AN ACTION RESEARCH APPROACH TO EXPLORING GRADUATE STUDENT INSTRUCTORS' ENGAGEMENT IN A PROFESSIONAL LEARNING COMMUNITY

By

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ABSTRACT

Given that the majority of college courses are staffed with instructors who have little, if any, teaching experience (Boysen, 2011), research has called for more innovative approaches to providing teaching development opportunities for graduate student instructors (GSIs) (e.g., BrckaLorenz et al., 2020; Chew et al., 2018). The purpose of this study was to explore professional learning communities (PLCs) as a potential solution to this challenge. This study employed an iterative action research design to develop a PLC of GSIs, explore their engagement in the PLC, and examine which aspects of the PLC were more or less engaging. Findings revealed several affordances and considerations related to PLCs and GSI teaching development. The PLC in this study was successful at engaging GSIs; however, different PLC activities engaged GSIs in different ways - behaviorally, affectively, or cognitively. Findings also revealed that how GSIs engaged was related to the design of each PLC activity, and specifically whether the activity supported five important motivational principles - value, autonomy, relatedness, perceived competence, and mastery goal orientation. Together, these findings