses that might be explained by demographic variables. Beitin (2012) states, “Asking who can provide a different perspective on a topic by nature of their role can be just as important as asking how many people are needed to answer the question” (p. 249).

Recognizing that my role as coordinator in the GERI Residential program influenced my relationships with the teachers both during camp and in the later guided reflection interviews, I

stated directly that my role in the interview was one of a “supportive peer” rather than as coordinator. To further support this supportive role, I used footings (the multiple perspectives individuals have that influence their responses; Holstein & Gubrium, 1995) differently throughout the interviews. For example, I often asked the teachers to answer particular questions from the footing of a GERI Residential teacher. On other occasions, however, I left the question open, allowing the teachers to determine from which footing they answered the question. For example, when I asked about their teaching experiences, I did not limit them to GERI Residential; they could answer from their K-12 teaching experiences, from teaching a Sunday School classes, or from any other teaching setting. I also encouraged linkages (Holstein & Gubrium, 1995) to past and future experiences to understand the teachers’ responses more fully. “Linkage is connecting a story to past and future experiences as a way of providing a perspective for experiences” (Beitin, 2012, p. 250). For example, several practicing K-12 teachers who participated in the interviews naturally connected our dialogue to their current teaching contexts.

“Individuals and schools who do not have time to reflect do not have time to improve” (Harwell-Kee, 1999, p. 28). My role in the interviews was a coach, one who engages with a colleague in respectful reflection by listening and observing critically, asking purposeful questions that facilitate reflection regarding instructional actions and decisions, and offering suggestions for improving instructional practice (Harwell-Kee, 1999). My goal for the interview was quality thinking and deep understanding (Harwell-Kee, 1999)—for teachers to actively engage in a respectful dialogue surrounding their and their students’ perceptions of motivation, to critically assess their effectiveness as motivators of students with gifts and talents, and to generate new ideas that would not only motivate their students but invigorate their teaching as well. Pre-service teachers have reported a preference for collaborative reflection, modelling in

reflective thinking, and coaching through structured dialogue (Hatton & Smith, 1994; Pugach, 1990). Yost, Sentner, & Forlenza-Bailey (2000) assert that pre-service teachers can learn advanced reflection skills, including critical reflection, through structured curricula and practice “under the guidance of knowledgeable mentors” (p. 46). The use of “critical friend” dyads proved highly successful in in the Hatton & Smith study: “A powerful strategy for fostering reflective action is to engage with another person in a way which encourages talking with, questioning, even confronting, the trusted other, in order to examine planning for teaching, implementation, and its evaluation” (1999; p. 41). Although the types of reflective thinking were not the primary focus of this study, I believe my participation as supportive peer/critical friend enhanced the development of GERI teachers’ reflective thinking skills.

Each Residential teacher’s motivational profile was shared and discussed in the guided reflection interview that was audio-recorded, transcribed, and analyzed for the purpose of understanding and explaining the usefulness of student perception data in teacher reflection and potential instructional improvement. Combining the quantitative profiles with qualitative observation data illuminates the present research concern and provides guidance toward enlightened practice (Johnson & Onwuegbuzie, 2004). Refer to Figure 2 for a complete script used during the interviews, with the open-ended, guiding questions in bold print.

### Guided Interview

#### Items Needed

Audio Recording Device  
 Copy of Participant's Consent Form  
 Copy of Participant's T-POCQ Responses  
 Copy of Participant's T-POCQ Means Chart  
 Copy of Participant's Students' SPOCQ Chart  
 Copy of Participant's Students' SPOCQ Descriptive Statistics  
 Copy of Participant's Combined Means Chart  
 Participant's Teacher Observation Forms (*highlight descriptors that relate to motivation*)

**NOTE:** *Bolded items below represent key questions asked during the reflective interview.*

1. Obtain verbal permission to record the interview.
2. Turn on recording device.
3. Remind participant about their consent to participate in the study and to be audio recorded today. Give them a copy of their consent form.
4. Remind participant about purpose of study
  - a. to understand the differences that exist in gifted students' and teachers' perceptions about whether teachers used motivational techniques in instruction; and
  - b. to explore how student perceptions can provide information for teachers to make decisions about improving instruction.
5. Explain my role in this reflective interview: supportive peer who will guide your reflection to intentionally focus on the motivational components of your classroom.
6. Remind participant about SPOCQ and T-POCQ
7. Define appeal, challenge, choice, meaningfulness, and academic self-efficacy
  - a. Appeal: Creating satisfying, pleasant learning experiences and/or incorporating students' interests
    - Create a learning environment that is safe, interesting, encouraging of smiles, and enjoyable.
    - This environment often reflects students' preferences for topics and activities and is positively engaging.
  - b. Challenge: Incorporating rigor, depth, and complexity in learning tasks
    - Challenge varies based on the student and engages the student for optimal learning.
  - c. Choice: Giving students the right or power to select educational options and direct their own learning.
    - Choice should be taken seriously. The more latitude you give students, the more they will learn how to choose wisely the problems and projects they want to pursue, an essential element of creativity.
  - d. Meaningfulness: Providing activities that are practical, important, and related to the students' daily lives.
  - e. Having relevance; making a connection to topics worth caring about

*Figure 2. Guided Reflection Interview Script*



## Figure 2 continued

- f. Academic Self-Efficacy: Promoting students' confidence in classroom performance and ability to achieve
  - This is not self-esteem, but it, like self-esteem, effects all our students do, or don't do, in the classroom.
- 8. Now that your GERI Summer Residential class has ended, what are some of your lasting impressions regarding the class(es) and your role as teacher?**
9. Show participant his/her responses to the T-POCQ questions to serve as a reminder. Describe.
10. Show participant his/her T-POCQ means chart. Describe.
- 11. After reviewing your Teacher Perceptions of Classroom Quality (T-POCQ) results, tell me more about why you scored yourself more highly in some areas and not others.**
12. Show participant his/her students' SPOCQ means chart. Describe.
13. Show participant his/her students' SPOCQ descriptive statistics. Describe.
14. Show participant his/her combined means chart. Describe.
- 15. After reviewing your students' Student Perceptions of Classroom Quality (SPOCQ) results and how they compare with your own perceptions, what are your reactions to any similarities and/or discrepancies you see?**
16. Show the participant his/her Teacher Observation Forms with any areas of note that correspond to SPOCQ and/or T-POCQ results.
- 17. After reviewing the GERI staff member's Teacher Observation Form data and how it compares with your and your students' survey results, what do you make of the addition of these more objective data to your motivational profile? In other words, whose perceptions do these data validate and in what ways?**
- 18. What are your overall impressions of your motivational profile and its role in helping you think about your effectiveness as a motivator of gifted students?**
- 19. What, if anything, might you do differently the next time you teach gifted students based on what you've experienced in this interview?**

## Procedures

**GERI teacher training.** One month prior to the beginning of Residential, I conducted a six-hour training for GERI teachers. Approximately one-half of this training contained information regarding the motivational constructs that were measured in this study. Appeal, challenge, choice, meaningfulness, and academic self-efficacy were defined, and explanations and examples of how these constructs function in the classroom were shared. After each construct was discussed, small groups of four to six Residential teachers who were gathered around large tables shared how they have incorporated or plan to incorporate each construct in their upcoming Residential class(es). They recorded their ideas on large (20" x 23") sheets of Post-it papers using markers of different colors for each construct. They then shared their ideas about each construct with the large group so that all benefited from the sharing of ideas.

Teachers were introduced to the study and volunteers were recruited. Questions regarding the study were answered, and those who consented understood that their perceptions and their students' perceptions of the teachers' use of appeal, choice, challenge, meaningfulness, and academic self-efficacy would be collected at the end of Residential, and the teachers would review this information in a guided reflection interview after camp ended. Teachers who were unable to attend this training session were contacted via email and required to view the training PowerPoint presentation (see Appendix D) and read *What Is Differentiation?*, a book chapter that discussed the five motivational constructs (Gentry & Mann, 2008). To ensure that all teachers completed the tasks, they responded to fifteen questions that I posed (see Appendix E). These questions covered important aspects of the motivational constructs, and teachers' responses were checked for accuracy by the researcher. All GERI teachers were encouraged to contact me via phone or email for clarification of any aspect of the research study and/or for assistance in

revising their curriculum to include the motivational constructs of interest in the study. Twenty-three teachers consented to participate.

**TOF observer training.** Two GERI staff members who hold degrees in education and have previous K-12 teaching experience conducted all teacher observations during Residential. The number of observers was limited in order to achieve more consistency and reliability in TOF data. Raters' qualifications, including graduate coursework and number of years' experience teaching students with gifts and talents, were collected using a brief questionnaire. See Table 11 for TOF rater qualifications. The week prior to the beginning of Residential, these observers took part in a two-hour training session. During this training, they were informed of the purposes of this study and instructed how to use the TOF, including their roles and duties as observers. Each TOF item and its respective subcategories along with the Likert-style rating scale were explained and discussed. Definitions of appeal, challenge, choice, meaningfulness, and academic self-efficacy (as operationalized in this study by SPOCQ and T-POCQ) were discussed including examples of teachers' behaviors that demonstrate these definitions. Teacher observation guidelines, updated from guidelines previously used by GERI (Hansen, 1988), were utilized to ensure standardized observation and rating procedures were followed. Refer to Appendix F for these updated guidelines. Raters then practiced using the TOF by evaluating four video clips and rating each TOF category from 1 (Unacceptable) to 7 (Excellent) or as 0 (unobserved). Inter-rater agreement was assessed, and raters' discrepancies, defined as ratings two or more rankings apart, were discussed until consensus on the most appropriate ratings was achieved. The total number of simulations used was determined by the degree to which acceptable inter-rater reliability was achieved (i.e., ratings no more than one ranking apart).

Table 11

*TOF Rater Qualifications*

	TOF Rater #1	TOF Rater #2
Highest degree held	MS Education	BA Interdisciplinary Studies
Gifted education credential held/year obtained	Certificate/2012	None
K-12 grade levels taught	K-12	K-6
K-12 positions held	<ul style="list-style-type: none"> <li>• Elementary teacher/general education classroom</li> <li>• Elementary teacher/gifted education classroom</li> <li>• Secondary teacher/science</li> </ul>	<ul style="list-style-type: none"> <li>• Elementary teacher/general education classroom</li> <li>• Elementary teacher/special education classroom</li> </ul>
Number of years in K-12 general education	10 years	6 years
Number of years in K-12 gifted education	4 years	0 years
Additional education or training in gifted education	3 graduate level courses	None
Other experiences in gifted programming/duration	<ul style="list-style-type: none"> <li>• GERI Summer Residential teacher (grades 7 &amp; 8)/2 weeks</li> <li>• GERI Super Saturday and Super Summer Coordinator (grades PreK-8)/2 years</li> </ul>	<ul style="list-style-type: none"> <li>• GERI Super Summer Head Counselor (grades K-4)/4 weeks</li> </ul>

**Teacher observation protocol and TOF data.** GERI teacher observation protocol for this study required teachers to be observed two times during each class they taught. Marking TOF items and making notes as appropriate, the trained observers completed the TOF as completely as possible during each 30-minute observation or shortly thereafter. Most of the time, no interaction occurred between the observer and the GERI teachers or students. The observations took place at scheduled times but occurred at least two days apart for each teacher. Teachers were informed of their observation schedule and could suggest alternative times, if warranted. For example, teachers sometimes took their classes on field trips; therefore, the timing of the GERI observation needed to be adjusted. Completed TOF's were scanned and emailed to the respective teachers the same day, and the hard copy was submitted to me for review. GERI teachers were given the opportunity to discuss their TOF observations with the observer and/or me, but few chose to do so. As Peters and Gates state, "the TOF, when fully completed, is meant to provide helpful feedback to teachers on its own, without a substantial meeting with the evaluator" (2010, p. 185).

In their training, the GERI observers were encouraged to pay particular attention to the TOF items that address the five motivation variables of interest (see Figure 1 for a crosswalk between SPOCQ, T-POCQ, and TOF). TOF data were used as additional data during the guided reflection interviews to provide additional support for student and/or teacher perceptions and to deepen teacher reflection about instructional quality.

**SPOCQ and T-POCQ surveys.** On the last day of class, all students went to campus computer labs to complete the SPOCQ under the supervision of GERI staff members. Residential teachers were not present when students completed this survey. While their students were in the computer labs, teachers were encouraged to complete the T-POCQ (also online) to obtain their

perceptions regarding the application of the five motivational constructs in their classrooms. If they did not complete the survey at that time, a follow-up email was sent to encourage them to complete the T-POCQ as soon as possible after their class(es) ended.

Correlations between students' and teachers' perceptions of appeal, challenge, choice, meaningfulness, and academic self-efficacy as measured by SPOCQ and T-POCQ, respectively, were calculated. In addition, descriptive statistics were used to compare classroom-level student and teacher survey results, creating a unique motivational profile for each GERI teacher. The motivational profiles were later embedded in qualitative guided-reflection interviews with selected teachers in order to enhance the quality of their reflection, especially through the comparison of their students' perceptions of the motivational components of the classroom with their own perceptions. These quantitative profiles were integral to the intentional reflection to stimulate teachers' reflection on instructional quality based on the relationships between their own perceptions with feedback from their students. GERI observation results as recorded on the TOF were also used during the guided reflection interview as additional data that provided insight into teachers' motivational profiles and supported the perceptions of the teacher, their students, or both.

Recall that the motivational profiles were constructed using descriptive statistics based on SPOCQ and T-POCQ results. Since a primary goal of this study was for teachers to reflect on students' feedback for improving instruction, SPOCQ means for each construct for each class were depicted in line graphs. Standard deviations and minimum/maximum score ranges for each construct (i.e., appeal, choice, challenge, meaningfulness, and academic self-efficacy) were included in charts below the line graph for each class. Because some teachers taught more than one GERI Residential class, motivational profiles for each class were constructed and discussed

in the guided reflection interview. Line graphs of T-POCQ means for each construct for each class were also constructed. Then, motivational profiles containing the line graphs of SPOCQ and T-POCQ means for each construct for each class were constructed for easier comparison. This combined graph that depicted student and teacher perceptions provided clearer pictures of how these two partners in the educational process agreed or disagreed on the motivational components of instruction. Finally, TOF data for each class were reviewed with the teachers to further explore the motivational components of instruction in specific teacher behaviors.

While all motivational profiles were shared with respective teachers, only those teachers selected based on various demographic information (e.g., number of years teaching students with gifts and talents or amount of training in gifted education) and/or those whose motivational profiles displayed discrepant SPOCQ and T-POCQ results were selected for follow-up interviews (see Participants and Participant Selection above).

**Guided reflection interviews.** In this study, two developmental theorists guided the approach I took in guided reflection interviews. First, Vygotsky's ZPD (1962, 1978) and its role in cognitive development helped me consider what and how much new information to present to the teachers during the interview—information that would represent the problem in a challenging yet resolvable way. As Reiman (1999) stated, "The word guided, in guided reflection, implies active consideration by more capable others or co-learners of a person's ZPD or current preferred ways of solving complex problems" (p. 600). Vygotsky believed that optimal development involved social interaction with and instruction by a knowledgeable peer or peers (1978), and the method of guided reflection used in this study mirrors this socially oriented co-construction of meaning. The second developmental theorist to influence the guided reflection interview was Piaget (1964) and his notions of equilibration, cognitive dissonance, assimilation, and

accommodation. Piaget (1964, 2008) emphasized the internal mental processes that allowed an individual to construct meaning without the involvement of others; he explained that cognitive dissonance motivates the individual to assimilate (file new experiences in existing mental structures) and/or accommodate (modify existing mental structures to include new information) to reestablish a state of equilibration. The introduction of potentially discrepant information during the guided reflection interview through student perceptions and/or teacher observation data initiated this mental process within the teachers. After presenting the information, my role as supportive peer assisted the teachers in their disequilibrium and individual processing of the information (via Piaget) as well as in our co-construction of knowledge and meaning (via Vygotsky). During the interview, I had to balance support and challenge while attending to the intellectual, moral, and emotional dimensions of the interaction and its effect on the teachers (Reiman, 1999).

At any given time during the interview, one or more levels of meaning are operating and promoting complex nuances to the interaction Reiman (1999). The first level of meaning involves our individual understandings of the problematic situation based on past learning experiences, beliefs, values, and assumptions. The second level of meaning is our co-constructed understanding based on experiences we share openly with one another. The third level of meaning involves individual hidden thoughts or agendas that are not revealed during reflection; this level of meaning, which may never be expressed, undermines the quality of the interaction and the outcomes of reflection-for-action. The fourth level of meaning is our subsequent individual meanings that have now assimilated or accommodated our co-constructed understanding. Reiman (1999) suggested that reflection should be differentiated based on the



learning and developmental needs of the teacher thereby creating an individualized “zone of proximal reflection” (p. 604) that invites deeper thinking and manageable risk.

Teachers received two pieces of feedback prior to the interviews: the TOF during Residential and their SPOCQ results shortly after camp concluded. The new information provided during the guided reflection interviews was their T-POCQ results and how the T-POCQ results compared to their students’ SPOCQ results and with GERI observation data. The role of curiosity in reflective thinking came into play at this point (see Rodgers, 2002, for a discussion about the role of curiosity in Dewey’s reflective thinking process). By withholding the T-POCQ results until the reflective interview and comparing them to the students’ SPOCQ results, I fostered an atmosphere of curiosity—an anticipation of how their perceptions measured up against their students’ perceptions.

The purpose of the guided reflection interviews was to assist teachers in analyzing and reflecting on their motivational profiles and to recognize the value in considering student feedback for improving the quality of instruction. These interviews with selected teachers were conducted after teacher motivational profiles were constructed and analyzed. results were compared in teacher pairs by various demographic characteristics (see Participants and Participant Selection above). An interview guide approach allowed for conversational interaction on the predetermined topics (i.e., the motivational profile and use of student feedback for instructional improvement) and for individualized feedback from the interviewer (Johnson & Christensen, 2014). See Appendices A and B for the open-ended questions and guided reflection interview script used in this study.

For the guided reflection interviews, six teachers met face-to-face and four teachers met via Skype or phone individually with me to discuss their motivational profiles, teacher

observation results, and the importance of including students' perceptions of the motivational components of instruction in their reflections and in improving instruction. Hard copies of teachers' T-POCQ responses, three motivational charts (one with T-POCQ means, one with SPOCQ means, and one with both means for easier comparison), and TOF forms were reviewed during the interviews. I emailed electronic files of the T-POCQ responses and motivational profiles to teachers whose interviews were conducted over the phone so that the files could be reviewed with me during the interview. Recall that teachers received copies of their TOF evaluations via email on the same day they were observed during Residential so these were not included again.

After a brief review of the purpose of the study, including the definitions of appeal, challenge, choice, meaningfulness, and academic self-efficacy, and after answering any initial questions about the study the teachers had, I asked the teachers for overall impressions of their teaching experience at GERI Residential. This first, more general question was used to help teachers recall their overall experience and to talk easily and freely as I listened non-judgmentally. Next, T-POCQ responses were shared with teachers; I specifically noted items when the teachers answered with negative or "I don't know" responses, and these items were discussed for deeper understanding. T-POCQ responses were then represented numerically in a line graph that depicted the T-POCQ means for each construct, and I encouraged discussion through open-ended questions about the five constructs, especially ones rated highest and lowest by the teacher. Teachers were asked to reflect on the T-POCQ responses and graphs and were encouraged to discuss these with references to the particular class taught. Next, line graphs depicting SPOCQ means for the five constructs were reviewed, including the table of descriptive statistics printed beneath each chart. I reviewed the minimum and maximum scores, the range of

scores, and the mean for each construct and then reviewed the highest and lowest rated constructs from the perspective of the students. Again, teachers were asked to reflect on the SPOCQ graphs and were encouraged to discuss their reactions and thoughts with references to the particular class taught. I then showed a third line graph containing both T-POCQ and SPOCQ means for easier comparison. Teachers were encouraged to reflect on the constructs, especially those where the students' SPOCQ means and the T-POCQ means were markedly different and to consider potential reasons why any such differences existed. Items from the T-POCQ, which are closely aligned with the SPOCQ, were referenced when needed for clarification of the constructs' meanings and potential reasons why differences in perceptions may have occurred. For a more in-depth exploration of the motivational components of the classroom, I then noted items that were marked (or not) on the teachers' TOF that corresponded to the constructs of interest from the T-POCQ and SPOCQ comparisons. Teachers were encouraged to reflect on and respond to the TOF's additional information that supported the teachers,' the students,' or both perceptions. Finally, I asked teachers to share their overall impressions of the guided reflection interview, including the usefulness of including students' perceptions in reflection on instructional effectiveness and the likelihood that they would change some aspect of their instruction. The interviews ended, I encouraged the Residential teachers to follow through with their intentions to improve instruction and to consider incorporating student feedback regarding classroom quality more frequently in their classrooms in their teaching positions, if applicable.

### **Data Analyses**

In mixed methods research, both quantitative and qualitative data combine to provide an in-depth look at the phenomena of interest. In this study, results from SPOCQ and T-POCQ provided quantitative data related to the motivational constructs of interest that I used to

determine whom I would invite to guided reflection interviews and as discussion starters in the guided reflection interviews. Analysis of the interview transcripts that focused on the motivational constructs provided depth to the quantitative data. In a sense, the quantitative and qualitative data provided validation for each other and allowed me to draw solid conclusions about the effectiveness of using student perceptions in teacher reflection.

**Quantitative data.** In the first stage of data analysis, SPSS 24 (IBM, 2016) was used to analyze quantitative data collected through the administration of the T-POCQ to those teachers who consented to participate in the study and of the SPOCQ to their students. Item analyses and alpha internal consistency reliability estimates were calculated for both instruments. Because the surveys contain the same number of parallel items to measure appeal, challenge, choice, meaningfulness, and academic self-efficacy, correlations between perceptions of teachers and their students were computed. Correlations were calculated for each of the five motivational constructs as measured on the SPOCQ and T-POCQ, comparing teachers' perceptions, students' perceptions, and teacher-to-student perceptions. In addition, classroom-level, descriptive statistics for the motivational constructs for each teacher's SPOCQ and T-POCQ results were also calculated and graphed. Teachers reviewed three graphs during the guided reflection interview: line graphs of the means for each instrument individually and a line graph containing both SPOCQ and T-POCQ means for a more direct comparison of the means for teacher and student perceptions of the motivational components of instruction.

**Qualitative data.** Two types of qualitative data were used in this study. The primary qualitative data were taken from the guided reflection interviews with ten GERI teachers that I conducted and recorded. Audio files were uploaded to an online service for transcribing. I hold a Master's degree in Education with an emphasis in school counseling and have worked for over

17 years in grades 7 – 12 as an English teacher and school counselor. I am trained in open-ended and follow-up questioning techniques and in attentive listening. The second qualitative data were the teachers' TOF results. During the guided reflection interviews, I reviewed TOF items that related to the motivational constructs of interest (based on differences in T-POCQ and SPOCQ results) to promote further discussion of the five motivational constructs and to provide examples of ways in which the motivational constructs might be enacted in the classroom. In this way, teachers could operationalize the constructs and to reflect on a more objective evaluator's observations.

Interview transcripts were analyzed using constant comparative methods developed by Glasser and Strauss (1967). First, I read each teacher's interview transcript in its entirety, making notes regarding general impressions. Interview transcripts were then combined and arranged by interview protocol question so that teachers' responses to the same question could be analyzed together. These clustered responses were analyzed for themes using an inductive process; themes that became evident were color-coded and noted, and portions of data that fit into existing themes were coded accordingly. In analyzing the qualitative data in these ways, themes were identified by individual teachers and by interview question. The color-coded themes were then grouped together and analyzed several times for developing overarching themes and for refining existing themes. These themes were then combined into broader categories, representing portions of data from various teachers and often from more than question.

Final data analysis involved the combination of each teacher's motivational profiles and transcribed interview data in the pairs described above. The pairs' motivational profiles were compared first, noting similarities and differences in T-POCQ and SPOCQ means and in highest and lowest ranked constructs. Then interview transcripts were analyzed by interview question

using constant comparative methods described above, identifying common themes and categories.

**Threats to validity.** Because this study was conducted in a short-term, summer academic enrichment program with high-ability students and teachers who were enthusiastic about the content they chose to teach, the results should not be generalized to other educational settings. Quantitative threats included the possibility of extraneous variables that could potentially influence SPOCQ results, including the students' ability to separate a teacher's likability from his/her ability to motivate. To address this threat, GERI staff members who administered the SPOCQ to the students emphasized the purpose of the evaluation and encouraged students to focus on the motivational aspects of instruction only when responding to the statements. In addition, GERI staff observations using the TOF either confirmed or contradicted the students' SPOCQ evaluations and added additional perspectives to the guided reflection interview. Second, teachers who consciously used more motivational techniques during GERI staff observations threatened ecological validity. To combat this reactivity, I provided training in implementing the five motivational constructs to all teachers prior to Residential and encouraged teachers to select their observation dates and times. In this way, I assumed that all teachers performed at their best during the observation—in essence, I encouraged reactivity in order to standardize it. If GERI staff selected observation times randomly, teachers could claim that the times selected were not adequate to assess their use of the motivational constructs. Third, operationalizing the five motivational constructs and assuring that GERI observers and teachers understood how these were measured minimized threats to construct-related validity.

Qualitative threats to validity include researcher bias; however, continual reflexivity and heightened awareness of the potential for bias minimized this threat. Training GERI staff

members to collect data using the TOF strengthened descriptive validity. Using quotations and rich descriptions of motivational aspects of the classroom collected during the guided reflective interviews supports interpretive validity. Finally, time spent observing GERI teachers and triangulation of methods and data sources strengthened the internal validity of this study. I strengthened this research by triangulating methods, measures, and perspectives. Multiple methods were employed through qualitative and quantitative procedures. Multiple measures were collected through quantitative surveys, teacher observations, and qualitative interviews. Multiple perspectives were used to understand the research topic by purposively selecting 10 teachers who represented different demographics and relationships to the topic. In all of these triangulations, I cross-verified the stories or themes in the data using inductive reasoning or grounded inferences.

Finally, reflexivity is always a validity issue in qualitative research. I attempted to audit my biases and perspectives throughout the study, especially during the guided reflection interviews and during data analyses. Part of my motivation for conducting this study is that I believe students have the right to partner with the teacher in their education—that they own it and have a fair amount to say about how it is carried out. I know that I have always been a champion of the underdog. When I perceive wrongdoing toward an individual, I empathize with that individual and step in to assist. In this study, I perceive the students as the underdogs, and I was aware throughout that their voices were not the only ones that I needed to attend to—the teachers' voices were as important, even the ones who may have disagreed with or discounted their students' perceptions of the motivational components of instruction. Throughout the study, I reminded myself that even though I wanted the teachers to value including their students'

perceptions in their reflection on instructional quality, I would not be disappointed if they did not. I would let the data speak without speaking over it with my biased voice.

I also considered negative case sampling in the qualitative interview data; if a teacher did not affirm the major stories or themes in the data, I attempted to understand the alternative story that that particular teacher was trying to tell. This helped me to more clearly understand the role of choice in the classroom from various teacher perspectives and to further analyze the balance between teacher and student power in the educational choices being made in the classroom. For example, several Residential teachers commented on their students' SPOCQ results disconfirming their perceptions about the role of choice in students' perceptions of motivation. Through exploration of the teachers' concerns during the guided reflection interviews, I could understand the tension teachers face in providing "true" choice and allowing students to have more control over what and how they learn. I was also able to determine patterns in the data surrounding the issue of choice to create a well-rounded discussion about its effective use in the classroom. In addition, I strengthened validity by representing my subjects and their data fairly by using their voices to tell the stories in the data.



## CHAPTER 4. RESULTS

The purpose of this exploratory study was to examine whether including students' perceptions of appeal, challenge, choice, meaningfulness, and academic self-efficacy enhanced teacher reflection on the quality of instruction. Teachers participated in a reflective process that included quantitative data regarding their own and their students' perceptions of five motivational components of the classroom—appeal, challenge, choice, meaningfulness, and academic self-efficacy. In addition, during an interview of a subsample of participants, each teacher's observation data provided additional information related to the quantitative survey results. As the reflective interview proceeded, teachers' reactions to and thoughts about the various information presented was encouraged. These qualitative data were analyzed to determine whether including students' perceptions on instructional quality showed evidence of being meaningful to the teacher's reflection and would likely result in instructional change.

### **Instrument Reliability**

Table 12 contains item analysis and alpha internal consistency reliability information for SPOCQ ( $n=518$  administrations; some students took more than one survey—one for each class they took). The overall alpha coefficient estimates of the five motivational constructs ranged from .90 to .93, as reported in the last column. Internal consistency estimates across construct data were stable. For the statements that define each construct, the response percentages and item-level means and standard deviations are reported. Correlations of each item with the remaining items defining each construct are recorded as “Corrected  $r$  w/Construct” followed by the alpha reliability estimate if the item were removed. For the SPOCQ data, item 20 (for appeal) and item 11 (for challenge) have lower correlations with the other items within the constructs.

Table 12

*SPOCQ: Response Percentages and Alpha Reliability Estimates (n=518 administrations)*

Construct	Item	Response Percentage					Mean	SD	Corrected <i>r</i> w/Construct	Alpha Rel. if Deleted	Alpha Reliability
		1	2	3	4	5					
I Appeal	3	3	5	8	29	55	4.30	.99	.82	.92	.93
	9	4	3	9	24	60	4.34	1.02	.84	.92	
	19	3	3	10	29	55	4.33	.95	.85	.92	
	20	3	5	16	37	39	4.03	1.03	.55	.95	
	25	2	3	9	33	53	4.32	.92	.83	.92	
	26	4	3	12	35	46	4.20	1.00	.84	.92	
	31	5	5	10	30	50	4.14	1.12	.81	.92	
II Challenge	4	3	4	11	36	46	4.19	.97	.78	.91	.92
	8	3	4	8	33	52	4.27	.99	.79	.90	
	11	1	2	12	38	47	4.29	.83	.50	.93	
	15	2	4	8	41	45	4.21	.92	.84	.90	
	18	3	2	11	30	54	4.31	.94	.83	.90	
	27	3	5	13	33	46	4.16	.99	.73	.91	
	33	3	5	12	35	45	4.15	1.01	.81	.90	
III Choice	1	1	5	11	42	41	4.15	.91	.76	.91	.92
	5	3	6	11	33	47	4.15	1.04	.76	.91	
	6	1	2	13	42	42	4.22	.84	.70	.91	
	12	4	7	14	30	45	4.07	1.09	.79	.90	
	16	2	3	14	35	45	4.19	.95	.78	.91	
	17	4	5	10	34	47	4.13	1.08	.82	.90	
	22	3	4	11	36	46	4.19	.98	.66	.92	
IV Meaningful- ness	7	2	3	14	35	46	4.22	.91	.69	.90	.90
	10	3	3	15	34	45	4.14	.99	.79	.88	
	13	3	10	16	32	39	3.94	1.12	.79	.87	
	24	5	10	17	29	39	3.89	1.17	.74	.89	
	29	4	10	17	32	37	3.90	1.14	.80	.87	
V Acad. Self- Efficacy	2	2	4	24	41	29	3.92	.92	.66	.89	.90
	14	2	4	19	36	39	4.06	.98	.63	.90	
	21	2	8	16	38	36	4.00	.99	.75	.89	
	23	1	4	15	40	40	4.14	.90	.61	.90	
	28	4	4	27	32	33	3.87	1.03	.74	.89	
	30	2	5	13	40	40	4.11	.95	.78	.88	
	32	2	3	10	36	49	4.26	.92	.68	.89	
	34	5	3	12	33	47	4.15	1.05	.71	.89	

Removing item 20 would raise the overall alpha reliability estimate of appeal by .02 and removing item 11 would raise the overall alpha reliability estimate for challenge by .01 (refer to “Alpha Rel. if Deleted” column). The internal consistency reliability estimates for this administration of SPOCQ reinforce previous studies’ findings regarding the valid and reliable results obtained from this instrument. With regard to inter-item correlations, estimates range between .50 and .85; these correlations are at or higher than what we normally expect (McCoach et al., 2013).

Table 13 contains the same analyses for the T-POCQ ( $n=39$  administrations; some of the 23 teachers completed the T-POCQ for more than one class). The overall alpha coefficient estimates of the five motivational constructs ranged from .60 to .85, markedly lower than SPOCQ reliability estimates. However, four of the five T-POCQ construct estimates measure above 0.70, an acceptable reliability estimate for affective instruments in research studies (McCoach et al., 2013). Internal consistency estimates across construct data were varied. For the T-POCQ data, most items for each construct have average correlations with the other items within the constructs; however, removing only a few of these items (20 and 31 for appeal; 18 for challenge; 22 for choice; and 34 for academic self-efficacy) would raise the overall alpha reliability estimates by .10 (for appeal), .03 (for challenge), or .01 (for appeal, choice, and academic self-efficacy).

The reliability estimates for internal consistency for this administration of the T-POCQ, ranging from .07 to .82, are somewhat concerning. “In general, most affective instruments have average inter-item correlations in the 0.30-0.60 range” (McCoach et al., 2013). Of the 34 T-POCQ items, 22 items were within this average range, 5 items fell below .30 (and should be reviewed for possible deletion), and 7 were above the average range.

Table 13

*T-POCQ: Response Percentages and Alpha Reliability Estimates (n=39 administrations)*

Construct	Item	Response Percentage					Mean	SD	Corrected <i>r</i> w/Construct	Alpha Rel. if Deleted	Alpha Reliability
		1	2	3	4	5					
I Appeal	3	0	0	0	8	92	4.92	.27	.21	.60	.60
	9	0	0	10	62	28	4.18	.60	.45	.52	
	19	0	0	8	46	46	4.38	.63	.52	.49	
	20	3	3	7	38	49	4.28	.92	.08	.70	
	25	0	0	26	54	20	3.95	.69	.57	.46	
	26	0	0	0	59	41	4.41	.50	.46	.53	
	31	0	0	0	28	72	4.72	.46	.14	.61	
II Challenge	4	0	0	8	43	49	4.41	.64	.56	.65	.72
	8	0	5	8	51	36	4.18	.79	.37	.71	
	11	0	0	8	51	41	4.33	.62	.54	.65	
	15	0	0	10	51	39	4.28	.65	.48	.67	
	18	0	0	0	46	54	4.54	.51	.07	.75	
	27	0	0	3	36	61	4.59	.55	.53	.66	
	33	0	0	3	61	36	4.33	.53	.48	.67	
III Choice	1	0	3	5	56	36	4.26	.68	.59	.71	.76
	5	0	5	10	39	46	4.26	.85	.34	.76	
	6	0	0	8	59	33	4.26	.59	.42	.74	
	12	0	8	18	46	28	3.95	.89	.66	.69	
	16	0	0	13	49	38	4.26	.68	.70	.69	
	17	0	3	15	46	36	4.15	.78	.41	.74	
	22	0	8	20	36	36	4.00	.95	.34	.77	
IV Meaningful- ness	7	0	0	15	46	39	4.23	.71	.48	.85	.85
	10	0	3	5	51	41	4.31	.69	.69	.81	
	13	3	8	5	51	33	4.05	.97	.82	.76	
	24	3	5	10	51	31	4.03	.93	.65	.82	
	29	0	10	8	56	26	3.97	.87	.66	.81	
V Acad. Self- Efficacy	2	0	5	28	44	23	3.85	.84	.58	.70	.75
	14	3	0	15	49	33	4.10	.85	.40	.73	
	21	0	0	13	14	33	4.21	.66	.42	.73	
	23	10	3	23	41	23	3.64	1.18	.64	.68	
	28	8	2	26	33	31	3.77	1.16	.58	.69	
	30	0	0	8	59	33	4.26	.59	.34	.74	
	32	3	10	13	41	33	3.92	1.06	.46	.72	
	34	0	0	0	38	62	4.62	.49	.12	.76	

Even though this instrument was worded similarly to the SPOCQ, the T-POCQ estimates of the small sample ( $n=39$  administrations) are less accurate (i.e., contain more error) than preferred. Any number of reasons may account for this larger degree of error: (a) individual response variations—age and teaching experience of teachers or to their particular GERI Residential class experiences and relationships, (b) variation in administration procedures—GERI teachers took the T-POCQ on their own time (and sometimes several weeks after GERI Residential was over) while their students took the SPOCQ together on the last day of class, and/or (c) the sample of teachers (likely more homogenous in attitude and characteristics than those that exist in the general teacher population as a whole).

Further, the T-POCQ has not yet been tested through exploratory or confirmatory factor analyses. Interestingly, during the guided reflection interviews, I inquired about the reasons why teachers rated a particular item the way they did, and some of the teachers provided feedback that related directly to the way the item was constructed or worded. For example, Teacher 12 answered “Undecided” for “I make the material covered in my class interesting for my students.” In our discussion about that response, Teacher 12 said,

It was the question: “I make the material interesting.” That question was weird.... I was looking at that question and I go, "Well, can I make something interesting or are the kids interested?" I mean, I want to put “strongly agree,” because I'm passionate about what I do.... So I do everything I can to make my subject as interesting as possible, but if they're apathetic, or they don't want to be there, there's not a whole lot I can do to make them interested in it if they just hate my topic anyway.... I can do everything I can to make it fun for them, but if they're not interested, I can't make them interested, and that's

why I put “undecided” (Teacher 12, personal communication, December 21, 2016).

Clearly, conducting EFA and CFA studies on the T-POCQ with larger samples of representative teachers are indicated.

### **Research Question 1**

**Correlations between students’ and teachers’ perceptions.** Recall the first research question: *How do gifted students’ perceptions of the motivational techniques used in instruction compare to their teachers’ perceptions as collected through parallel surveys?* Two sets of data were used in this analysis: SPOCQ results for only those students whose teachers participated in the study ( $n=518$  administrations) and T-POCQ results for those teachers who participated in the study ( $n=39$  administrations). The Spearman rank correlation test (Spearman, 1904) provides a non-parametric measure of the degree of association between two variables measured on an ordinal scale without the assumption of normality in the distribution of data, as is the case with these data.

Spearman correlations between SPOCQ results ( $n=518$  administrations) for those students whose teachers participated in the study and their teachers’ T-POCQ results ( $n=39$  administrations) are displayed in Table 14. Significant negative correlations existed between these two groups in appeal ( $r = -0.04, p < .01, r^2 = 0.002$ ) and meaningfulness ( $r = -0.04, p < .01, r^2 = 0.002$ ). However, the strengths of these correlations are weak. In direct comparisons between the same construct (see the highlighted correlations in Table 14), students’ and their teachers’ perceptions did not significantly correlate on challenge ( $r = -0.29, r^2 = 0.084$ ), academic self-efficacy ( $r = -0.08, r^2 = 0.006$ ), and choice ( $r = 0.00$ ). When statistical significance is observed in conjunction with small effect sizes, we should further analyze the meaningfulness of our results. Statistical significance may have been achieved because the size of the student

sample in this study is rather large, and small effect sizes may indicate sampling error (e.g., students with gifts and talents and their highly motivated teachers). However, I conclude that the combination of statistical significance and small effect sizes, especially when combined with the qualitative data in this study, points to both statistical and practical significance. In essence, teachers and their students do not perceive the motivational constructs of instruction in the same way.

Table 15 contains Spearman correlations between T-POCQ means for each construct, and Table 16 contains Spearman correlations between SPOCQ means for each construct. The high, positive correlations in both tables suggest that teachers in the study perceive the five constructs similarly and that students in the study perceive the five constructs similarly. When the strong positive correlations in Tables 15 and 16 are compared to the weak correlations in Table 14, we can more clearly see the very different perceptions that teachers and students have of appeal, challenge, choice, meaningfulness, and academic self-efficacy.

Table 14

*Spearman Correlation Matrix among T-POCQ (n=518) and SPOCQ (n=39) Results*

Variable	Appeal <sub>sp</sub>	Challenge <sub>sp</sub>	Choice <sub>sp</sub>	Meaningfulness <sub>sp</sub>	Acad. Self-efficacy <sub>sp</sub>
Appeal <sub>tp</sub>	-0.04*	.12*	.16*	.11	0.09
Challenge <sub>tp</sub>	.13*	-.29	.10	-0.03	0.04
Choice <sub>tp</sub>	.10	0.01	0.00	-0.01	0.00
Meaningfulness <sub>tp</sub>	.14*	0.03	0.09	0.04*	0.07
Acad. Self-Efficacy <sub>tp</sub>	.16*	0.09*	.10	.11	-0.08

*Note.* sp = SPOCQ; tp = T-POCQ. \*Correlation is significant at the 0.01 level (2-tailed).

Table 15

*Spearman Correlation Matrix among Teachers (n=39 administrations)*

Variable	Appeal <sub>tp</sub>	Challenge <sub>tp</sub>	Choice <sub>tp</sub>	Meaningfulness <sub>tp</sub>	Acad. Self-efficacy <sub>tp</sub>
Appeal <sub>tp</sub>	1.00				
Challenge <sub>tp</sub>	.55*	1.00			
Choice <sub>tp</sub>	.69*	.73*	1.00		
Meaningfulness <sub>tp</sub>	.59*	.33*	.54*	1.00	
Acad. Self-efficacy <sub>tp</sub>	.63*	.67*	.66*	.70*	1.00

*Note.* tp = T-POCQ. \*Correlation is significant at the 0.01 level (2-tailed).

Table 16

*Spearman Correlation Matrix among Students (n=518 administrations)*

Variable	Appeal <sub>sp</sub>	Challenge <sub>sp</sub>	Choice <sub>sp</sub>	Meaningfulness <sub>sp</sub>	Acad. Self-efficacy <sub>sp</sub>
Appeal <sub>sp</sub>	1.00				
Challenge <sub>sp</sub>	.85*	1.00			
Choice <sub>sp</sub>	.85*	.85*	1.00		
Meaningfulness <sub>sp</sub>	.79*	.76*	.80*	1.00	
Acad. Self-efficacy <sub>sp</sub>	.80*	.81*	.85*	.78*	1.00

*Note.* sp = SPOCQ. \*Correlation is significant at the 0.01 level (2-tailed).



**Mean comparisons between students' and teachers' perceptions.** Table 17 provides SPOCQ and T-POCQ means and mean differences by teacher as well as grand means overall. SPOCQ and T-POCQ results for all classes taught by one teacher were combined to compute table means. Positive mean differences denote teacher perceptions were higher than their students' perceptions; negative mean differences (highlighted in the table) signify that student perceptions were higher than their teacher's perceptions. When all motivational constructs' means were combined, teacher perceptions were higher than their students' perceptions in 67 of the 115 comparisons (58.3%). For individual constructs, teachers' means were comparatively higher for appeal (69.6% of the comparisons), challenge (69.6% of the comparisons), and meaningfulness (60.9% of the comparisons), but they were slightly lower than their students' means for choice (47.8% of the comparisons) and academic self-efficacy (43.5% of the comparisons).

Table 17

*SPOCQ and T-POCQ Means and Mean Differences by Teacher*

Teacher <sup>a</sup>	Subject		Appeal	Challenge	Choice	Meaningfulness	Academic Self-Efficacy
1	Social Studies	T-POCQ	3.86	4.29	4.00	4.60	4.63
		SPOCQ	4.14	3.69	3.93	4.40	4.02
		SD	0.82	0.79	0.64	0.25	0.38
		n <sup>b</sup>	6	6	6	6	6
		Mean Diff. <sup>c</sup>	-0.28	0.60	0.07	0.20	0.61
2	Math	T-POCQ	4.13	4.13	3.38	4.0	3.89
		SD	0.75	0.73	0.86	0.82	0.79
		SPOCQ	3.62	3.71	3.80	3.87	3.68
		SD	1.32	1.24	1.19	1.26	1.10
		n	18	19	18	19	19
		Mean Diff.	0.51	0.42	-0.42	0.13	0.21
3	Art	T-POCQ	4.71	5.00	4.86	4.20	4.25
		SPOCQ	4.62	4.43	4.66	3.85	4.38
		SD	0.36	0.72	0.30	0.90	0.36
		n	13	13	11	13	13
		Mean Diff.	0.09	0.57	0.20	0.35	-0.13
4	Math/Engineering	T-POCQ	4.57	3.71	3.57	4.20	3.38
		SPOCQ	4.57	4.55	4.50	4.59	4.48
		SD	0.41	0.44	0.46	0.46	0.48
		n	14	16	16	16	16
		Mean Diff.	0.00	-0.84	-0.93	-0.39	-1.10

(continued)

Teacher <sup>a</sup>	Subject		Appeal	Challenge	Choice	Meaningfulness	Academic Self-Efficacy
5	Engineering	T-POCQ	5.00	4.79	4.79	4.79	4.88
		SD	0.26	0.21	0.18	0.37	0.20
		SPOCQ	4.58	4.49	4.56	4.33	4.36
		SD	0.59	0.66	0.56	0.68	0.63
		n	33	33	32	33	33
		Mean Diff.	0.42	0.30	0.23	0.46	0.53
6	Engineering	T-POCQ	4.24	4.16	4.14	3.69	2.95
		SD	0.52	0.54	0.18	0.51	0.34
		SPOCQ	3.36	3.52	3.59	3.33	3.59
		SD	1.27	1.13	0.96	1.19	0.84
		n	28	26	27	27	28
		Mean Diff.	0.88	0.64	0.55	0.36	-0.64
7	Math	T-POCQ	4.29	4.14	3.57	4.00	3.63
		SPOCQ	3.68	4.07	3.71	3.13	3.54
		SD	0.54	0.63	0.76	1.06	0.76
		n	17	17	17	15	17
		Mean Diff.	0.60	0.07	-0.14	0.87	0.09
8	Social Studies	T-POCQ	4.74	4.59	4.86	4.60	4.51
		SD	0.19	0.12	0.10	0.21	0.14
		SPOCQ	4.58	4.40	4.41	4.41	4.24
		SD	0.47	0.53	0.55	0.56	0.62
		n	44	41	44	41	43
		Mean Diff.	0.16	0.19	0.45	0.19	0.27

(continued)

Teacher <sup>a</sup>	Subject		Appeal	Challenge	Choice	Meaningfulness	Academic Self-Efficacy
9	Science	T-POCQ	4.09	3.73	3.52	4.00	3.26
		SD	0.30	0.44	0.55	0.37	0.39
		SPOCQ	4.47	4.33	4.34	4.18	4.14
		SD	0.57	0.65	0.68	0.72	0.72
		n	20	20	20	20	19
		Mean Diff.	-0.38	-0.60	-0.82	-0.18	-0.88
10	Math	T-POCQ	5.00	5.00	5.00	4.20	4.75
		SPOCQ	4.29	4.38	4.08	3.87	3.71
		SD	0.85	0.51	0.76	0.81	0.67
		n	16	17	17	18	18
		Mean Diff.	0.71	0.62	0.92	0.33	1.04
11	Science	T-POCQ	4.00	4.57	3.86	3.20	4.00
		SPOCQ	4.57	4.70	4.61	4.33	4.43
		SD	0.40	0.39	0.38	0.65	0.48
		n	12	12	12	12	12
		Mean Diff.	-0.57	-0.13	-0.75	-1.13	-0.43
12	Social Studies	T-POCQ	4.00	4.43	4.14	5.00	4.13
		SPOCQ	3.79	3.79	3.98	3.75	3.77
		SD	1.00	0.95	0.75	0.55	0.84
		n	8	8	8	8	8
		Mean Diff.	0.21	0.67	0.16	1.25	0.36

(continued)

Teacher <sup>a</sup>	Subject		Appeal	Challenge	Choice	Meaningfulness	Academic Self-Efficacy
13	Business	T-POCQ	4.43	4.00	3.71	4.20	4.50
		SPOCQ	3.54	3.82	3.74	4.14	3.89
		SD	1.10	1.00	0.10	0.70	0.81
		n	17	19	19	19	20
		Mean Diff.	0.89	0.18	-0.03	0.06	0.61
14	Engineering	T-POCQ	4.14	4.57	4.14	3.00	3.63
		SD	0.16	0.08	0.15	0.03	0.27
		SPOCQ	3.96	4.06	3.94	3.66	3.81
		SD	0.95	0.71	0.80	0.82	0.72
		n	28	29	30	28	29
Mean Diff.	0.18	0.51	0.20	-0.66	-0.18		
15	Engineering	T-POCQ	4.43	3.71	4.43	4.60	3.63
		SPOCQ	4.45	4.30	4.51	4.51	4.10
		SD	0.57	0.50	0.37	0.48	0.66
		n	11	10	9	11	10
		Mean Diff.	-0.02	-0.59	-0.08	0.09	-0.47
16	Art	T-POCQ	4.08	4.20	3.77	3.36	3.93
		SD	0.27	0.27	0.23	0.26	0.10
		SPOCQ	4.47	4.42	4.33	4.23	4.35
		SD	0.62	0.64	0.69	0.80	0.58
		n	30	32	32	31	32
Mean Diff.	-0.39	-0.22	-0.56	-0.87	-0.42		

(continued)

Teacher <sup>a</sup>	Subject		Appeal	Challenge	Choice	Meaningfulness	Academic Self-Efficacy
17	Science	T-POCQ	4.29	4.32	4.23	4.33	4.26
		SD	0.43	0.36	0.40	0.42	0.23
		SPOCQ	4.27	4.20	4.00	4.12	4.07
		SD	0.88	0.80	0.91	0.87	0.72
		n	45	45	45	45	46
		Mean Diff.	0.02	0.12	0.23	0.21	0.19
18	Language Arts	T-POCQ	4.57	4.43	4.57	4.60	3.88
		SPOCQ	4.69	4.27	4.61	3.89	4.38
		SD	0.32	0.66	0.39	0.81	0.46
		n	7	7	7	7	6
		Mean Diff.	-0.12	0.16	-0.04	0.71	-0.50
		19	Language Arts	T-POCQ	4.67	4.73	4.54
SD	0.11			0.06	0.20	0.28	0.09
SPOCQ	4.25			4.27	4.12	3.79	4.10
SD	0.92			0.84	0.90	1.08	0.83
n	23			24	25	25	24
Mean Diff.	0.42			0.46	0.42	1.08	0.70
20	Science	T-POCQ	4.71	4.00	3.57	3.80	3.75
		SPOCQ	4.66	4.75	4.71	4.70	4.55
		SD	0.32	0.24	0.31	0.32	0.40
		n	8	8	8	8	8
		Mean Diff.	0.05	-0.75	-1.14	-0.90	-0.80

(continued)

Teacher <sup>a</sup>	Subject		Appeal	Challenge	Choice	Meaningfulness	Academic Self-Efficacy
21	Science	T-POCQ	4.61	4.42	4.54	4.11	4.31
		SD	0.13	0.06	0.14	0.17	0.18
		SPOCQ	4.39	4.21	4.25	4.32	4.10
		SD	0.49	0.54	0.58	0.57	0.67
		Mean Diff.	0.22	0.21	0.29	-0.21	0.21
22	Art	T-POCQ	4.36	4.51	3.74	3.46	3.91
		SD	0.09	0.04	0.02	0.38	0.11
		SPOCQ	4.83	4.85	4.80	4.64	4.58
		SD	0.23	0.17	0.25	0.56	0.37
		n	29	29	29	27	29
		Mean Diff.	-0.47	-0.34	-1.06	-1.18	-0.67
23	Computer Science	T-POCQ	4.44	4.66	4.19	4.00	4.00
		SD	0.24	0.21	0.21	0.20	0.17
		SPOCQ	4.31	4.29	4.15	4.00	4.09
		SD	0.65	0.37	0.73	0.85	0.62
		n	41	42	41	41	40
		Mean Diff.	0.13	0.37	0.04	0.00	-0.09
Grand Means		T-POCQ	4.44	4.40	4.19	4.08	4.08
		SD	0.327	0.368	0.493	0.649	0.537
		n	23	23	23	23	23
		SPOCQ	4.29	4.26	4.21	4.09	4.10
		SD	0.827	0.761	0.780	0.870	0.723
		n	502	505	505	502	510
Mean Diff.	0.15	0.14	-0.02	-0.01	-0.02		

<sup>a</sup>SPOCQ and T-POCQ results for all classes taught by one teacher were combined to compute table means. <sup>b</sup>n represents the number of student responses for each construct and includes all classes taught by the teacher. <sup>c</sup>Positive mean differences denote teacher perceptions were higher than their students' perceptions; negative mean differences (highlighted) denote student perceptions were higher than their teacher's perceptions.

**Teachers' perceptions of the five motivational constructs.** Descriptive statistics for individual teachers selected for the guided reflection interviews were compared to the overall T-POCQ results. Table 18 provides descriptive statistics for the 23 GERI teachers who completed the assessment ( $n=39$  administrations; note that 12 of the 23 participating teachers took the T-POCQ more than once because they taught more than one GERI class and because their rankings would likely change based on the specific class taught). Overall T-POCQ means for each motivational construct were high, ranging from 4.05 (0.54 SD) to 4.41 (0.33 SD) on a scale from 1 to 5. Teachers perceived appeal as the highest motivational construct; appeal also had the smallest score range, signifying more agreement between teachers. In the guided reflective interviews, no teachers identified appeal as an area in need of improvement. The largest range of scores for the 23 teachers occurred for meaningfulness and academic self-efficacy with a low of 1.00 and a perfect high of 5.00. While two teachers noted meaningfulness as a strength in the interviews, most teachers identified meaningfulness as the construct needing the most improvement in motivating students. Overall, GERI teachers ranked academic self-efficacy as the lowest perceived motivational construct relative to the other four; however, with a mean of 4.05, academic self-efficacy was still ranked highly. In the guided reflection interviews, no teacher identified academic self-efficacy as an area of strength, but more than half identified it as an area for improvement. Based on these averages, the 23 teachers who taught 39 GERI classes appeared to be confident in their use of the motivational constructs in their classrooms. Table 19 provides means of the items that comprise each motivational construct for the 10 GERI teachers who were selected for the guided reflection interviews. Again, note that 6 of these teachers completed more than one T-POCQ due to teaching more than one GERI class. For example,



Teacher 2 taught two classes and has T-POCQ results for 2-Star I and 2-Pulsar II below.

Commentary on these averages is included in each teacher's motivational profile below.

Finally, classroom-level, descriptive statistics for the motivational constructs for each teacher's SPOCQ and T-POCQ results were also calculated and graphed. These graphs and accompanying descriptive statistics served as the central points of discussion during the guided reflection interviews with participating teachers. Figures 3 to 7 contain paired teachers' motivational profiles based on demographics as explained previously. A discussion of the data pair, including qualitative data gleaned from the guided reflection interviews follows each figure.

Table 18

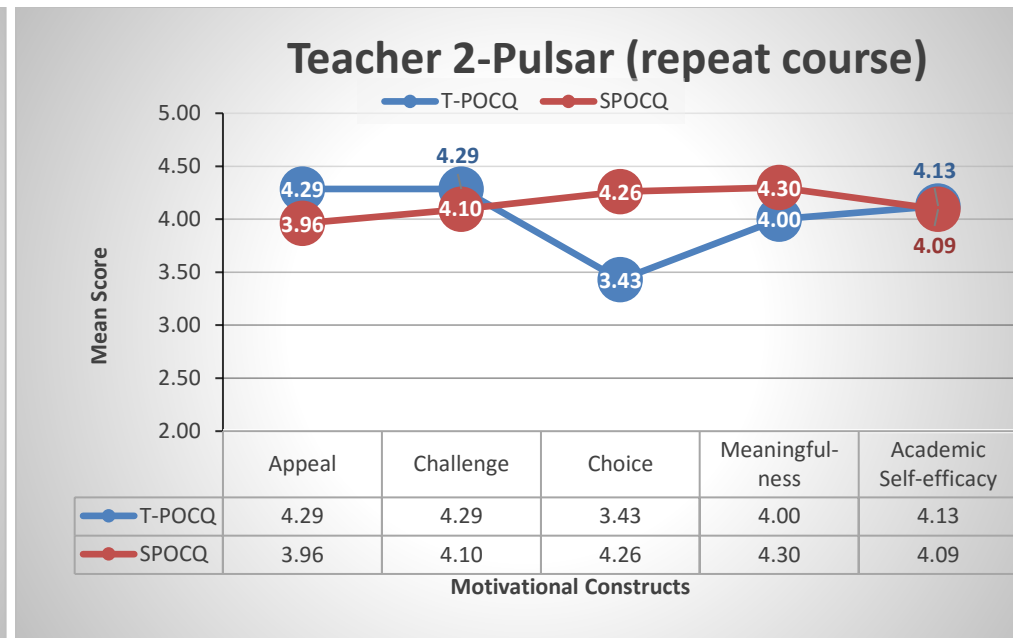
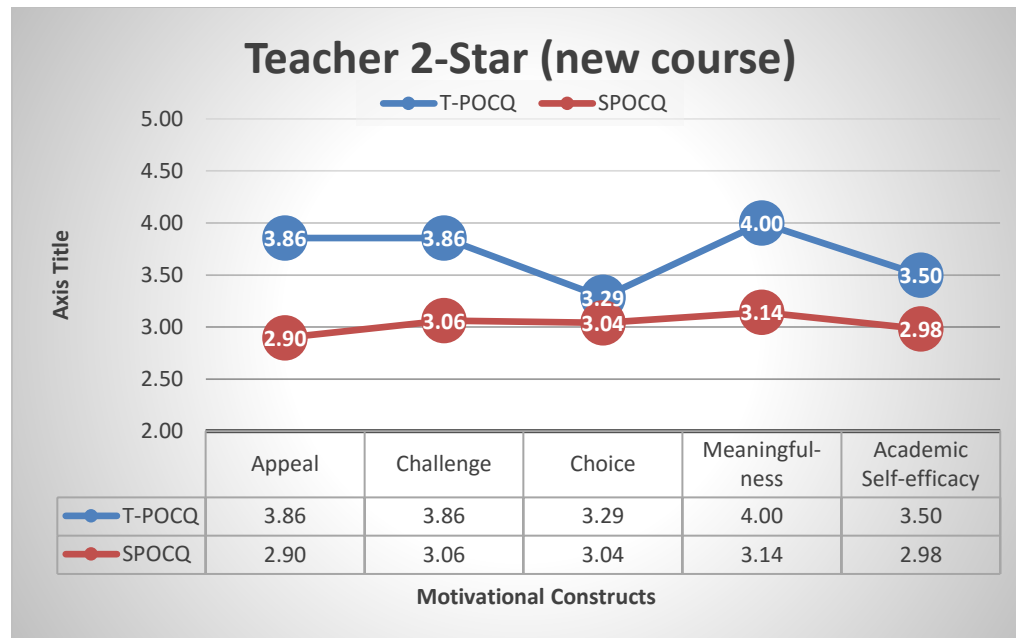
*Summary T-POCQ Descriptive Statistics (n=39 administrations)*

	Minimum	Maximum	Mean	Std. Deviation
Appeal	3.00	5.00	4.41	0.33
Challenge	2.00	5.00	4.38	0.38
Choice	2.00	5.00	4.16	0.50
Meaningfulness	1.00	5.00	4.12	0.66
Self-efficacy	1.00	5.00	4.04	0.54

Table 19

*T-POCQ Scale Means for Teachers Participating in Guided Interviews (n=10)*

Teacher #	Appeal	Challenge	Choice	Meaningfulness	Academic Self-Efficacy
2—Star I	3.86	3.86	3.29	4.00	3.50
2—Pulsar II	4.29	4.29	3.43	4.00	4.13
3—Comet II	4.71	5.00	4.86	4.20	4.25
4—Pulsar II	4.57	3.71	3.57	4.20	3.38
7—Comet II	4.29	4.14	3.57	4.00	3.63
8—Star II	4.57	4.57	4.86	5.00	4.50
8—Star I	4.86	4.71	4.86	4.80	4.63
8—Pulsar I	4.71	4.43	4.86	4.00	4.38
12—Pulsar I	4.00	4.43	4.14	5.00	4.13
14—Star II	4.14	4.57	4.14	3.00	3.63
14—Pulsar II	4.14	4.57	4.14	3.00	3.63
16—Star II	4.00	4.29	3.86	3.60	4.00
16—Pulsar II	4.14	4.14	3.71	3.20	3.88
21—Pulsar I	4.29	3.86	4.14	4.00	3.75
21—Pulsar II	4.86	4.86	4.86	4.20	4.75
23—Star II	4.57	4.57	4.14	4.00	4.00
23—Pulsar I	4.29	4.71	4.29	4.00	4.13
23—Pulsar II	4.43	4.71	4.14	4.00	3.88



Teacher 2-Star SPOCQ Descriptive Statistics

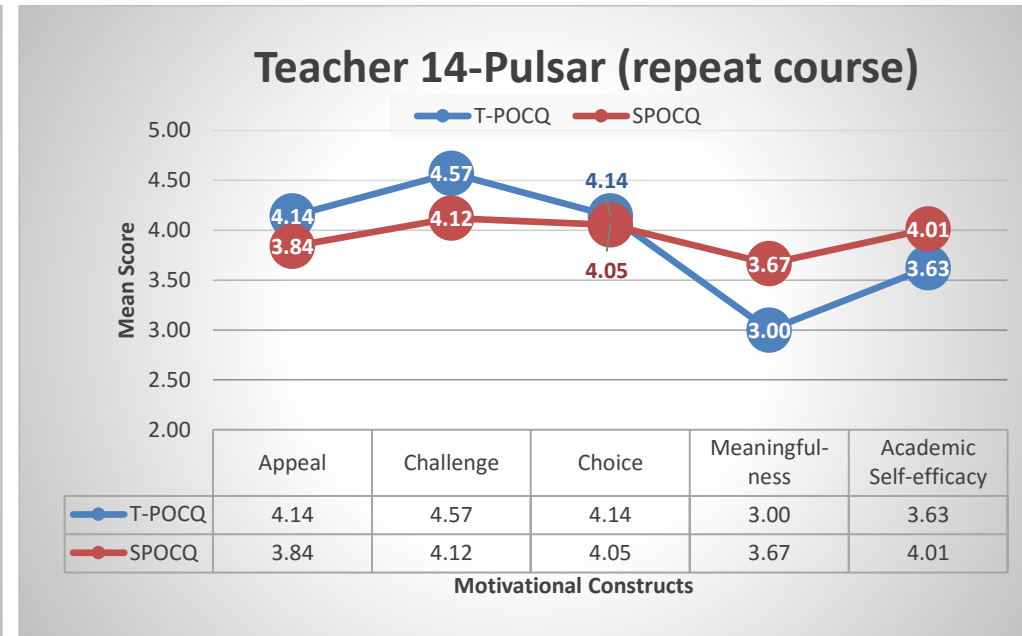
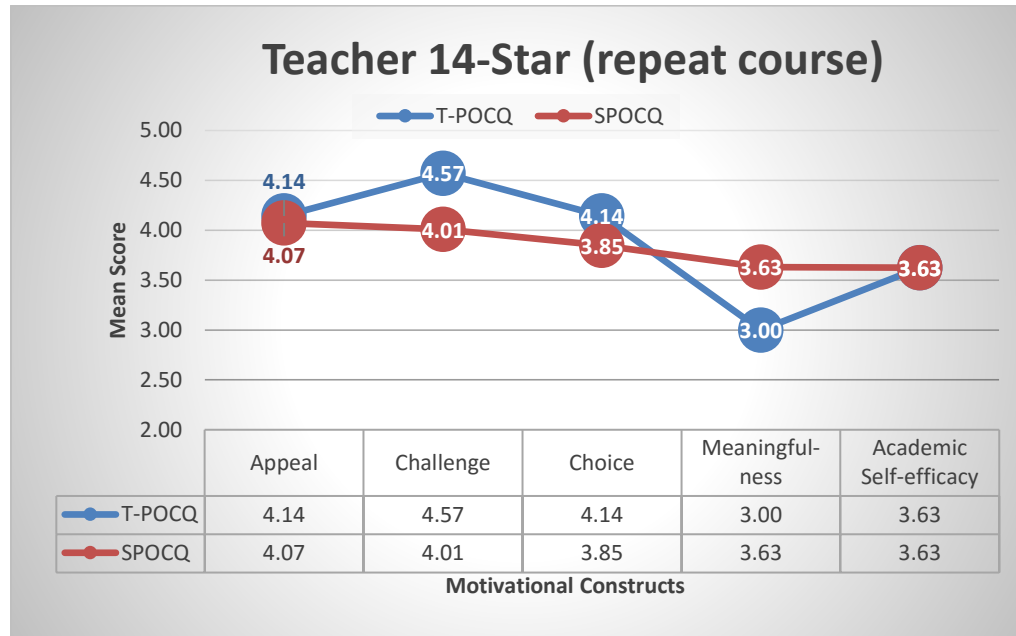
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	7	4.00	1.00	5.00	2.90	1.60
Challenge	7	4.00	1.00	5.00	3.06	1.53
Choice	7	4.00	1.00	5.00	3.04	1.45
Meaningful-ness	7	4.00	1.00	5.00	3.14	1.68
Academic Self-efficacy	7	4.00	1.00	5.00	2.98	1.40

Teacher 2-Pulsar SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	12	3.00	2.00	5.00	3.96	0.96
Challenge	12	3.00	2.00	5.00	4.10	0.89
Choice	12	2.00	3.00	5.00	4.26	0.65
Meaningful-ness	12	2.00	3.00	5.00	4.30	0.73
Academic Self-efficacy	12	2.00	3.00	5.00	4.09	0.63

Figure 3. Classroom-level Motivational Profiles of Teachers 2 and 14

Figure 3 continued



Teacher 14-Star SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	17	3.00	2.00	5.00	4.04	0.86
Challenge	17	3.00	2.00	5.00	4.01	0.71
Choice	17	3.00	2.00	5.00	3.85	0.88
Meaningful-ness	17	3.00	2.00	5.00	3.63	0.77
Academic Self-efficacy	17	3.00	2.00	5.00	3.63	0.64

Teacher 14-Pulsar SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	13	4.00	1.00	5.00	3.84	1.05
Challenge	13	2.00	3.00	5.00	4.12	0.71
Choice	13	3.00	2.00	5.00	4.05	0.70
Meaningful-ness	13	3.00	2.00	5.00	3.67	0.86
Academic Self-efficacy	13	3.00	2.00	5.00	4.01	0.77

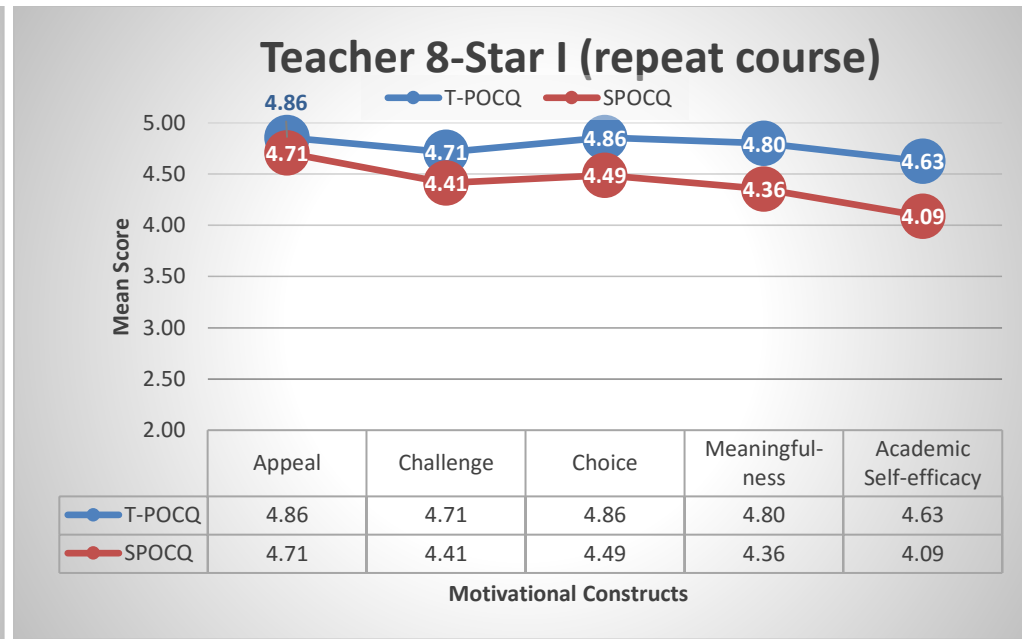
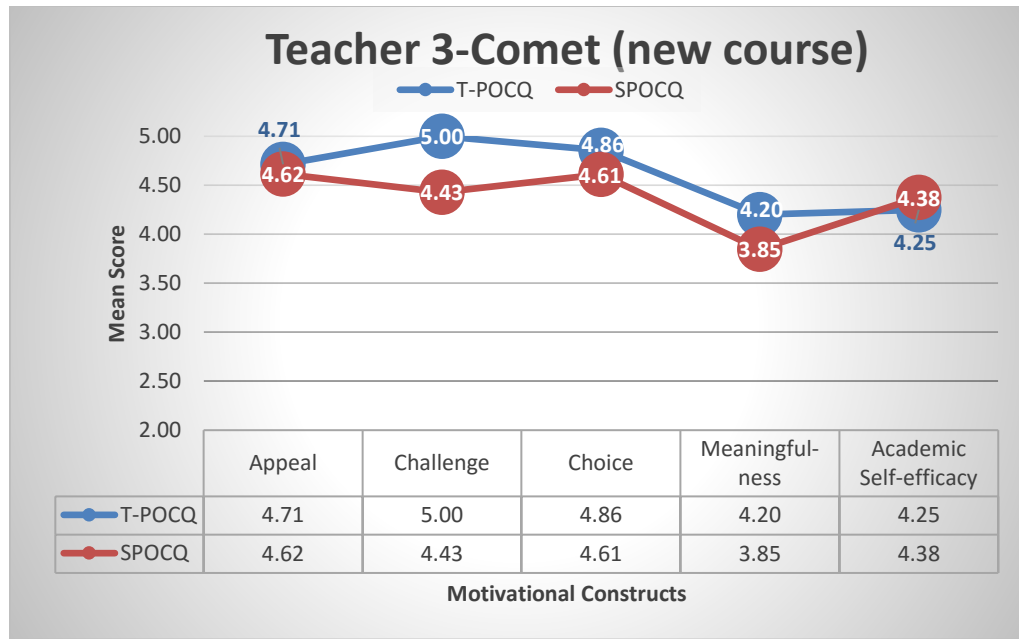
Paired sample #1, Teachers 2 and 14, differed in degree held and number of years K-12 teaching experience. Teacher 2, who holds a Master's degree in statistics with no K-12 teaching experience, developed and taught two GERI classes. Motivational profiles 2-Star and 2-Pulsar represent the quantitative results of the SPOCQ and T-POCQ for these two classes: one new GERI class (see 2-Star) and one repeat GERI class (see 2-Pulsar) that was taught for the second time, having been taught the previous summer in Residential. In general, Teacher 2's rankings for the new class were 2 to 5 standard deviations below the overall T-POCQ mean rankings of the 23 participating teachers: appeal (-5 SD), challenge (-4 SD), choice (-3 SD), meaningfulness (-2 SD), and academic self-efficacy (-2 SD). Teacher 2's ranking for the repeat class were higher with three mean rankings above the overall T-POCQ means: appeal (-1 SD), challenge (-1 SD), choice (+1 SD), meaningfulness (+1 SD), and academic self-efficacy (+1 SD). Comparing the two classes, Teacher 2's T-POCQ results show higher mean rankings on perceived motivation across all constructs in the class taught previously when compared to the new class. Teacher 2 ranked appeal and challenge equally for each class, although both were ranked higher in the previously taught class, and choice was ranked lowest in both classes. In addition, SPOCQ mean rankings on all constructs for both classes were lower than their teacher's rankings, except for choice and meaningfulness in the previously taught class (2-Pulsar). Of note, SPOCQ mean rankings for the new class taught to Star (middle school) students averaged 1.16 points lower (range 1.04 to 1.25) than SPOCQ mean rankings for the previously taught class at the Pulsar (high school) level. SPOCQ ranges for each construct in the 2-Star course were very large for a 5-point scale, spanning 4 points on the 5-point scale.

Teacher 14, who holds a Master's degree in education and has two years' K-12 teaching experience, also taught two GERI classes. Motivational profiles 14-Star and 14-Pulsar represent

the same class developed and taught by Teacher 14, once at the Star level and once at the Pulsar level. Interestingly, Teacher 14's T-POCQ mean rankings were identical for both profiles, indicating that perceived motivation for each construct was equivalent regardless of grade level taught. In general, Teacher 14's rankings for 14-Star scored one standard deviation below the overall T-POCQ mean rankings of the 23 participating teachers on all constructs except appeal which was two standard deviations below the mean. Teacher 14's ranking for 14-Pulsar were similar, with three constructs (challenge, choice, and meaningfulness) one standard deviation below the overall T-POCQ means, appeal two standard deviations below, and academic self-efficacy one standard deviation above the overall T-POCQ means. For both classes, Teacher 14 ranked challenge highest and meaningfulness lowest among the five motivational constructs. SPOCQ mean rankings also followed similar patterns across the constructs with students ranking appeal, challenge, and choice lower than their teacher and meaningfulness and academic self-efficacy equal to or higher than Teacher 14. In general, middle school Star students' mean rankings on challenge, choice, meaningfulness, and academic self-efficacy were slightly lower (average 0.13; range 0.06 to 0.44) than the Pulsar students' means; Star students' mean appeal ranking appeal was 0.17 higher than the Pulsar mean.

Examining the quantitative results of this teacher pair, Teacher 2 perceived less confidence in providing motivational components of instruction, especially when teaching a class for the first time. Teacher 2 does not hold a degree in education and has not taught in K-12 settings. Teacher 14, on the other hand, perceived more confidence in providing motivational components of instruction even when teaching a class for the first time. Interestingly, both teachers and their students ranked the motivational constructs lower in the middle school (Star)

sections of their courses than in the high school (Pulsar) sections. Their students followed a similar pattern: Star students ranked these teachers lower than the Pulsar students did.



Teacher 3-Comet SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	13	2.00	3.00	5.00	4.62	0.36
Challenge	13	3.00	2.00	5.00	4.43	0.72
Choice	13	1.00	4.00	5.00	4.61	0.30
Meaningful-ness	13	3.00	2.00	5.00	3.85	0.90
Academic Self-efficacy	13	2.00	3.00	5.00	4.38	0.36

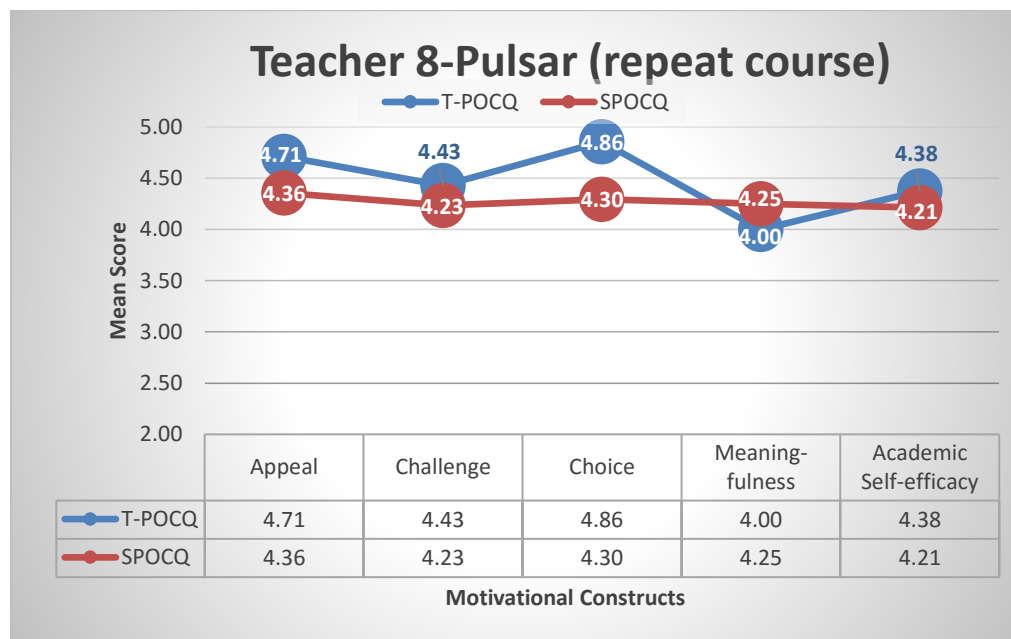
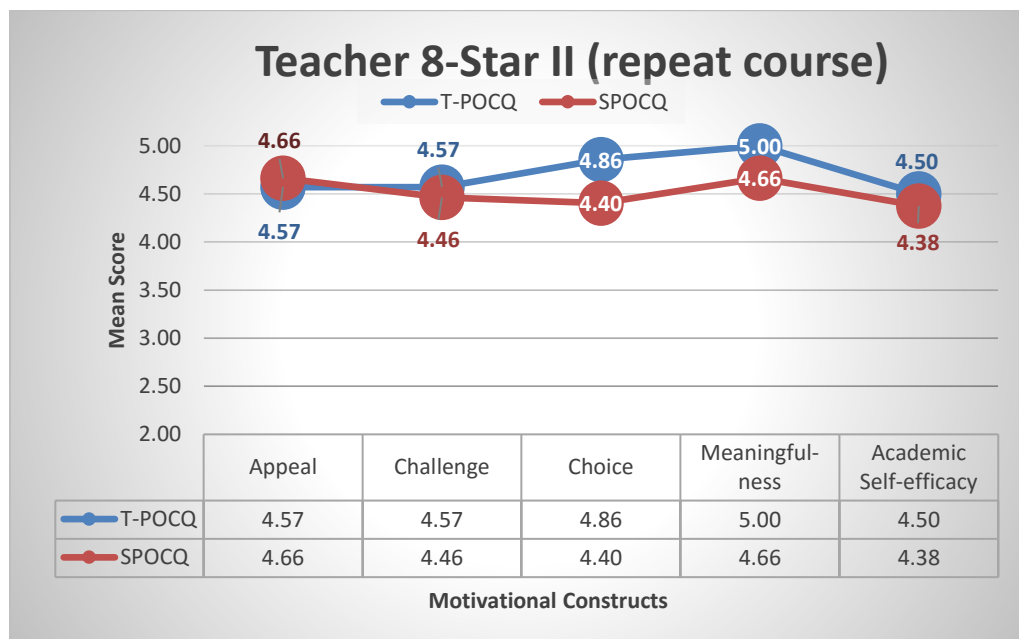
Teacher 8-Star I SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	19	1.00	4.00	5.00	4.71	0.31
Challenge	19	2.00	3.00	5.00	4.41	0.52
Choice	19	2.00	3.00	5.00	4.49	0.45
Meaningful-ness	19	2.00	3.00	5.00	4.36	0.55
Academic Self-efficacy	19	3.00	2.00	5.00	4.09	0.74

Figure 4. Classroom-level Motivational Profiles of Teachers 3 and 8



Figure 4 continued



Teacher 8-Star II SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	11	1.00	4.00	5.00	4.66	0.44
Challenge	11	2.00	3.00	5.00	4.46	0.52
Choice	11	3.00	2.00	5.00	4.40	0.69
Meaningful-ness	11	1.00	4.00	5.00	4.66	0.40
Academic Self-efficacy	11	2.00	3.00	5.00	4.38	0.57

Teacher 8-Pulsar SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	14	2.00	3.00	5.00	4.36	0.61
Challenge	14	2.00	3.00	5.00	4.23	0.61
Choice	14	2.00	3.00	5.00	4.30	0.56
Meaningful-ness	14	2.00	3.00	5.00	4.25	0.64
Academic Self-efficacy	14	2.00	3.00	5.00	4.21	0.62

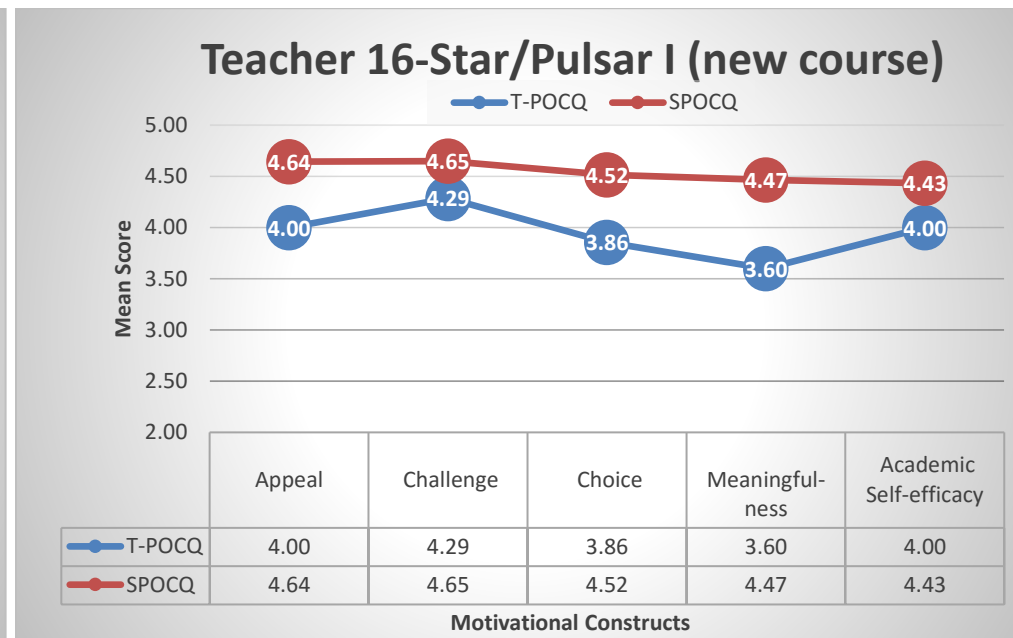
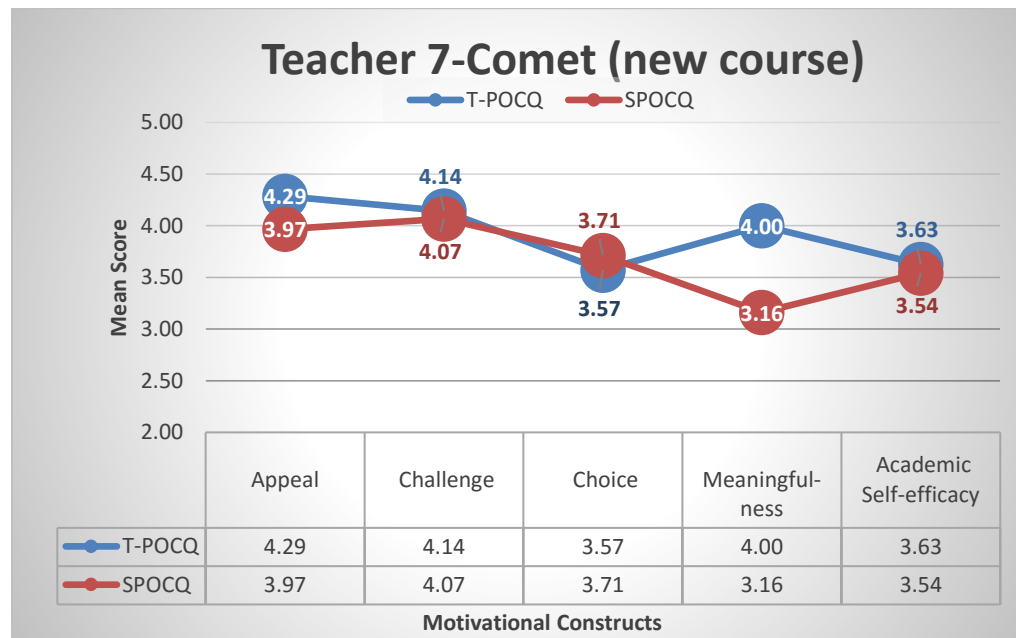
Paired sample #2, Teachers 3 and 8, differed in gifted education training, number of years teaching students with gifts and talents, and number of years teaching at GERI. Both teachers hold Master's degrees in education with between six to ten years' K-12 teaching experience. Teacher 3 does not hold a gifted education credential and taught for GERI for the first time during this study. Teacher 8 holds a gifted education certificate and has taught for GERI between six to ten years.

Teacher 3 developed and taught one GERI class. Motivational profile 3-Comet represents the quantitative results of the SPOCQ and T-POCQ for this class. Teacher 3's rankings ranged from 1 to 2 standard deviations above the overall T-POCQ mean rankings of the 23 participating teachers: appeal (+1 SD), challenge (+2 SD), choice (+2 SD), meaningfulness (+1 SD), and academic self-efficacy (+1 SD). Teacher 3 ranked challenge highest (5.0/5.0), and meaningfulness was ranked lowest, relatively speaking with 4.25/5.0. SPOCQ mean rankings on all constructs were lower than their teacher's rankings, except for academic self-efficacy which was slightly higher than the T-POCQ ranking by 0.13 points.

Motivational profiles 8-Star I, 8-Star II and 8-Pulsar represent three different classes developed and taught previously by Teacher 8. Teacher 8's T-POCQ mean rankings ranged between 4.0 to 5.0 on all profiles, indicating that perceived motivation for each construct was fairly consistent regardless of grade level or class taught. In general, Teacher 8 ranked choice 2 standard deviations above the overall T-POCQ mean in all three classes. Teacher 8's rankings for the two Star classes (Star I and II) were 1 to 2 standards deviations above the overall T-POCQ mean for all five constructs with academic self-efficacy ranked lowest in both classes. The only construct that was ranked below (by -1 SD) the overall T-POCQ mean was meaningfulness in the 8-Pulsar profile. SPOCQ mean rankings followed similar patterns across

the three classes with students ranking appeal highest and academic self-efficacy lowest. All SPOCQ means were slightly lower than their teacher's, except for appeal in 8-Star II and meaningfulness in 8-Pulsar. In general, middle school Star students' average mean rankings on all constructs were slightly higher (average 0.19; range 0.03 to 0.33) than the Pulsar students' means.

Examining the mean averages of this teacher pair, Teachers 3 and 8 perceived similar levels in providing appeal and choice in their classrooms, while Teacher 3 ranked higher in providing challenge and Teacher 8 ranked higher in providing meaningfulness and academic self-efficacy. Although Teacher 8 holds a gifted education credential and Teacher 3 does not, average SPOCQ mean rankings for both were impressive, however, Teacher 3's rankings exceeded Teacher 8 on all constructs except meaningfulness



Teacher 7-Comet SPOCQ Descriptive Statistics

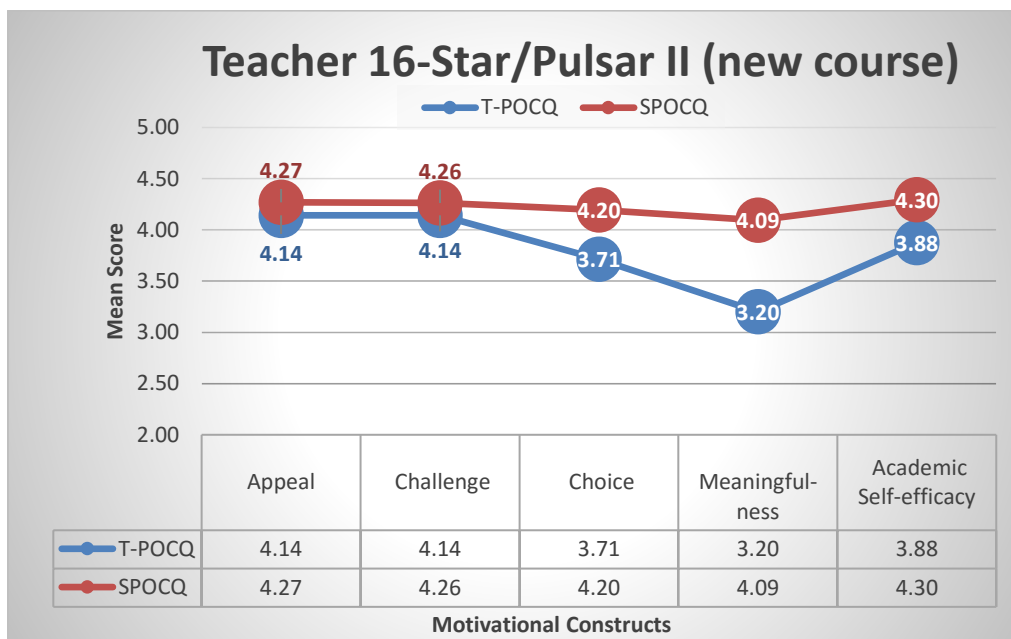
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	17	2.00	3.00	5.00	3.97	0.54
Challenge	17	3.00	2.00	5.00	4.07	0.63
Choice	17	3.00	2.00	5.00	3.71	0.76
Meaningful-ness	17	4.00	1.00	5.00	3.16	0.99
Academic Self-efficacy	17	4.00	1.00	5.00	3.54	0.76

Teacher 16-Star/Pulsar II SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	13	1.00	4.00	5.00	4.64	0.36
Challenge	13	1.00	4.00	5.00	4.65	0.36
Choice	13	2.00	3.00	5.00	4.52	0.37
Meaningful-ness	13	2.00	3.00	5.00	4.47	0.45
Academic Self-efficacy	13	2.00	3.00	5.00	4.43	0.47

Figure 5. Classroom-level Motivational Profiles of Teachers 7 and 16

Figure 5 continued



Teacher 16-Star/Pulsar II SPOCQ Descriptive Statistics

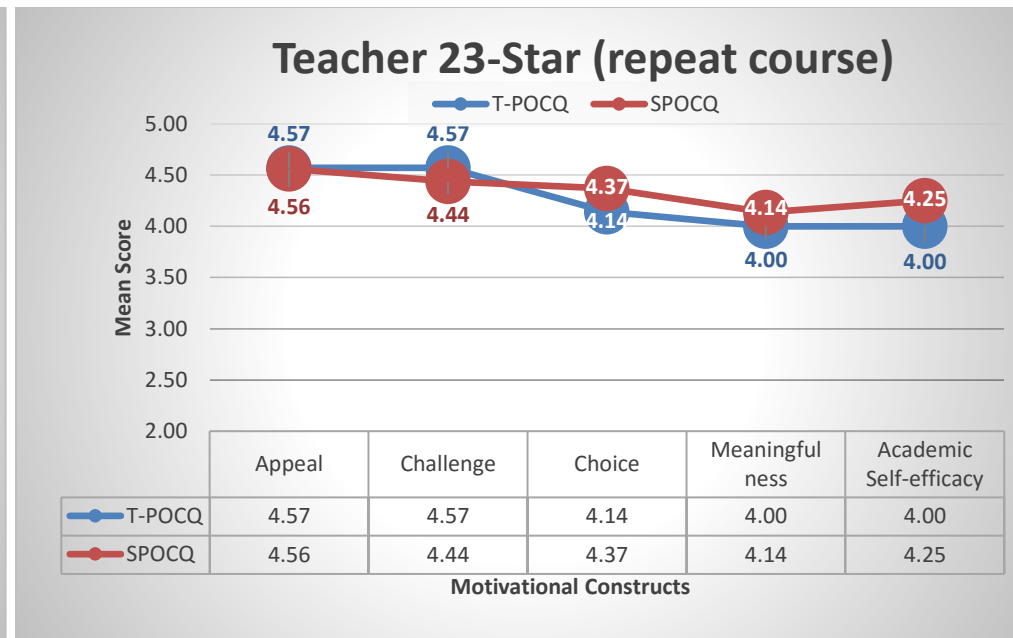
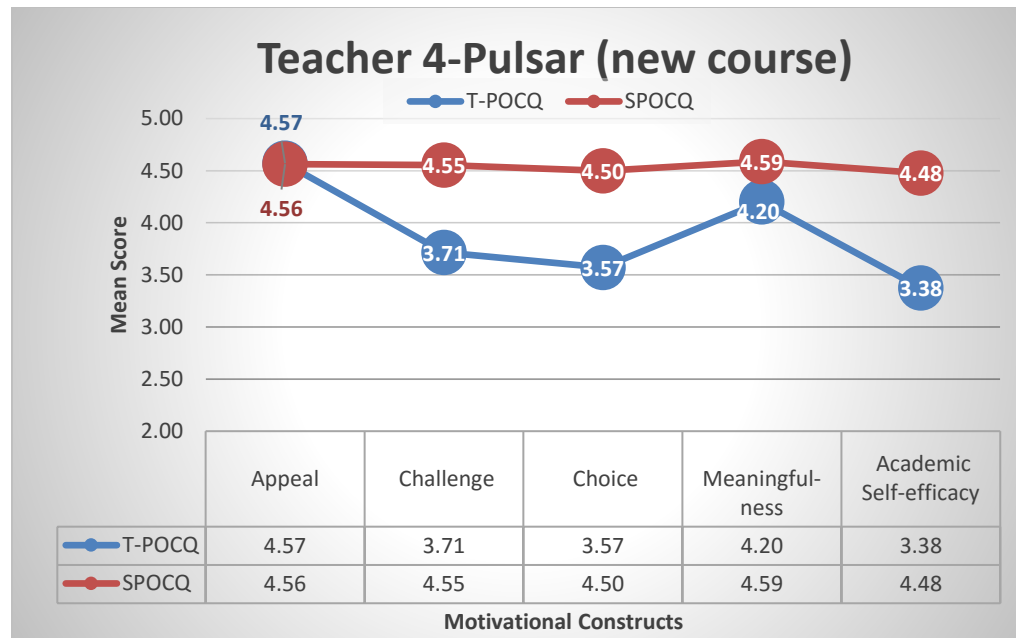
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	19	3.00	2.00	5.00	4.27	0.79
Challenge	19	3.00	2.00	5.00	4.26	0.74
Choice	19	3.00	2.00	5.00	4.20	0.83
Meaningful-ness	19	3.00	2.00	5.00	4.09	0.93
Academic Self-efficacy	19	2.00	3.00	5.00	4.30	0.65

Paired sample #3, Teachers 7 and 16, differed in degree held, number of years K-12 teaching experience, and number of years teaching students with gifts and talents. Teacher 7, who holds a Bachelor's degree in Behavioral Science with more than 11 years' teaching in K-12 and three to five years teaching students with gifts and talents, taught one GERI class developed by another GERI teacher. Motivational profile 7-Comet represents the quantitative results of the SPOCQ and T-POCQ for this class. Teacher 7's mean rankings for appeal, challenge, meaningfulness, and academic self-efficacy were -1 SD below and choice was -2 SD below the overall T-POCQ mean rankings of the 23 participating teachers. Teacher 7 ranked appeal highest (4.29) and choice lowest (3.57) among the five constructs. SPOCQ mean rankings for Teacher 7 were lower than their teachers' T-POCQ rankings on all constructs except for choice.

Teacher 16, who holds a Master's degree in engineering and no prior teaching experience, taught two GERI classes in an area of interest unrelated to engineering. Motivational profiles 16-Star/Pulsar I and II represent the same class developed and taught by Teacher 16, with both classes combining Star and Pulsar students. Interestingly, Teacher 16's T-POCQ mean rankings followed similar patterns in both profiles; meaningfulness was ranked lowest in both classes, and challenge was ranked highest in both (along with appeal in 16-Star/Pulsar II). On average, Teacher 16's rankings were -1 SD below the overall T-POCQ mean rankings on challenge, choice, and academic self-efficacy and -2 SD's below on appeal and meaningfulness. SPOCQ mean rankings, ranging from 4.09 to 4.65 across both classes, ranked consistently higher than their teacher's T-POCQ means.

Examining the results of this teacher pair, Teacher 7 ranked lower than Teacher 16 on both instruments (except for appeal and meaningfulness on the T-POCQ), despite Teacher 7 having a Bachelor's degree in an education-related field and over 10 years' teaching experience.

Although both teachers were teaching a class for the first time, a factor that may account for this is that Teacher 7 did not develop his own curriculum whereas Teacher 16 did.



Teacher 4-Pulsar SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	16	1.00	4.00	5.00	4.56	0.38
Challenge	16	2.00	3.00	5.00	4.55	0.44
Choice	16	2.00	3.00	5.00	4.50	0.46
Meaningfulness	16	2.00	3.00	5.00	4.59	0.46
Academic Self-efficacy	16	2.00	3.00	5.00	4.48	0.48

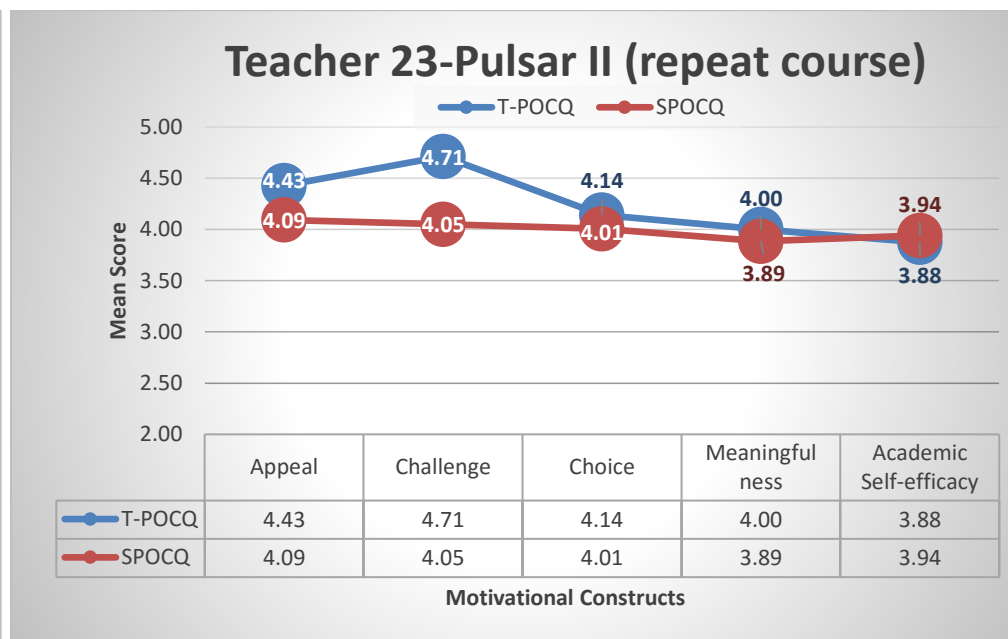
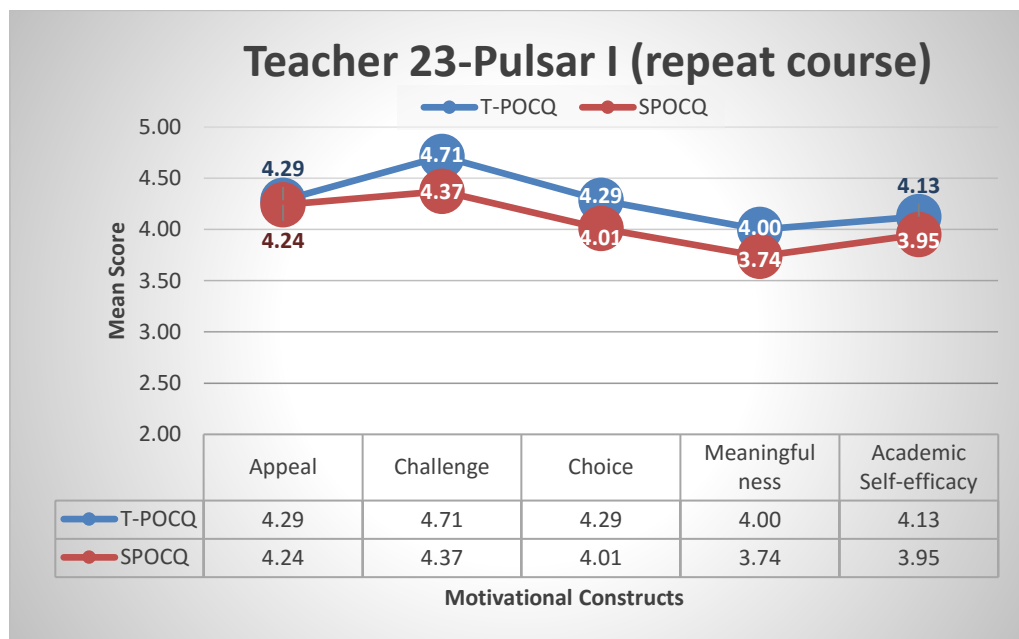
Teacher 23-Star SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	15	2.00	3.00	5.00	4.56	0.44
Challenge	15	2.00	3.00	5.00	4.44	0.66
Choice	15	3.00	2.00	5.00	4.37	0.64
Meaningfulness	15	4.00	1.00	5.00	4.14	1.13
Academic Self-efficacy	15	2.00	3.00	5.00	4.25	0.61

Figure 6. Classroom-level Motivational Profiles of Teachers 4 and 23



Figure 6 continued



Teacher 23-Pulsar I SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	13	3.00	2.00	5.00	4.24	0.87
Challenge	13	2.00	3.00	5.00	4.37	0.75
Choice	13	3.00	2.00	5.00	4.01	0.87
Meaningful-ness	13	4.00	1.00	5.00	3.74	0.97
Academic Self-efficacy	13	3.00	2.00	5.00	3.95	0.80

Teacher 23-Pulsar II SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	14	2.00	3.00	5.00	4.09	0.52
Challenge	14	3.00	2.00	5.00	4.05	0.63
Choice	14	3.00	2.00	5.00	4.01	0.65
Meaningful-ness	14	3.00	2.00	5.00	3.89	0.67
Academic Self-efficacy	14	2.00	3.00	5.00	3.94	0.47

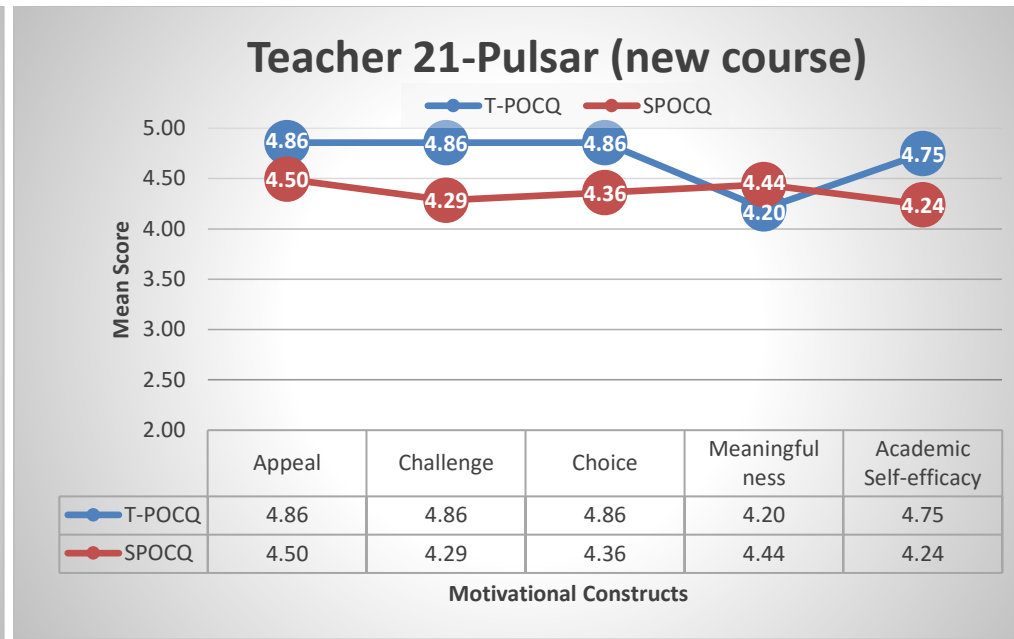
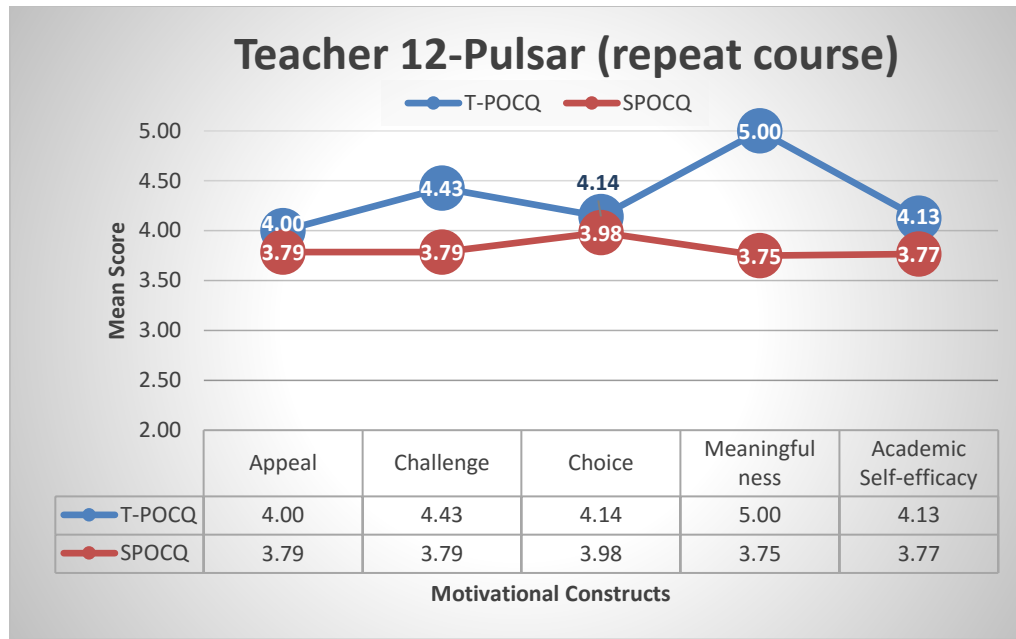
Paired sample #4, Teachers 4 and 23, differed in gifted credential held, number of years K-12 teaching experience, and number of years teaching students with gifts and talents. Both teachers hold Master's degrees in education and gifted education credentials—Teacher 4 is a doctoral candidate in gifted education and Teacher 23 holds a gifted education certificate. Although Teacher 4 has approximately six more years' K-12 teaching experience, both are relatively new to teaching students with gifts and talents. Teacher 4 stepped in to teach at Residential unexpectedly when the original teacher was unable to do so; therefore, he developed his course as he taught. Teacher 23 developed and taught his three GERI classes for more than two years.

Teacher 4's motivational profile, 4-Pulsar, represents the quantitative results of the SPOCQ and T-POCQ surveys. In general, Teacher 4's rankings for this new class, scored from -2 SD's below (for challenge, choice, and academic self-efficacy) to +1 SD above (for appeal and meaningfulness) the overall T-POCQ mean rankings of the 23 participating teachers. Teacher 4 ranked appeal highest and academic self-efficacy lowest. SPOCQ mean rankings on all constructs were higher than their teacher's rankings, except for appeal which was only .01 points lower.

Teacher 23 taught three GERI classes: one course taught at the Star level (23-Star), and 23-Pulsar I and II represent the same class taught two times at the high school level. In general, Teacher 23's rankings for the Star class were +1 SD above the overall T-POCQ mean rankings of the 23 participating teachers on appeal and challenge and -1 SD below the overall T-POCQ mean on choice, meaningfulness, and academic self-efficacy. SPOCQ mean rankings followed a similar pattern with SPOCQ means above T-POCQ means for appeal and challenge and below T-POCQ means for choice, meaningfulness, and academic self-efficacy. Teacher 23's average T-

POCQ mean rankings for 23-Pulsar I and II were slightly different with two constructs (challenge and choice) +1 SD above the overall T-POCQ means and three constructs (appeal, meaningfulness, and academic self-efficacy) -1 SD below. For both classes, Teacher 23 ranked challenge highest and meaningfulness lowest among the five motivational constructs along with academic self-efficacy for 23 Pulsar II. SPOCQ mean rankings for the two Pulsar classes were below T-POCQ rankings except for academic self-efficacy in 23-Pulsar II. In general, middle school Star students' mean rankings on all constructs were higher (average 0.32; range 0.22 to 0.40) than the Pulsar students' average mean rankings.

Examining the results of this teacher pair, both teachers performed unexpectedly lower than the overall T-POCQ mean, especially considering their gifted education credentials, teaching experience, and familiarity with the GERI program. Teacher 4's students, however, seemed to counter his average-to-low T-POCQ scores with overall high rankings. This is noteworthy since Teacher 4 had to assume teaching duties unexpectedly. Teacher 23 had mixed results, with Star students responding more positively than Pulsar students.



Teacher 12-Pulsar SPOCQ Descriptive Statistics

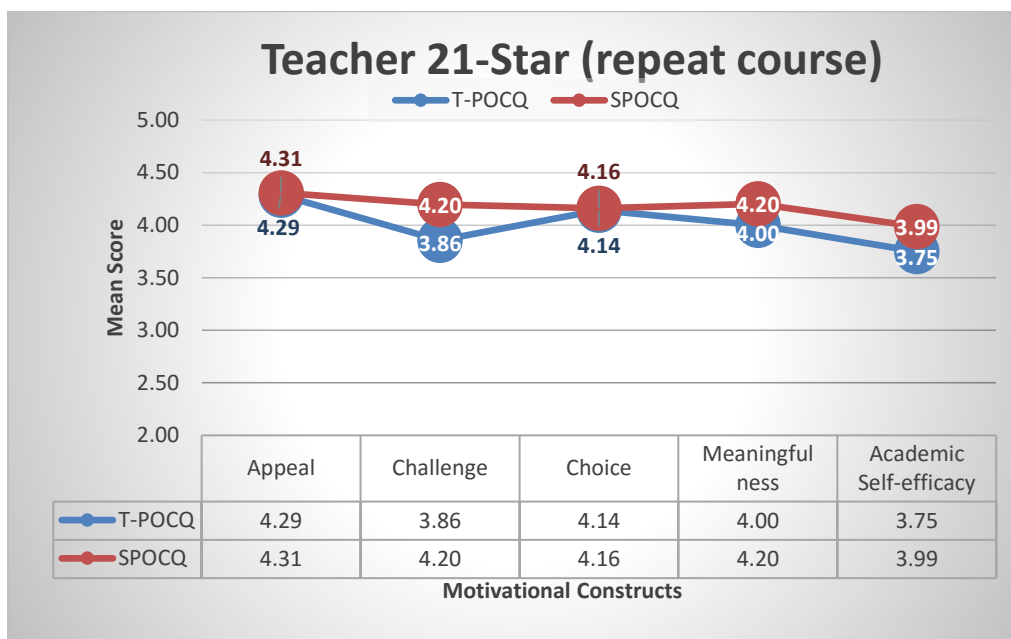
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	8	4.00	1.00	5.00	3.79	1.00
Challenge	8	4.00	1.00	5.00	3.79	0.95
Choice	8	3.00	2.00	5.00	3.98	0.75
Meaningful-ness	8	2.00	3.00	5.00	3.75	0.55
Academic Self-efficacy	8	3.00	2.00	5.00	3.77	0.84

Teacher 21-Pulsar SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	15	2.00	3.00	5.00	4.50	0.46
Challenge	15	3.00	2.00	5.00	4.29	0.49
Choice	15	3.00	2.00	5.00	4.36	0.51
Meaningful-ness	15	2.00	3.00	5.00	4.44	0.54
Academic Self-efficacy	15	3.00	2.00	5.00	4.24	0.50

Figure 7. Classroom-level Motivational Profiles of Teachers 12 and 21

Figure 7 continued



Teacher 21-Star SPOCQ Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Appeal	19	2.00	3.00	5.00	4.31	0.51
Challenge	19	3.00	2.00	5.00	4.20	0.58
Choice	19	2.00	2.00	5.00	4.16	0.60
Meaningfulness	19	2.00	3.00	5.00	4.20	0.57
Academic Self-efficacy	19	3.00	2.00	5.00	3.99	0.77

Paired sample #5, Teachers 12 and 21, differed in number of years teaching students with gifts and talents. Both teachers hold Master's degrees in education and have been K-12 teachers for over 11 years. Neither holds a gifted education credential, but Teacher 12 has between six to 10 years working with students with gifts and talents while Teacher 21 has none. Teacher 12 developed and taught one class for GERI. Motivational profile 12-Pulsar represents the quantitative results of the SPOCQ and T-POCQ for this class. Teacher 12's mean rankings for between -2 SD and +2 SD around the overall T-POCQ mean rankings of the 23 participating teachers: appeal (-2 SD), challenge (+1 SD), choice (-1 SD), meaningfulness (+2 SD), and academic self-efficacy (+1 SD). Teacher 12 ranked meaningfulness highest (5.0) and academic self-efficacy (4.13) and choice (4.14) lowest among the five constructs. SPOCQ mean rankings for Teacher 12 were lower than their teachers' T-POCQ rankings on all constructs, and in contrast to their teacher, Teacher 12's students ranked meaningfulness lowest of the five.

Teacher 21 developed and taught two different GERI classes—one for middle school students (21-Star) and one high school students (21-Pulsar). Interestingly, Teacher 21's T-POCQ and SPOCQ mean rankings are quite close in both classes, but in 21-Pulsar, T-POCQ means were higher than SPOCQ scores (except for meaning) and in 21-Star T-POCQ rankings were lower than SPOCQ on all constructs. No patterns are apparent in the profiles regarding construct ranking order. On average, Teacher 21's rankings were +1 SD above the overall T-POCQ mean rankings on all constructs. Average SPOCQ means, ranging from 4.10 to 4.39, ranked consistently lower than their teacher's T-POCQ means except for meaningfulness.

Examining the results of this teacher pair, Teacher 21's average SPOCQ rankings were higher than Teacher 12's (average 0.44, ranging from 0.27 to 0.60 higher) despite Teacher 12 having more experience working with students with gifts and talents.

## Research Question 2

**Using quantitative data in teacher reflection.** The second research question asked, “How can the survey data be used to inform teacher reflection on the motivational components of instruction? Three related questions were also examined to support further analysis:

2a. What differences, if any, exist among teachers’ individual motivation profiles based on years of teaching experience in GERI’s Summer Residential program, years of teaching experience in other settings (e.g., K-12 schools, college), years of teaching students with gifts and talents in any setting other than GERI, and amount of training in gifted education?

2b. For those teachers whose motivational profiles show discrepancies between students’ and teachers’ perceptions of the motivational techniques used in instruction, how can using their students’ perceptions in guided reflection interviews with a knowledgeable peer affect the quality of that reflection and lead to probable instructional improvement?

2c. How do GERI staff members’ evaluation of teachers’ motivational techniques through two classroom observations corroborate students’ perceptions and/or teachers’ perceptions?

Study results addressing these questions are addressed in order below.

**Demographic differences.** Some interesting differences existed among teachers’ individual motivation profiles and subsequent interviews based on years of teaching experience in GERI’s Summer Residential program, years of teaching experience in other settings (e.g., K-12 schools, college), years of teaching students with gifts and talents in any setting other than

GERI, and amount of training in gifted education. First, I will review patterns in the quantitative data as observed in the motivational profiles, followed by patterns evident in the interview data.

Analyzing the quantitative data in and across teachers who represent various demographic groups led to some noteworthy findings. Paired sample #1 (Teachers 2 and 14) differed in degree and K-12 teaching experience. Teacher 2 who holds a Master's in Statistics and has no teaching experience admitted that she was overly optimistic regarding her teaching performance, but even her modest T-POCQ means were higher than her students' SPOCQ means on all but two constructs across her two classes. She stated that she was able to focus more on the students as opposed to the content in the Pulsar class that she had taught the previous summer, and this class was enjoyable for her. She realized that her lack of teaching experience and training made teaching the new Star course overwhelming at times. On the other hand, Teacher 14 who holds a Master's in Education and several years teaching experience had mixed reviews from his two classes of students, with SPOCQ scores on appeal, challenge and choice ranking lower than his T-POCQ means but higher on meaningfulness and academic self-efficacy. Teacher 14 noted that teaching for GERI was different from teaching in regular K-12 in that all five of the motivational constructs had to be functioning for learning to be effective, and he was very cognizant about including appeal, challenge, choice, meaningfulness, and academic self-efficacy in his GERI lesson plans. Their motivational profiles confirm common beliefs that teachers would benefit from training in research-based pedagogy in order to feel more efficacious in their ability to teach effectively.

Teachers 3 and 8 in paired sample #2 reported high T-POCQ means for all constructs with both giving themselves a perfect 5.0 on one construct (on challenge for Teacher 3 and on meaningfulness for Teacher 8), and both scored above the overall T-POCQ averages on each



construct. Not surprisingly, most of their students' SPOCQ means were lower than their T-POCQ means, even though these SPOCQ scores were also very high. Although both teachers have over six years K-12 teaching experience, Teacher 8 taught gifted students in K-12 for several years, holds a certification in Gifted, Creative, and Talented Studies from Purdue University, and has taught for GERI for at least six summers. However, Teacher 3's SPOCQ means were higher than Teacher 8's on four of the five constructs (on all but meaning). This result does not contradict the finding from the comparison between paired sample #1 since Teacher 3 here has teaching experience. The data may be telling a different story than originally thought, however.

Analysis of paired sample #3 affirms the surprising findings of the previous pair. Teachers 7 and 16 differ in degree, years of teaching K-12 and years of teaching gifted students. Teacher 7 holds a Bachelor's degree in Behavioral Science, has taught K-12 for over 11 years, and has taught children with gifts and talents for three to five years. Teacher 16 holds a Master's degree in Engineering with no teaching experience. Both teachers' T-POCQ means for each construct fell below the overall T-POCQ means; however, Teacher 16's SPOCQ means were higher than his T-POCQ mean in both classes he taught while Teacher 7's SPOCQ results were lower on four of the five constructs (all except choice). Further, Teacher 7's means on both instruments ranked lower than Teacher 16's means. This is puzzling and worthy of further investigation.

Teachers 4 and 23 have gifted credentials with experience teaching in K-12 classrooms. They differ, however, in years of experience in teaching as well as the number of years teaching gifted students. Because of their training in gifted education, their T-POCQ and SPOCQ means should likely have been high, but some of these teachers' T-POCQ means fell below the overall

T-POCQ means, and in the case of Teacher 4, by -2 SD for challenge, choice, and efficacy. Teacher 4's SPOCQ means, however, were higher than his T-POCQ means for four of the five constructs (all but appeal). This was not the case for Teacher 23 whose SPOCQ mean scores were slightly lower than his T-POCQ means on a majority of the comparisons across his three classes. Note, however, that the lowest SPOCQ mean for Teacher 23 is 3.74, a relatively high mean.

Although both teachers recognize the importance of getting to know their students to improve instruction and learning, they seem to be more teacher-centered than student-centered. Both spoke in length about diversity in the classes they taught—diverse ethnic groups, diverse languages, diverse abilities and prior knowledge—and the need for differentiation as a result. These experienced teachers noted the importance of careful planning for maximum learning to occur, and that others do not observe this work; the “by design” aspects are hidden from the observer, and the observer may not understand why teachers made certain decisions. For example, a TOF observer commented that Teacher 4's students would likely benefit from open classroom discussions; however, Teacher 4 intentionally avoided classroom discussion due to language barriers (Several students spoke Spanish only and several Chinese students' English speaking skills were limited.) Teacher 23 also commented that the TOF rater could not observe how creativity and students' interests were accommodated in his classroom because they were incorporated into the computer program they were using throughout the class.

The final paired sample with Teachers 12 and 21 provides a comparison between veteran K-12 educators who hold Masters' degrees in Education with no training in Gifted, Creative, and Talented Studies. Teacher 12, however, has between 6 to 10 years' experience teaching students with gifts and talents. Teacher 12's T-POCQ means varied with a -2 SD, although he perceived

that he provided meaningfulness best (5.0 T-POCQ mean). Interestingly, his students ranked meaningfulness as the lowest of the constructs. Teacher 21 does not have K-12 experience in gifted teaching students, yet her T-POCQ and SPOCQ means are close on all constructs across the two classes she taught, and her T-POCQ means are higher than the overall T-POCQ means. Teacher 21's SPOCQ rankings are higher than Teacher 12's despite Teacher 12's experience teaching students with gifts and talents. Yet again, a less experienced and/or untrained teacher earned higher SPOCQ means than a more experienced teacher did.

**Guided reflection interviews.** During the guided reflection interviews, it became apparent through their comments that most of the teachers had already reflected on the feedback they received during (the TOF feedback) and shortly after GERI camp (the SPOCQ results). The new information provided during the interview was their T-POCQ results and how the T-POCQ results compared to their students' SPOCQ results and the GERI observations. The role of curiosity in reflective thinking came into play at this point (see Rodgers, 2002, for a discussion about the role of curiosity in Dewey's reflective thinking process). By withholding the T-POCQ results until the reflective interview and comparing them to the students' SPOCQ results, I fostered an atmosphere of curiosity—an anticipation of how their perceptions measured up against their students' perceptions. Novice teachers' zone of proximal reflection suggested that their recognition that reflection on instructional quality includes more than a focus on content and learning activities seemed to be “enough” for this one-time guided reflection interview. More experienced teachers seemed ready to discuss and wrestle with the finer details of instructional quality, including refining motivational practices based on their students' feedback.

**Using student perceptions in guided reflection.** The second related question concerns how the use of students' perceptions in guided reflection interviews with a knowledgeable peer affects the quality of that reflection and lead to probable instructional improvement for the teacher. Teachers agreed that using student perceptions in their reflection improved the quality of the reflection by adding an important perspective that they would not have considered otherwise. Teacher 14 stated, "It looks like there's a disconnect between what I'm thinking and what they're thinking" (personal communication, December 14, 2016). After asking whether guided reflection using students' perceptions was helpful, Teacher 7 admitted, "It's definitely going to help. I guess I need to back up" (personal communication, December 20, 2016). Teacher 16's review of students' perceptions in the guided reflection interview instilled confidence in incorporating meaning in instruction: "It gives me a little bit of confidence to do it in a subtler way the next time I teach the class, instead of feeling like I need to have a separate section for 'Here's the meaning'" (personal communication, December 16, 2016). Teacher 12 also acknowledged how students' perceptions reinforced positive teaching actions by stating,

What I like is it's nice to see a reinforcement of things I'm trying to do, even though I don't come out and say it. I know like as soon as I come out and say, "Okay, kids, this is going to be meaningful, you're going to apply this, you're going to do it." Kids are sitting in a chair, going, "Bet you I won't." But that's the undertone of everything that I try to do is say, "Okay, in my head, I'm going to try to make this challenging, motivational, I really care about it even though I'm going to be a little more relaxed about it...." One thing I always appreciated about the cartoon Fat Albert was his educational dissertation, and he always said, "If you're not careful, you're going to learn something." I always loved that approach.

We're going to have some fun, it's going to be laid back, hopefully you'll be entertained, we're going to try to make it entertaining, but hopefully you'll walk away with something. That's what I'm seeing is at least there's something in there that says, "Okay, we're sniffing through your façade. We know that you're actually trying to do something." So, thank you for that. (personal communication, December 21, 2016)

Teacher 4 discussed the added value of the students' perceptions not only in relation to making instructional improvements, but also as a reminder to him about the skill level of his students.

[Through reflection using student perceptions] I see the 'expert effect'—where you forget what it was like to learn the mathematics.... I don't understand the struggle.... It's like I'm fluent in the language. I've forgotten some of the struggle, and some of the issues that students have learning math. (personal communication, March 23, 2016)

Teacher 3 may have stated the value of use of student perceptions in guided reflection most aptly,

Well, I think it's really helpful information as an educator just to compare how your thoughts on the process and then looking at the students' thoughts on the process, and maybe looking at your strengths, and then looking at your weaknesses, and maybe focusing the next year, or even in your own classroom, just looking at things this way, but kind of focusing on, "Okay, if meaningfulness is my lowest, then what can I do differently to make it more meaningful or more applicable to be more effective, or for them to rate that higher?"

I didn't really go back on my own and reflect on these things. I just kind of reflected on how I thought it went and what I would do differently, what I thought was successful. I did have ideas of things that I wanted to do differently next year, to build on what I had done the previous year, but I wasn't really looking at these five [motivational constructs] as much as I was just trying to build on what I did, make it better, provide even more. After comparing these, what I thought, what the kids thought, the strong areas, the weaker areas, I think those are good things to look just in terms of evaluating how you're putting things together for the next year, and how you can make it more meaningful or applicable. Having this time to look over these numbers changes or gives me a more specific direction to go in redoing what I would be doing for the following year.... There is a lot of choice, but I need to work on more than meaningfulness, and, looking at their numbers again, challenge. I thought it was challenging, but apparently, they didn't think it was as challenging as I did.

Yeah. I think it's extremely helpful in evaluating yourself and what you can do better, and how you can make it a more effective class in [appeal, challenge, choice, meaningfulness, and academic self-efficacy].... Obviously, there's a big gap between my age and the way I was raised, and what I learned, and how I learned, and their age, and the way they're raised, and things that they're exposed to. I think sometimes it's kind of bridging that gap of, "Here's what I'm seeing. Here's what I'm requesting. Here's what I'd like to do different, but oh, look what they're thinking, look what they're seeing, and I didn't think about that" because I'm not sitting in that chair that they are. (personal communication, December 14, 2016))

Overall, inclusion of the more objective SPOCQ and T-POCQ data added deeper meaning and heightened significance to teachers' reflections and opened new possibilities for instructional improvement that would not have been considered otherwise. Regardless of teaching experience or expertise, GERI teachers recognized the importance of including student perceptions of the motivation components of instruction in their reflection. Past GERI practice has been to email teachers individualized summary reports that included their students' SPOCQ results, and we intended for teachers to read, reflect upon, and use the results to make improvements in their GERI classes. Whether this happened has been unexplored. This study, however, provides evidence that guided reflection on the SPOCQ results informs teacher reflection about classroom quality. Although all teachers benefitted, first-time or novice teachers appeared to have benefitted most; this aspect is explored below.

**Use of teacher observation data in teacher reflection.** The final research question considered whether GERI staff members' classroom observations and evaluations using the TOF supported students' perceptions and/or teachers' perceptions of the teachers' use of the motivational constructs in instruction. During the guided reflection interviews, we reviewed the teacher's observations, noting the statements that reflected the discrepant motivational construct(s) suggested by the teacher's motivational profile. For example, if teachers' and students' rankings on a specific construct were discrepant, items on the TOF that related to this construct were addressed with the teacher. In this way, teachers could envision how the construct might function in the classroom and consider the specific teacher behaviors for instructional improvement suggested by the items (refer to the Construct Crosswalk in Figure 1). All ten teachers appreciated the inclusion of observational data in our reflection time, especially when discrepant SPOCQ and T-POCQ results were evidenced. One particular set of observation data

validated a teacher's perceptions about the motivational components of instruction. This was affirming to the teacher who then halted his further reflection on the observed discrepancies between SPOCQ and T-POCQ results, resorting to blaming the students for any perceived shortcomings in the motivational components of instruction.

I can make my subject as interesting as possible, but if the kids are interested, I can give them everything, but they're apathetic, or they don't want to be there, there's not a whole lot I can do to make them interested in it.... I've never believed that I can make every person in the room successful. There has to be something coming from the kids as well.... I kind of take [SPOCQ and T-POCQ] with a grain of salt. I like that I'm above the median. That's always good." (Teacher 12, personal communication, December 21, 2016)

Because the GERI observer checked all the items for the construct of interest, signifying that the observer witnessed the teacher promoting motivation in those specific ways, the teacher believed this relieved him of further reflecting on what might have been happening in the classroom from the students' perspective.

### **Additional Qualitative Themes**

**Content, motivation, and first-time teachers.** Novice teachers' zone of proximal reflection suggested that their recognition that reflection on instructional quality includes more than a focus on content and learning activities seemed to be "enough" for this one-time guided reflection interview. More experienced teachers seemed ready to discuss and wrestle with the finer details of instructional quality, including refining motivational practices based on their students' feedback. GERI teachers who were new to the profession and had little or no experience teaching stated that they focused more on teaching than learning and more on content



than students, motivation, and their students' perceptions regarding classroom quality. After observing that meaningfulness was ranked lowest by students, Teacher 3 stated, "I think as a first-time teacher, for me it was more about understanding the process, getting the concept across, teaching the basics about [the content], and then creating projects. I don't know that I addressed meaningfulness as much as I possibly could've" (personal communication, December 14, 2016). Later, Teacher3C implies a kind of order to teaching: first, it is about the content; next comes appeal and choice; then meaning, challenge, and academic self-efficacy can be addressed:

This [specific content] is something I like the most. This is the thing that obviously came through in my teaching, and that's where my kids were most successful. I kind of think with this teaching [at GERI] this was really appealing. There's a lot of choice. Those are kind of the higher numbers [on T-POCQ and SPOCQ], because that's how I viewed it.... I guess as teacher, for me, like this next year, I might have to look more at, "Okay, so I have the appeal and the choice down, but now I need to work a little bit more on the challenge and the meaningfulness and the self-efficacy. (personal communication, December 14, 2016)

The need or urgency to communicate content was often complicated by the motivational and social components of the classroom, especially for first-time teachers. Teacher 16, a graduate student who had never taught before, commented on the multiple foci of teaching, stating,

This was my first official teaching experience, so it was an interesting crash course in sort of the whole thing. I think for me the biggest thing that I took away from it was learning to manage a classroom of very diverse individuals.... Trying to manage a classroom with these five ideals in mind [i.e. appeal, challenge, choice, meaningfulness, and academic

self-efficacy], while also having to deal with some of the social aspects of it, was tricky.  
(personal communication, December 16, 2016))

After reviewing encouraging SPOCQ results, Teacher 16 commented,

I was very focused on teaching for the first time and for teaching this thing for the first time that I have experience in but isn't necessarily my expertise. Yeah. I'm looking forward to doing it again and seeing how that experience [teaching it the first time] changes it. (personal communication, December 16, 2016)

During the reflective interview with Teacher 7, we discussed meaningfulness as an area for improvement based on students' T-POCQ rankings. Teacher 7, an experienced teacher who taught familiar content in a new way at GERI, kept returning to the seeming safety of content and how to add more of it (through choice and challenge) rather than addressing the issue of meaningfulness. This repeated focus on the familiar—the content—spoke to the teacher's seeming lack of confidence in the new teaching technique, having never taught content in that way before, and to the teacher's lack of focus on the motivational component of meaningfulness. When discussing Teacher 7's concern with filling the three-hour teaching blocks, I suggested adding activities that would relate content to the students' daily lives to promote meaningfulness, and although initially agreeing with me, Teacher 7 shifted again to filling the time with more content.

It's going to be my task then to figure out how to make this meaningful; to ask those questions or to listen to the students when they have questions, or when they're talking to one another and I eavesdrop, to pick up on that question or to provide challenging type of questions for them to build upon.... I think I need, based on my experience from last year, to be able to fill in that time, like if they

get something done early. I'm going to challenge myself to learn a few different projects, a few different pieces [to teach them]. (personal communication, December 20, 2016)

Teacher 2, a returning GERI teacher who has a degree in statistics and no K-12 teaching experience, commented on the difference between teaching a GERI class for the first time versus teaching a class a second time.

First of all, a new course takes a lot of effort and there's uncertainty, but teaching a course a second time definitely gives you more confidence and more space to work from what you already developed before. That was so noticeable for me. I enjoyed the new course, and I felt more secure than the previous year, which was my first time to teach ever. Still the building blocks were just coming on the fly. The constant change making and all those elements, I can see how those can interfere with a student's actual engagement. Being more aware of the details helps you pick up on the students' interest and satisfaction with the topics and activities.... I really enjoyed it [teaching the class a second time]. I was able to focus on other things. For example, I focused on the attitudes of the students.... Now that I'm a little bit less worried in terms of the materials and the structure of the program itself, I definitely can pay more attention to what drive them into actually being here and enjoying it.... I couldn't say if it's [picking up on students' reactions and emotions] a natural thing or not. I don't know if it's about my familiarity with it or my interest about emotions in education. I definitely keep my eyes open, right? During the first [time to teach], focusing on running the course was taking me out of [tuning in to the students] even though I tried. The second

time I taught the course, it was definitely more evident that I tried and it worked.

(personal communication, December 16, 2016)

This interesting finding can be used to foster teacher identity and guide teacher development in undergraduate programs. In other words, if we consider this finding as typical for novice teachers—that content is their first and primary concern at the early stages of teaching and that consideration for other components of effective instruction (e.g., motivation) are considered later—then we can structure undergraduate teacher preparation programs and new teacher mentoring programs in K-12 schools so that novice teachers' concerns about content (knowing it, covering it, having enough of it to fill a teaching period) do not overshadow the motivational components of instruction. Helping new teachers to balance teaching and learning in this way helps them to create student-centered classrooms and to consider their students' learning needs and perceptions regarding instructional quality.

**Student and teacher perceptions about choice: a qualitative difference.** In the guided reflection interviews, the motivational component of choice became a topic of discussion on several occasions. Some GERI teachers who felt confident they included ample choice in their instruction questioned why their students rated choice lower than they did. Discussions shifted from simply adding more choices to lessons to considering the quality of choices teachers typically offered. For example, Teacher 3 stated,

I kind of, in my mind, link differentiation with choice. I think there was a lot of choice, but..., in reflecting, it was fairly consistent from day to day.... Maybe there should've been more, "You don't have to do this but you could do this.... That's, again, something as an educator that I thought that I was addressing that by allowing choice.... When I think of differentiation, it's like, "You can create a poster, or you can create a poem, or you can ..." Maybe there wasn't so much of

those options. It wasn't just more "You pick." (personal communication, December 14, 2016)

Some teachers recognized right away that the choices given to their students for projects were lacking in quality. Teacher 7 disagreed with one of the items on the T-POCQ that related to choice ("I allow my students to choose the resources they want to use for projects."), and stated, "[The students] can choose the colors that they want, but if we're building a dodecahedron it's pretty much, 'Follow my instructions. Build it.' You get to choose the colors, but you're not really choosing how you're going to build a dodecahedron" (personal communication, December 20, 2016). Another teacher commented,

I think the choice thing also is something that I want to revisit a little bit with the structure of their project.... I think the design of the project itself was pretty good and worked for what it was, but the types of choice that they were given I think might have been still a little bit restrictive. They had choice on where they could go to film and how they wanted to put it together and what they wanted to say in their videos, but they all still kind of had to do this GERI promotional video. I think that giving, especially groups that kind of already know a lot about this stuff, maybe finding a way to give them a larger challenge on top of that would be good. Giving them more open-endedness to kind of help with the fact that they kind of know the techniques already. That's something that I need to sit down and think about over the next couple of months, about how to redesign the project itself to allow for more choice in the classroom. (Teacher 16, personal communication, December 16, 2016).

More than any other teacher, Teacher 8 struggled with the fact that her students ranked choice as lowest of the five motivational constructs:

When it comes to choice, that's pretty much what my first Master's degree is in. It's differentiated instruction and it's focused on William Glasser's idea of choice. I'm thinking that the discrepancy there is maybe they were given a set of objectives and this is how you will go ahead and do this, but your topic could be your choice. I'm thinking that maybe they're seeing it as a final project kind of thing, like maybe there weren't a lot of options to ... I don't really know how to explain it well. Maybe there weren't a lot of products that they could come up with. Instead it was more of a free choice in terms of topics so maybe that's where the discrepancy comes between myself and the students.... I'm even thinking with their final project, we did Project Citizen. This is the skeleton that you follow but your topic, again, is going to be your choice. I guess with the way that they can demonstrate it, even though they had different ways that they could present it, still it was like here's the skeleton. Now you can fill in the gaps with what you're interested in. Even then, even though that's a big gap, it's really not. (personal communication, December 15, 2016)

Later in the guided reflection, Teacher 8 returned to the topic of choice and stated,

It's interesting that I think that choice is really high and it's not perceived like that with students. If I were still in the classroom and I saw data like that, it would make me think more of doing choice menus or something like that where the product or the outcome could be different instead of just the topic, expanding on it. (personal communication, December 15, 2016).

Teacher 4 brought a different perspective regarding choice and its use in instruction. His T-POCQ mean for choice was low, and as we explored this in the guided reflection interview he stated, “One of my mantras of being a teacher was ‘Surprises are only for birthday parties.’ That’s my K-12 attitude [about choice]” (personal communication, March 23, 2017). For Teacher 4, choice related directly to a structured classroom environment that facilitated learning; allowing too many choices or free choices undermined structures necessary for teaching and learning to occur. As I encouraged him to continue, he stated,

Sometimes, you know you can have choice, but it’s limited. It’s directed choice. It’s not like, “OK, you can choose your project, or whatever project you want—whatever your interest is.” It’s more like a restricted range where you, as the teacher, say, “Here are some options for you. Go ahead and choose one of these options, and here’s the solution you need to get to. Now, how you approach that—that’s up to you.” But they don’t just get to explore. Teachers are important for a reason. That’s what I’m getting at. (personal communication, March 23, 2016)

Later in the interview, I explored what Teacher 4 meant by “directed choice,” and this led to an interesting discussion about how teachers might control or manipulate students’ perceptions about choice and about learning paths.

Students have to believe that there is...I don’t want to say “the illusion of choice,” but you, the teacher, know the full range of answers...because you are teaching them. If a student only gets three choices, and you’re restricting on your side, you know that you’re restricting. To a student, that’s three choices. They have the choice to choose.... You’re guiding them in the direction you want them to learn, because at the endpoint is that goal where they say, “Ah, I understand! Ah, I get

it!” Then, all of it kind of makes a little sense—the path that you’ve put them on.... [The students] felt they had lots of choices in the classroom...that they were guiding their own days,...but behind that was a gentle touch and a clear structure of the classroom that helped guide them.... They were guided, but the guiding was what they saw as help—the teacher helping, the teacher explaining, the teacher doing all those. Really through explaining and guiding, you’re nudging them to the directions you want to go. (personal communication, March 23, 2016)

As the interview progressed, what initially seemed like firm resistance to the use of choice as a motivational component of instruction and learning became firm support to its use in deliberate ways to move learning forward toward the goal established by the teacher-facilitator.

Another teacher and I discussed the appropriate and effective use of choice in the classroom (i.e., from the perspective of quality of choice as perceived by students), and this teacher readily grasped the opportunity for improving instruction in this way:

Giving students an opportunity to do research or come up with their own ideas for projects, especially in a technology setting, is really a good opportunity to take.... I think giving appropriate choices is something to keep doing so within my domain of teaching that's convenient. That's good, but just make sure to keep doing that. Like we talked about, making sure that it is a meaningfully perceived choice from the student's perspective. Balancing some things where I give the direction versus some things where it's open ended and students can explore.... I think that making [choice] clear, like I would be open to something like that if a student were to come to me and say, “Hey, I've got this to do, this is what I want to do instead.” There's some considerations about how am I going to assess it or



evaluate it, but I feel like I would be open to that with a student. Just making it clear that that is a possibility here is good. (Teacher 14, personal communication, December 14, 2016)

Overall, GERI teachers came to understand that their perceptions of choice in designing learning experiences were qualitatively different from their students' perceptions. Considering choice from the student perspective forced them to reevaluate their use of this important motivational construct.

**T-POCQ as an improvement tool and statement of teaching philosophy.** Teacher 21 stated that she viewed the completion of the T-POCQ as a professional development exercise that reminded her about important motivational considerations of teaching and the need to improve regardless of years of experience.

I didn't give myself a five out of five on areas that I knew I could improve on. I used this tool, because I had a feeling that we would be going through this, but it's a reminder to myself to make an honest assessment and do better in some of those areas. (personal communication, December 21, 2016)

Teacher 4 takes this a step further when he stated,

I would say [how I rated myself on the T-POCQ] is probably fairly consistent with my philosophy of teaching, and fairly consistent with my outlook as a teacher as a facilitator rather than a teacher as an instructor. You know, the sole font of knowledge, or a teacher as a detachment. It's my philosophy as a teacher as a facilitator. (personal communication, March 23, 2017).

These important perspectives speak to the versatile use of the T-POCQ. Not only might the T-POCQ be used as a tool for the teacher for improving the quality of instruction, but it could also

guide their subsequent professional development planning. In addition, administrators and teacher teams might view the T-POCQ not only as a teacher self-assessment tool, but also as a statement of a teacher's larger philosophy of or approach to teaching. Subsequent conversations based on responses to the T-POCQ can lead to deeper understanding about why teachers teach as they do.

## CHAPTER 5. DISCUSSION

This mixed methods study used multiple tools to examine the influence of students' perceptions of motivational components of instruction when included in teacher reflection. Quantitative findings showed that although teacher-to-teacher and student-to-student perceptions of the motivational components of instruction were highly and positively correlated, teacher-to-student perceptions were significantly but weakly correlated. Qualitative findings showed that teachers believed the focus of their reflection shifted from fundamental content delivery to the quality of instruction when including student perceptions. Teachers also appreciated the opportunity to think through their students' perceptions and to revise instructional strategies with a knowledgeable peer. These quantitative and qualitative findings that directly address the study's research questions speak to the practical significance of the study.

This study supports previous research (e.g., Gentry & Owen, 2004; Gentry, Rizza, & Owen, 2002; Gentry & Springer, 2002), corroborating that teacher-to-student perceptions about what occurs in the classroom often conflict: teachers and their students perceive classroom teaching and learning differently. The weak correlations between teacher and student perceptions in this study were illuminated through guided reflection interviews when teachers recognized that their students perceived the motivational components of instruction differently. This Deweyan disequilibrium (Rodgers, 2002; Piaget, 1964) inspired them to rethink practice and incorporate students' points of view in the modifications made to instruction. The quantitative findings provided statistical and practical force that drove the guided reflection interviews. The findings of this study are consistent with previous work that emphasizes the importance of including students' perceptions in teacher reflection on improving instruction (see Bill and

Melinda Gates Foundation, 2012a; 2012b) while extending such conclusions by adding the quantitative component as part of that intentional reflection. Teachers' own narratives attest that including SPOCQ and T-POCQ results in their reflection forced them to consider the motivational components of instruction more seriously, in more depth, and from others' perspectives. This study also supports theories of teacher reflection initiated by John Dewey over a century ago and carried on through the more recent work of Donald Schon. Furthermore, the results of this study extend previous research that called for deeper and broader development of teacher reflection (e.g., Luttenberg & Bergen, 2008) with the inclusion of other perspectives (e.g., Fisher & Fry, 2012). In this study, student perceptions collected through the SPOCQ survey and teacher observation data collected by GERI staff members using the TOF added important information GERI teachers needed to reflect on and to improve instruction. This study also extends previous research that called for closer examination between teacher reflection and professional practice (e.g., Luttenberg & Bergen, 2008) through the guided reflection interview questions that encouraged teachers to identify instructional changes they would make based on their motivational profiles and related observation data.

### **Value of Guided Reflection**

**Role of motivation in teacher reflection.** Typically, when motivation is discussed in relation to education, the focus of that discussion is on the student rather than the teacher. In this study, self-determination theory (SDT) was used as a guiding theory to situate the motivational components of interest in this study, from both the teacher and the student perspectives. Teachers are also motivated by autonomy, competence, and belonging, and the five motivational components of instruction highlighted here relate directly to these three aspects of teacher

motivation (per SDT). Teachers need appeal, challenge, choice, meaningfulness, and academic and teaching self-efficacy to be motivated toward improvement of practice.

Teacher self-efficacy, much like students' academic self-efficacy, affects everything they do in the classroom, from instructional decision making to classroom management techniques, to their relationships with their students and other teachers. In this study, I encouraged teachers to consider their students' perceptions about instructional quality—to not be threatened by it, but to seriously consider it and grow as a more efficacious teacher. Low sense-of-efficacy teachers often perceive students' seeming lack of motivation to learn as a barrier that the teacher cannot influence and as an excuse not to teach them—a fatalistic attitude of blaming the student and relinquishing responsibility for student achievement (Ashton, 1986). High sense-of-efficacy teachers, on the other hand, recognize that students experience difficulties that teachers cannot control both inside and outside the classroom, but they make every attempt to reach and teach their students—a confident attitude of helping the student and assuming responsibility for those aspects of student achievement over which teachers have control (Ashton, 1986; Pintrich & DeGroot, 1990).

Noddings' (1984) description of teaching as a caring relation with another who is cared for, followed by specialized behaviors that educate resonates with me. "Teacher" is not a role, but a specialized way of being more fully human. In this study, I promoted the use of student perceptions as vital to rich teacher reflection, but I also promoted teachers' senses of belonging *with* students in the classroom (as opposed to a "me against them" approach) and their teaching self-efficacy. She writes,

When a teacher asks a question in class and a student responds, she receives not just the "response" but the student. What he says matters, whether it is right or

wrong, and she probes gently for classification, interpretation, contribution. She is not seeking the answer but the involvement of the cared-for. For the brief interval of dialogue that grows around the question, the cared-for indeed “fills the firmament.” The student is infinitely more important than the subject matter (Noddings, 1984, p.176).

In this study, the GERI students and the teachers filled the firmament. I cared for the teachers through reflecting with them about their students’ perceptions about the motivational components of instruction and by encouraging the teachers’ own autonomy, competency, and belonging. I assumed the role of the one-caring (i.e., the one who cares), as Nodding (1984) describes

The one-caring as teacher is not necessarily permissive. She does not abstain...from leading the student, or persuading him, or coaxing him toward an examination of school subjects. But she recognizes that, in the long run, he will learn what he pleases.... This recognition does not reduce either the teacher’s power or her responsibility. ... The teacher’s power is, thus, awesome. It is she who presents the ‘effective world’ to the student. In doing this, she realizes that the student, as ethical agent, will make his own selection from the presented possibilities and so, in a very important sense, she is prepared to put her motive energy in the service of his projects. She has already had a hand in selecting those projects and will continue to guide and inform them, but the objectives themselves must be embraced by the student.” (p. 176-177)

In my role as supportive peer, I could guide and inform without judgment regarding the teacher’s reflective thinking and well-meaning intentions toward instructional improvement. This is, of

course, fully within the teacher's control, but my role in the purposeful reflection was to show and to question, not to dictate or evaluate. This resonates with this study's finding regarding the teacher's use of choice as a motivating component of instruction. What teachers decide to do based on the guided reflection on student perceptions is their autonomous, "true" choice.

### **Value of Students' Perceptions in Teacher Reflection**

In this age of educational accountability, teachers are accountable to administrators, parents, local school boards, state departments of education, and state and federal laws. All of these, even though most are far removed from the classroom, have considerable influence over teachers and their decision making regarding instructional priorities. Educators who want to make the most meaningful and effective instructional improvements should consider being accountable to the people they directly influence—their students. These vested stakeholders are teachers' partners in the educational process (Akbari, 2007); their experiences in the classroom provide teachers with immediately actionable information that can be used to increase students' test scores and improve other accountability measures (Manefield, et al., 2007; Prior, 2011). Teachers' hesitation to solicit feedback from students, especially to evaluate instruction, is understandable; however, this study showed that including students' perceptions in teacher reflection on instructional quality improved the quality, depth, and direction of that reflection. Ideally, this improved reflection will be translated to improvements in teaching and learning.

This study explored how the results of two parallel quantitative instruments that measure teacher and student perceptions of the motivational components of instruction can be used to inform teacher reflection. The SPOCQ and T-POCQ provide teachers with quick assessments of how their perceptions compare to what students think, thereby providing teachers with information to reflect upon individually and/or to discuss with their students or a knowledgeable,

supportive peer. The use of quantitative results in the guided reflection interviews provided structure and focus to teachers' valuable, often limited reflection time. In addition, quantitative data provided more objective information that teachers could not explain away easily. For example, all students' perceptions were included in the mean scores, and this made it more difficult for teachers to blame a single student for opposing perceptions. Reported as averages, SPOCQ results had to be wrestled with when teachers did not agree with the students' perceptions. The TOF provided additional qualitative information and further insight into why students and/or teachers ranked the five motivational constructs in the way that they did. In addition, TOF statements that related to the motivational components of instruction helped teachers to envision how they could be applied in instruction and to further guide subsequent instructional improvements. Finally, reflecting with a knowledgeable, supportive peer who had studied these quantitative and qualitative data beforehand served to bring all the data together—to question, explain, and discuss it in a non-threatening atmosphere where the focus was on instruction, not personalities, and on improving practice (Pugach & Johnson, 1990; Rodgers, 2002).

### **The Five Motivational Constructs**

**Appeal.** Appeal seemed to be a non-issue in this study. Since SPOCQ and T-POCQ results suggest that appeal is a solid motivational construct used by GERI teachers, appeal was rarely addressed in the guided reflection interviews. Three primary reasons likely account for this. First, GERI is a summer enrichment program with a focus on enhancing regular school curriculum in appealing ways. In selecting courses for GERI Residential, we choose cutting-edge, novel content that we believe are of interest to adolescents. Second, teachers know upfront that we expect them to develop classes involving active learning experiences that are project-



based and hands-on. Finally, GERI students self-select their classes so we assume they bring their interest and excitement about the content with them to camp. Appeal would likely play a larger role in regular education classrooms where students select their classes less often and where teachers must put more effort into building interest and excitement around class content.

**Challenge.** Overall T-POCQ results identified challenge as the second highest motivational construct with a mean of 4.381. During the guided reflection interviews, most teachers validated this result, noting challenge as an area of strength. Students' perceptions, however, did not rank challenge as highly as their teachers,' causing a discrepancy between teachers' and students' perceptions. This discrepancy suggests that although teachers know the content and how to make it challenging, they do not know their students' level of mastery and how to appropriately challenge them within their ZPD. Pre-assessment of students' prior knowledge is necessary. Teachers need to know where their students are academically in the content area in order to provide appropriate challenge.

**Choice.** An intriguing finding of this exploratory investigation is that choice is often perceived differently by teachers and their students. Choice in the classroom can be enacted and experienced in qualitatively different ways, with teachers perceiving that they incorporate choice frequently in their lessons while their students do not often perceive these choices as "true" choices. Choice was defined in this study as giving students the right or power to select educational options and direct their own learning. When students have "true" choice, they direct their own learning by selecting what they want to learn and how much time they want to spend doing so. They create their own projects and determine what they need to accomplish their self-selected learning goals. Teachers, on the other hand, often incorporate choice into their lessons, but these choices are limited in various ways, by design. For example, teachers may offer choices

in products or in learning activities, but the teacher still determines content, time spent, and learning goals.

*(Multiple) choice: True or false?* I made a distinction between "true" and "false" choices in the guided reflection interviews with teachers who wrestled with discrepant perceptions regarding choice. True choices are directly related to the important concepts to be learned, and false choices have little connection to these concepts. Students with gifts and talents can identify a false choice quickly and easily. They feel or sense that it really does not matter what they choose, the choice is un motivating, and they may not want or care to choose. The choice feels empty, irrelevant, and "false." Students may feel discounted or patronized when offered such choices. For example, a teacher may teach geometric concepts through origami and encourages students to choose the colors of paper that will be used in creating their shapes. Choosing the colors of paper is a false choice that has nothing to do with the mathematical concepts to be learned. Sure, the resulting colorful shape might represent a student's favorite colors, but this fact does not facilitate the student's learning of geometrical concepts.

In guided reflection interviews, several teachers expressed concern, even fear, about giving students "true" choice. Comments such as "lose control," "chaos," "spin out of control," and "can't manage it all" were a few of the phrases that spoke to this anxiety. Teacher 14 stated,

I think in lesson planning, if you're offering choices as a teacher, you feel like maybe it still needs to be constrained a little bit. How do you get the breadth of options that students will appreciate without making it difficult or [completely open-ended], and in some circumstances, that's okay, but in others, maybe you need a little bit more narrow of a field of options, depending on what you're trying to help students achieve. (personal communication, December 14, 2016)

Although teachers in this study recognized the power and effectiveness of student choice, they struggled with how, when, and how much choice to allow without losing control of the classroom. This dilemma was not particular to one demographic group; novice teachers who had no teaching experience to veteran teachers who had more than 10 years' experience wrestled with how to give students meaningful choice in the classroom. The issue centered on control. Teacher-centered control seemed to be crucial for maintaining a classroom where learning could occur. Teachers believed they needed to be directive and authoritative for maximum learning to occur, and they lacked trust in their students' abilities to choose as effectively as the teacher could.

However, students can be guided or taught how to choose effectively when they are afforded power to choose--power they interpret as actual, "true" control over what and how they learn. In this, teachers do not relinquish their control or their power to direct learning. Even in highly student-centered classrooms where student choice is rampant, teachers can still maintain control, but like the students, they must decide when, how much, and what kind of control they should exercise over the learning process, including how they will exercise that control most effectively. Most teachers likely believe that control should be exercised in the presence of students during class. Shifting teachers' thinking toward exercising their control prior to working with the students (i.e., during the planning phase of instruction) is necessary. Teachers would likely benefit from further training regarding how to plan for and manage "true" student choices that motivate and empower students but do not create unmanageable situations for the teacher regarding assignment parameters, instructional organization, and behavior management. Teacher 4 wraps this discussion of choice up nicely when he stated,

[The students] can't know that, months in advance, the experiment that they came

up with is the exact one the instructor wanted them to do... I just always keep that quiet. I'm like, "Wow, that's a great idea! This is a wonderful experiment!" and I'm thinking, "Great minds think alike!" Funny how that all works. (personal communication, March 23, 2016)

**Meaningfulness.** Teachers and their students in this study also perceived meaningfulness differently. What teachers identify as meaningful students sometimes do not and sometimes what students find meaningful, teachers do not. Teachers are advised to know their students' interests, passions, challenges, and personal circumstances so that content and instructional activities can be crafted in ways that connect learning to the students' daily lives. Trying to relate key concepts to students' experiences or futures or asking students to consider these connections themselves strengthens meaningfulness for both teachers and students. Teachers may assume that there is no meaningful connection between content and the students' real lives, but students may perceive connections that the teacher does not. In this study, Teacher 16 mentioned that a dramatic change had happened over the last ten years with regard to technology and its widespread use in daily life. Although this teacher perceived that teaching students to create quality videos as not very meaningful, the students ranked meaningfulness more strongly than the teacher did. Teachers create meaningful learning experiences when they see the world through their students' eyes and connect content to the students' areas of interest.

**Academic Self-efficacy.** On average, teachers ranked academic self-efficacy lowest of the five constructs. In the guided reflection interviews, when teachers spoke about this construct, it was always in relation to another of the constructs. For example, Teacher 14 stated that self-efficacy could be enhanced by offering more choices to students—choices that encourage exploration and extending content to new applications. He stated that enhancing learning in this

way is “an opportunity for them to... transfer [knowledge] and feel like a contributor rather than just a consumer of knowledge” (personal communication, December 14, 2016). Stating it in different ways, teacher pair #4 linked academic self-efficacy to challenge; both Teacher 4 and Teacher 23 believe that academic “struggle” is desirable and strengthens students’ academic self-efficacy. For example, Teacher 4 stated, “I believe struggle helps you learn.... They’re there to be challenged” (personal communication, March 23, 2017). Teacher 3 also perceived that self-efficacy is improved through the struggle or process of learning new things, especially when the students had to work together which heightened the social-emotional component of learning—some were frustrated by their role in the group, which negatively affected academic self-efficacy while others were cooperative and seemed more confident working in teams.

### **The Importance of Student Voice**

In this discussion, I believe it is important to underscore the importance of including the student voice in educational decision making, especially with regard to adults not only including it, but also understanding it and using it to inform school improvement. Just like most any data source, adults can use student voice to serve their purposes—as a suppressor of change through its blatant disregard or an impetus for positive transformation through its intentional, equal consideration (Fielding, 2001). All students have heartfelt opinions and helpful ideas about improving their lived experiences in each classroom into which they step. Indeed, researchers who include student voice in their studies, whether through quantitative or qualitative means, should ensure all demographic groups are well represented and can “speak” openly without fear of repercussion. See the limitations in this chapter to see how student voice could have been more effectively used in this study.

In research and educational systems today, students are viewed primarily as “sources of data rather than agents of transformation” (Fielding, 2001, p. 101). This is a business model applied to education that stresses results over process. However, “free” education is not about a business model; it is about a system that frees its participants to be creative as well as practical. Education is primarily about the relationships, processes, and transactions that occur along the way. Students and teachers together make education happen; one cannot do its part without the other. Debating “student-centered” or “teacher-centered” education further divides teachers and students: “participant-centered” education recognizes the “participatory” involvement of teachers and students in a respectful, dialogic engagement that considers one’s own learning and teaching needs as well as all others’ needs involved in the educational transactions of the classroom. In this way, student voice does not overwhelm or exclude the teacher voice or vice versa. “The accepted roles of student and teacher become less mutually exclusive, more open to extension and reversal, more open to mutual learning, more welcoming of a radical collegiality” (Fielding, 2001, p. 108). Meaning is made and remembered when equal voices speak to what is possible and desirable in the classroom (Fielding, 2001). “My” meaning becomes a qualitatively different “our” meaning, an integration of all our best ideas.

While many educators recognize and even state that students are more than test scores, they do not fully embrace their worth or their potential for effecting positive change in the classroom, in the school, and beyond. The authentic student voice is needed in school improvement efforts: their voice is heard, understood, valued, and utilized. The critical student voice is necessary to disrupt the unchallenged status quo of teaching and learning. The creative student voice is needed in classrooms where uninspired teaching necessarily and sometimes desperately focuses on covering standards and raising test scores. The emotional student voice is

sadly unheard regarding the nation's stubborn emphasis on performance and need for strict accountability measures that hurt their teachers and their schools. Most importantly, I believe it is the innocent, truthful child's voice that will revive what is dying in the truly human, loving act of teaching.

### **Limitations**

Because this study was conducted in a summer enrichment program at a major Midwestern university, the small sample of teachers is not representative of all K-12 teachers: a majority of GERI residential teachers were professors and graduate students. Although the sample size was appropriate for this study, its results are not intended for generalization. This limitation was mitigated somewhat by the intentional selection of teachers for the guided reflection interviews; of the ten teachers selected, half were practicing teachers in public schools (grades 6-12) and three more held degrees in education and were currently working on advanced degrees. Another limitation is that this study was not conducted in a traditional school setting where teachers may be more hesitant to solicit student feedback regarding the motivational components of instruction and/or students may be less cooperative in providing meaningful feedback that may or may not be acted upon by the teacher. However, the findings of this study support previous studies that compared teacher and student perceptions on classroom quality. Even in a summer enrichment program where teachers and students are highly motivated, perceptions of appeal, challenge, choice, meaningfulness, and academic self-efficacy differ. Teachers in all settings who work with students with gifts and talents would benefit from soliciting feedback from these students (formally as in this study or informally) regarding the motivational components of instruction.

Two limitations are related to the use of the quantitative measures used in this study. First, because GERI class sizes ranged from seven to 19 students, SPOCQ results from smaller classes may be difficult to interpret, especially if the spread of scores among the students in the class is wide. In these cases, students should be given the opportunity to explain their SPOCQ responses (individually or in small groups) in order to be helpful in teacher reflection about instructional improvement. In this study, two of the 18 classes taught by the 10 interviewed teachers contained less than 10 students. In these classes, seven of the 10 motivation measures (5 constructs in each class) contained spreads that spanned more than 3 points (i.e. over half the scale's range). In addition, the short amount of time (30 hours) that teachers and students spend together could be criticized as not nearly enough time to accurately assess teachers' use of motivational techniques. On the other hand, classes are compact and intense, and teachers and students come to know one another quickly. Further, GERI teachers recognize that their students with gifts and talents expect a camp-like atmosphere so they plan for challenging and fun learning.

Second, while assumptions might be appropriate for theory building, assumptions are not appropriate when trying to validate or show the reliability of the results of a newly constructed instrument like the T-POCQ. Timing was an issue in this study with little time for validating the T-POCQ before data collection needed to begin. However, alpha reliability estimates for the T-POCQ, reported earlier, provide preliminary support for its use. In addition, a factor analysis study is being performed on the T-POCQ to support its use in future research.

A final limitation of this study was the limited and constricted use of student voice. Student voice in this study was represented by quantitative SPOCQ results—descriptive statistics on the motivational components of instruction—and these results were collected by adults for



adult (and GERI program) use. GERI teachers did not have the opportunity to talk to their students about their SPOCQ results, and GERI students did not have the opportunity to fully explain what their SPOCQ results meant or to suggest ideas that might improve the motivational components of instruction. Students can more accurately interpret their quantitative SPOCQ results than any adult can, and they could have participated in some fashion in the guided reflection interviews. Including student voice in ways that encourage dialogue between researcher, teachers, and students would have strengthened the validity of the results because students would have more say, literally, in how their teachers might improve instruction through motivation and because teachers would have rich, descriptive information on which to reflect.

### **Suggestions for Future Research**

Because teachers in all settings are charged with motivating students, this study needs to be replicated beyond summer enrichment programs for students with gifts and talents. All teachers regardless of degree or expertise and all students regardless of ability would likely benefit from the processes highlighted in this study. Further, comparative studies involving different school levels (e.g., middle vs. high school) and contexts (e.g., rural vs. urban), including individual teachers pairing with teachers from other schools through online collaborations, would add additional insights.

Before such studies are undertaken, however, I suggest the following important considerations. First, prior to conducting studies such as this in any school, researchers would be wise to assess teachers' willingness to gather feedback from their students to inform their reflection and guide instructional changes. Teachers who are not open to this strategy for improving classroom quality, for whatever reason, may do more harm by collecting their students' perceptions only to disregard them. In addition, students' willingness to provide

meaningful feedback should also be assessed prior to conducting the study. Students who believe that administrators and/or teachers will not take their feedback seriously or use it for positive change will not respond in constructive ways. Further, students who are apathetic toward teachers, specific subject areas, and/or school in general may not provide sincere feedback for teachers' use. Students need to be reassured that their feedback is important and will be seriously considered in school improvement efforts. On the other hand, if student apathy is a result of a dysfunctional system, of which their teachers are a part, their thoughtful feedback may initiate positive change, thereby breaking a negative cycle of miseducation.

Second, differentiated professional development that instructs administrators and teachers regarding the reasons for and effective use of student perceptions in teacher reflection and instructional improvement should occur. Researchers should inform faculty about the motivational components of instruction highlighted in this study, explain how teacher and student perceptions of appeal, challenge, choice, meaningfulness, and academic self-efficacy are measured on the SPOCQ and T-POCQ, and convince them that students' opinions on these constructs are important and valid. Teachers who are less confident, experienced, or skilled may require more structured, intentional professional development in this area. Students should also be informed about the five motivational constructs, how their perceptions will be assessed by the SPOCQ, and how their teachers will use the results.

Another consideration for future research involves the effective use of survey data in teacher reflection and subsequent instructional improvement. Researchers should encourage administrators and teachers to agree on the legitimate use of T-POCQ and SPOCQ results. For example, will students' perceptions of instructional quality as measured by SPOCQ be for teachers' use in their reflection on instructional improvement or will administrators also use

SPOCQ and/or T-POCQ results in their evaluation of teachers? In addition, researchers and school faculty should consider how to structure teacher reflection and gauge the effectiveness of any instructional improvements made. This study supports the use of guided teacher reflection that utilizes student perceptions, but this requires time and other supportive systemic structures. The amount of time needed for researchers to conduct guided reflection interviews, for teachers to survey their students then plan and implement instructional improvements, and for administrators to conduct informed classroom observations should be prioritized in school improvement efforts. Administrators should support additional, differentiated professional development, if warranted. Further, evaluation processes and accountability measures should be implemented to determine whether instructional changes were effective, including what will happen after these judgments are made. The possibility exists that some teachers' practices will not improve; therefore, administrators should determine beforehand how this possibility fits into established teacher evaluation procedures. Including the students' perceptions in this process adds depth and breadth to data collection, analysis, and subsequent school improvement efforts that have the potential to not only transform classroom learning climates but also school- and corporation-level climates as well.

A related consideration involves the effective use of student voice in research. In this study, quantitative SPOCQ results represented the student voice (i.e., their perceptions of the motivational components of instruction). Also, recall that the SPOCQ survey was taken on the last day of GERI's one-week- or two-week-long classes. Had students not left the following day, classroom-level focus groups or interviews with students from each class would have added rich qualitative data, providing student interpretations of teacher behaviors and other classroom events. Care should be taken to ensure that all student demographic groups are afforded the

opportunity to share. This qualitative student-voice data would have provided additional meaning to SPOCQ mean scores and more detailed and specific feedback for teacher reflection. Future research in this area would benefit from this additional layer of student voice.

Future research might also concern ways in which the quality of reflection can be assessed in-progress. Although measuring outcomes related to the consequent actions of reflection seems standard, school leaders may desire evidence that teachers' times of reflection involve quality thinking and deep understanding (Harwell-Kee, 1999). Self-reports often fall short of accurate accountings, and reflection that employs standardized procedures or techniques (i.e. guided or scripted reflection) does not ensure quality or depth (Hatton & Smith, 1994). Collaborative reflection in pairs or small groups may inform this assessment regarding teachers' evolving beliefs and actions. Research that captures the kinds of thinking demonstrated in reflection is needed. Further, teacher reflection about reflection can inform the effectiveness of the intervention, especially for those teachers who remain indifferent and/or fail to improve. Both assessments (in-progress and reflection about reflection) would be strengthened with a longitudinal approach. Teachers meet in pairs or small groups regularly over a specified period of time (e.g., one school year), and formative assessments monitor the quality of reflection and the instructional changes made as a result. In this way, changes in teachers' thinking and practice, which may take time and consistent feedback, can be more fairly assessed.

Finally, extending this research to empower teachers and students to participate in shared decision-making and instructional planning is also highly recommended. By doing so, student feedback is not only used by the teacher in reflection regarding instructional improvement, but also the teacher and the students collaborate in designing rigorous and motivating learning experiences based on this feedback. Utilizing student voice in this way solidifies their active

participation in their own learning by giving them control over content, process, and product. Refer to Fielding (2001) and Holdsworth (2005) for research on this topic.

### **A Final Thought**

As I continue to reflect on this study and consider the multiple, ever-evolving ideas surrounding the value of student voice and the importance of teacher success (indeed, their very livelihoods depend on it), I grow more concerned about teachers' lack of time, space, and possibly skill to reflect on their practices. On the other hand, it could be the case that a younger generation of teachers doesn't find the practice of reflection necessary—reflection has become an antiquated, philosophical task of days gone by that they may have little time for in today's fast-paced, scripted-lesson world. Regardless, reflection-in-, on-, and about-practice is vital for personal growth and teaching skill development. As we were discussing Teacher 4's T-POCQ responses during the guided reflection interview, I used a phrase twice to clarify what he was talking about that I now view as a key facet of reflection that may reinvigorate its practice. When commenting about Teacher 4's low ranking of academic self-efficacy, our conversation went like this:

Teacher 4: Struggle helps you learn.... Being unsure, and being not confident in the beginning [of the class], that's good for them during the first week. It's a two-week course. If during week one, they're not confident in their abilities, that's good. If Friday of week two, they're also not confident, that's maybe not so good.

Me: Right. Okay. So this [low T-POCQ self-efficacy ranking] could be by design.

Teacher 4: Yes.

Me: It's kind of by design. You want to throw them off kilter a little bit.

Teacher 4: I do. (personal communication, March 23, 2017)

Later in the interview, as we discussed challenge and students' ZPD's, the phrase resurfaced.

Teacher 4: Behind the scenes, I know that I'm toning things down. I'm changing things up. You know, I'm modifying the challenge.... To the outside observer, they're like, "Hmm, this course is very hard...." To me, behind it, I say, "It could have been harder...." To you, as the outside observer, [level of challenge] was where it needed to be for you, if that makes sense.

Me: Yes. Right. It was by design.

Teacher 4: Right.... I feel that they should struggle during that first week. They should be, you should feel challenged. You should feel, maybe, a little overwhelmed, especially if [learning] is going to be meaningful. (personal communication, March 23, 2017)

Teaching and learning "by design" demands reflection before, during, and after instruction takes place, and this basic truth brings me back to Donald Schon's (1983) reflective practitioner. Schon (1983) situates the practice of reflection in the design professions, such as architecture, urban design, and regional planning, among others, with "design as a reflective conversation with the situation" involving a problematic situation, the language of the discipline, reframing, consequences, and implications (p. 76). Basically, the reflective practitioner uses design processes and problem-solving strategies with another or others to resolve issues related to practice. Based on Schon's definition, the tired practice of reflection might be reframed as "reflection-by-design" with the focus on specific elements of teaching and learning—much like what I did in this study. With a particular educational issue in mind (e.g., motivation, underachievement, or classroom management), teachers' reflections could become intentional, focused, and effective. I realize the design process applied to education is not a new idea; there's

“Learning by Design,” “Understanding by Design,” and “Instruction by Design” among others, but applying design processes to reflection as Schon explains offers the best chance for this important practice to be renewed in teacher preparation programs and in schools today.

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## APPENDIX A. STUDENT PERCEPTIONS OF CLASSROOM QUALITY

	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly Agree (5)
1. I am given choices regarding how to show the teacher what I have learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I'm good at helping other kids understand concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I find the contents of my class interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I find my class time instruction appropriately challenges my intellectual abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. My teacher lets me choose the resources I use for projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When there are different ways to show what I have learned, I can usually pick a good way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The teacher applies the lessons to practical experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I find my class assignments a good challenge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The assignments for my class are interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. My teacher makes connections between the course material and society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I learn best when I am challenged.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I am given lots of choices in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. In my class my teacher relates current issues to the material we are learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I am good at connecting material from this class with the real world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. This class content is an appropriate challenge for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I feel responsible for my learning because I am allowed to make choices in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. The teacher uses a variety of instructional techniques that make this class enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I like the challenge of the projects in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. The material covered in my class is interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly Agree (5)
20. The instructor provides examples of how the material relates to society and daily living.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I am good at answering questions in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I am encouraged to pursue subjects that interest me in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. It is pretty easy for me to earn good grades.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. In my class I explore real issues that affect the world around me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I look forward to learning new things in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I find the class content pleasurable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I use my critical thinking skills in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I'm good at taking tests in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I can relate the material discussed in my class to my daily life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I can easily understand assignments for this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. I like going to my class each day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. I can usually discover interesting things to learn about in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. I like the way my teacher challenges me in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. I can express my opinions clearly in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. Good grades are mainly the result of my hard work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. Good grades are mainly the result of my ability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. I can improve my intelligence by working hard.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. I plan to go to college.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## APPENDIX B. TEACHER PERCEPTIONS OF CLASSROOM QUALITY

	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly Agree (5)
1. I give my students choices regarding how to show me what they have learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Because I explain material well, my students are able to clearly explain course concepts to other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I try to make the content of my class interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. My instruction appropriately challenges my students' intellectual abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I allow my students to choose the resources they want to use for projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I allow students to choose different ways to show me what they have learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I apply lessons to students' practical experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. My assignments provide difficult challenges for my students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The assignments I give in my class are interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I make connections between the course material and society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I challenge students so that they will learn the material better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I provide lots of choices in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I relate current issues to the material students are learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I make sure my students are consistently connect material from my class with the real world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I provide appropriately challenging content for the students in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I allow students to make choices in my class so they become more responsible for their own learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I use a variety of instructional techniques to make my class more enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I try to make projects challenging in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I make the material covered in my class interesting for my students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly Agree (5)
20. I provide examples of how the material relates to society and daily living.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I provide comprehensive answers to my students' questions pertaining to my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I encourage students to pursue subjects that interest them that relate to my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I make students earn the high grades they receive in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. In my class, I explore real issues that affect the world around us.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I make sure my students look forward to learning new things in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I try to make class content appealing to my students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I require students to use critical thinking skills in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I provide appropriately challenging classroom tests that allow students to show me what they have learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I encourage students to relate material discussed in my class to their daily lives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I make sure students can easily understand assignments for my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. I want students to like coming to my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. I encourage students to bring in interesting topics to learn about that relate to the content in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. I challenge my students academically in meaningful ways.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. I encourage my students to express their opinions in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. Generally speaking, good grades are mainly the result of a student's hard work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. Generally speaking, good grades are mainly the result of a student's innate ability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. I think students can improve their intelligence by working hard.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. I believe all of my students should plan to go to college.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# APPENDIX C. TEACHER OBSERVATION FORM

PLEASE PRESS FIRMLY IN INK

## PURDUE UNIVERSITY GIFTED EDUCATION RESOURCE INSTITUTE Teacher Observation Form

Revised

Teacher \_\_\_\_\_ Date \_\_\_\_\_  
Time \_\_\_\_\_ to \_\_\_\_\_ Room \_\_\_\_\_

Criterion observed  
 Criterion not observed

RATING SCALE	
7 - Excellent	3 - Below Average
6 - Very Good	2 - Poor
5 - Above Average	1 - Unacceptable
4 - Average	N/O - Not Observed

Please use the seven-point scale to rate the overall quality of the instruction in each numbered category. Please check next to each category's lettered descriptors if observed in the lesson.

	7	6	5	4	3	2	1	N/O
<b>1. Content coverage</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Content is advanced for grade level <input type="checkbox"/> B. Topics of instruction are related to other subjects / content areas <input type="checkbox"/> C. Teacher expertise in the content area is evident								
<b>2. Clarity of instruction</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Instructor communicates well with students <input type="checkbox"/> B. Nonverbal communication is used to enhance instruction <input type="checkbox"/> C. Handouts and instructions are clearly printed and thorough <input type="checkbox"/> D. Appropriate illustrations and examples are used <input type="checkbox"/> E. Student comprehension is evident								
<b>3. Motivational techniques</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Teacher shows energy and enthusiasm <input type="checkbox"/> B. Variety of warm-ups, hooks, or brain-teasers are used to gain student interest <input type="checkbox"/> C. Teacher encourages student enthusiasm and persistence <input type="checkbox"/> D. Multiple learning styles are considered								
<b>4. Pedagogy / instructional techniques</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Visual aids are used to enhance instruction <input type="checkbox"/> B. Instructional techniques are appropriately advanced for the group <input type="checkbox"/> C. Instructor avoids unnecessary repetition and drill <input type="checkbox"/> D. Instructor utilizes pre-assessment to prevent redundancy <input type="checkbox"/> E. Instructor provides opportunities for inquiry into authentic questions generated by the students								
<b>5. Opportunity for self-determination of activities by student</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Adequate choices offered <input type="checkbox"/> B. Student-directed activities are available when appropriate <input type="checkbox"/> C. Individual interests are accommodated								
<b>6. Student involvement in a variety of experiences</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Activities are based on real-world applications <input type="checkbox"/> B. A variety of assignments and/or activities are included <input type="checkbox"/> C. Problem-solving and independent-study processes are encouraged <input type="checkbox"/> D. Discussions, small-group activities, technology, field trips, and/or learning centers are incorporated								
<b>7. Interaction between teacher and student and student and peers</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Interaction is appropriate to course objectives <input type="checkbox"/> B. Activities are included that promote social and/or emotional development <input type="checkbox"/> C. Teacher and students show mutual respect <input type="checkbox"/> D. Sense of order and the promotion of self-discipline is evident								
<b>8. Opportunity for student follow-up on activities or topics on their own</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Instructor promotes open-endedness, allowing for creativity and individual interests <input type="checkbox"/> B. Activities and assignments build upon / prepare for lessons <input type="checkbox"/> C. Extended activities are focused and purposeful <input type="checkbox"/> D. Students are encouraged and offered assistance for further study of topics of interest								

	7	6	5	4	3	2	1	N/O
<b>9. Emphasis on higher-level thinking skills</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Critical thinking activities are included <input type="checkbox"/> B. Upper levels of Bloom's Taxonomy (application, analysis, synthesis, evaluation) are evident <input type="checkbox"/> C. Metacognitive thinking is encouraged <input type="checkbox"/> D. Sufficient time is spent on open-ended discussion or other process activities								
<b>10. Emphasis on creativity</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Instructor encourages risk-taking <input type="checkbox"/> B. Creative-thinking skills (fluency, flexibility, originality, and elaboration) are incorporated <input type="checkbox"/> C. Instructor models creative behavior when appropriate								
<b>11. Lesson plans designed to meet program, course, and daily objectives</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Lessons show a sense of planning, with flexibility <input type="checkbox"/> B. Lessons emphasize student involvement <input type="checkbox"/> C. Considerations for individual student differentiation are included								
<b>12. Appropriate use of classroom technology</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> A. Use of technology compliments respective lesson <input type="checkbox"/> B. Technology advances what students already know <input type="checkbox"/> C. Instructor utilizes audio-visual materials and/or computers in instruction <input type="checkbox"/> D. A variety of technology is incorporated <input type="checkbox"/> E. Opportunities for the students to develop and employ technological skills are provided								

Activities were conducted \_\_\_\_\_ in small groups \_\_\_\_\_ in large groups \_\_\_\_\_ individually.

Teacher's strengths:  
\_\_\_\_\_  
\_\_\_\_\_

Suggestions for improvement:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Additional comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Observer's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Teacher's Signature: \_\_\_\_\_ Date: \_\_\_\_\_


Would like conference regarding evaluation. Suggested time: \_\_\_\_\_

## APPENDIX D. MOTIVATIONAL CONSTRUCTS PORTION OF TEACHER TRAINING POWERPOINT

**SRES 2016  
Teacher Training**

**WELCOME!**

June 4, 2016



1

1. At your tables, develop your own definition of differentiation and write it in the middle of the large piece of easel paper on your table.
2. Next, around the edges of your definition, list the many ways in which you could differentiate in your classroom.

**What Is Differentiation?**

13

*Differentiation is*

- A model of instruction that revolves around the belief that students learn in many different ways
- Questions leading to appropriate differentiation
  - Planning: *What do I want students to know, understand, or to be able to do?*
  - Preassessment: *Who already knows and understands the information and/or can do it? Who needs additional support in order to know, understand, and/or demonstrate the skills?*
  - Differentiation: *What can I do for him, her, or them so they can make continuous progress and extend their learning?*

**“The” Definition**

14

“If teachers teach children to master a certain subject matter in a manner that leads those youngsters to hate the material they’ve mastered, it might have been better to have never tackled the subject in the first place.”

Popham, 2001

**The Power of Motivation**

15

How important are ...?

- Appeal (interest + enjoyment)
- Challenge
- Choice
- Meaningfulness
- Self Efficacy

How are these related to ...

**MOTIVATION?**

16

“People will be most creative when they feel motivated primarily by the interest, enjoyment, satisfaction and challenge of the work itself--not by external pressures.”

-Amabile & Hennessey 1992

**Motivation**

17

Turning the learning and responsibility over to the students can be an effective means of **DIFFERENTIATION** requiring less work than teacher-directed differentiation strategies.

### Teacher-Friendly and Student-Based Differentiation Is A Must!

18

- Open-ended
- Enjoyable (for teacher & students)
- Ambiguous &/or unpredictable
- Encourages work ethic and genuine interest, commitment, and creativity
- Provides individualized rigor, depth and complexity

### Teacher-Friendly, Student-Based Differentiation

19

- Menu of strategies
- Teachers need same consideration as do students when it comes to differentiation: consideration of individual differences & opportunity to refine & develop strengths
- ONE SIZE DOES NOT FIT ALL!
- Take away some ideas and see ...

### Teacher-Friendly, Student-Based Differentiation

20

- **Appeal**
- **Choice**
- **Challenge**
- **Meaningfulness**
- **Academic Self-efficacy**

### 25 Strategies ~ 5 Categories

Gentry, 2009

21

**APPEAL:** *Creating satisfying, pleasant learning experiences and/or incorporating students' interests*

- Create a learning environment that is safe, interesting, encouraging of smiles, and enjoyable.
- This environment often reflects students' preferences for topics and activities and is positively engaging.

### Appeal

22

"Learning is more effective when students enjoy what they are doing, and, therefore, learning experiences should be constructed and assessed with as much concern for enjoyment as for other goals"

Renzulli, 1994

### Appeal

23

"There can be no mental development without interest."

Whitehead, 1929

*Think about it, if your students aren't interested, they won't want to learn it. Even grammar and spelling can be interesting!*

## Appeal

24

1. Offer students the opportunity to do fewer, but more difficult problems.
2. Share yourself, encourage the same from your students.
3. Ask the students what will work.
4. Laugh, care, appreciate creativity and humor.
5. Assess, incorporate, & develop student interests.
6. Be interesting in your teaching.
7. Share your interests.

## Appeal

25

\*\*On your easel paper, identify the ways in which you utilized **APPEAL** as a differentiation strategy (or add a few).

*Circle them in RED.\*\**

## APPEAL

26

**CHOICE:** *Giving students the right or power to select educational options and direct their own learning.*

"A measure of choice is arguably the ingredient most crucial to the realization of intrinsic rewards in the classroom."

Csikszentmihalyi, Rathunde, & Whalen, 1993

## Choice

27

"Choice should be taken seriously. The more latitude you give students, the more they will learn how to choose wisely the problems and projects they want to pursue, an essential element of creativity."

Stenberg, 1996

## Choice

28

16. Let students choose content.
17. Offer students opportunities to choose products, audiences, and ways of presenting what they know.
18. Provide choice concerning whether to work alone or together.
19. Offer students choices concerning due dates.

## Choice

29

**\*\*On your easel paper, identify the ways in which you utilized CHOICE as a differentiation strategy (or add a few).**

*Circle them in BLUE.\*\**

## CHOICE

30

**CHALLENGE:** *Incorporating rigor, depth, and complexity in learning tasks*

Challenge varies based on the student and engages the student for optimal learning.

Vygotsky

- Content
- Process
- Product
- Audience

## Challenge

31

"Only when challenges and skills were felt to be high and working in tandem did all the varied components of well-being - cognitive, emotional, and motivational - come together for the students. Concentration was far above its normal classroom level, and self-esteem, potency, and involvement also reached their highest levels."

Csikszentmihalyi, Rathunde, & Whalen, 1993

## Challenge

32

8. Choose controversy.
9. Remember that students can produce knowledge.
10. Provide depth and complexity based on student questions and interests.
11. Take the time, jump in over your head, and start with a big-picture problem that students don't have all the skills to solve.

## Challenge

33

12. Whenever possible provide open-ended assignments; be ambiguous.
13. Use challenge problems (daily, weekly, monthly, on tests and assignments).
14. Begin at the back of the book.
15. Ensure advanced content for all students.

## Challenge

34

**\*\*On your easel paper, identify the ways in which you utilized CHALLENGE as a differentiation strategy (or add...)**

*Circle them in GREEN.\*\**

## CHALLENGE

35

**MEANINGFULNESS:** *Providing activities that are practical, important, and related to the students' daily lives.*

- Having relevance; making a connection to topics worth caring about

"The whole process of education should thus be conceived as the process of learning to think through the solutions of real problems."

Dewey, 1916

## Meaningfulness

36

20. Help students consider meaningfulness and evaluate the importance of their work by posing questions such as:

- So what?
- Who cares?
- Who might care?
- How might we have a greater effect?

## Meaningfulness

37

21. Connect schoolwork to the real world deliberately and often by engaging in community involvement, service learning, mentorships, and apprenticeships.

22. Provide opportunities for deep involvement.

## Meaningfulness

38

\*\*On your easel paper, identify the ways in which you utilized **MEANINGFULNESS** as a differentiation strategy (or add...)

*Circle them in ORANGE.\*\**

## MEANINGFULNESS

39

### **ACADEMIC SELF-EFFICACY:**

*Promoting students' confidence in classroom performance and ability to achieve*

#### **Influences**

- *Course of action they will pursue*
- *Thought patterns (self-hindering or self-aiding)*
- *How much effort they will put forth*
- *How long they will persevere (obstacles, failures)*
- *How resilient they are to adversity (coping)*
- *Level of accomplishment they realize*

*Bong & Skowlik (2003)*

40

23. "If you have a better idea see me..." Tell the students to come see you if they have a better idea for an assignment, discussion...

24. Explicitly discuss process to encourage metacognition.

25. Throw away the rubric and provide minimum requirements instead.

## Academic Self-Efficacy

41

\*\*On your easel paper, identify the ways in which you utilized **ACADEMIC SELF-EFFICACY** as a differentiation strategy (or...)

Circle them in **PURPLE**.\*\*

## Academic Self-Efficacy

42

By putting the students in charge of their learning, you encourage

creativity      strengths      quality  
 buy-in      autonomy  
 interest      talent development

**How's That Working For YOU?**  
**How's That Working For THEM?**

43

• An effectively differentiated classroom must have a culture that develops and supports...

- Diversity
- Challenge, High Expectations, and Risk Taking
- Instruction through Assessment
- Instruction through Procedures and Routines
- A Community of Learners
- Excellence in Teaching

## Classroom Climate Is Foundational

44

- Your own strengths +  
 Those of your students =  
 Optimal, meaningful learning possibilities
- To grow, try new things, model risk taking ... see what works
- Push to make a difference for individual students

## Final Considerations

45

*“Enthusiasm is the match that lights the candle of achievement.”*

-William Arthur Ward

## Final Considerations

46



## Time to Reflect & Share

47

## APPENDIX E. TEACHER TRAINING FOR THOSE WHO DID NOT ATTEND THE TRAINING

1. Read the attached chapter written by Drs. Marcia Gentry and Rebecca Mann called “What Is Differentiation?” and answer the following questions:
  - a. Gentry suggests that five constructs should be considered when differentiating curriculum and instruction. What are these five constructs and provide a brief definition for each.
  - b. Define the “differentiated classroom” and describe in a sentence or two the role of the teacher in it.
  - c. What are the four ways in which curriculum can be differentiated? Explain each in one or two sentences.
  - d. Why is it important to pre-assess your GERI students and how can you use the information?
2. Read through the attached *Residential 2016 Teacher Training* PowerPoint and answer the following questions:
  - a. What are two of your primary impressions about the students who will attend Residential?
  - b. On your own, write your answers for activities 1 (What is differentiation?) and 2 (List the many ways in which you could differentiate in your classroom.) on slide 13. For activity 2, list at least five ways.
  - c. List two ways you will personalize some of the strategies for *Appeal* on slide 25.
  - d. List two ways you will personalize some of the strategies for *Choice* on slide 29.
  - e. List two ways you will personalize some of the strategies for *Challenge* on slides 33 and 34.
  - f. List two ways you will personalize some of the strategies for *Meaningfulness* on slides 37 and 38.
  - g. List two ways you will personalize some of the strategies for *Academic Self-Efficacy* on slide 41.

*\*\*The remaining 18 questions teachers were required to answer concerned the logistics of Residential procedures and general camp expectations that do not pertain directly to this study; therefore, they are not included here.*



## APPENDIX F. TEACHER OBSERVATION GUIDELINES

**Adapted from Hansen, 1988**

### Philosophy

The teaching performed in each Gifted Education Resource Institute (GERI) PreK-12 enrichment program requires evaluation that is thorough, fair, and objective. Each evaluation should be based on established principles and strategies for differentiating curriculum for gifted students.

### Purposes of Observation

1. To improve the quality of educational experiences for gifted students.
2. To assist the teacher in achieving the goals of the gifted education curriculum.
3. To provide assistance to the teacher to help correct instructional weaknesses.
4. To recognize the teacher's special talents and to encourage their utilization with gifted students.
5. To enable the teacher to recognize his/her role in the gifted and talented program.

### Role of Observer/Rater

1. Evaluate quality of instruction in relation to Purdue University Gifted Education Resource Institute criteria.
2. Identify teacher's strengths in working with gifted students.
3. Make suggestions for instructional improvement.
4. Provide resource information.
5. Offer professional support and encouragement.
6. Promote qualitatively differentiated gifted education.

### Observer/Rater Training

GERI staff and other professional educators who desire to observe in a GERI program must attend a training session in order to become familiar with the *Teacher Observation Form* (TOF) that will be utilized during the evaluation visit and with GERI program expectations for observers. The coordinators of various GERI programs are responsible for this training before their respective sessions begin.

### Observation Procedure

1. New GERI teachers will be observed twice and returning GERI teachers will be observed once during each class they teach in any GERI program. From time to time, the number of observations may increase based on the judgment of the GERI program coordinator or for research purposes. Each observation should last at least 30 minutes unless a longer observation is deemed necessary by the GERI program coordinator or for research purposes.
2. Observers are not required to contact the GERI teacher prior to the observation.

3. Observers should arrive early to make sure they can find the classroom. Observers should enter as unobtrusively as possible.
4. Before each observation begins, the observer should obtain a copy of the TOF.
5. During the observation, the GERI staff or professional educators should complete the TOF as directed on the form. Rankings and comments should accurately reflect the type and degree of curriculum differentiation seen by the observer.
6. Following the observation, the observer should return the completed TOF to the designated GERI staff member, and a copy of evaluation will be scanned and sent to the teacher via email. Teachers who would like to discuss their evaluations with the observer should contact the GERI program coordinator to make arrangements for a meeting.
7. When meeting to discuss TOF results, observers should address the teacher's strengths, explain any recommendations that were made, make resource suggestions, if possible, and provide an opportunity for the teacher to discuss problems/concerns related to gifted education. Any questions that the observer cannot answer should be referred to the coordinator of the program.
8. Coordinators should review observations daily, noting special problems and/or any rankings below three. When this occurs, the coordinator should first consult the observer, then address any more serious issues with the GERI teacher and observer together.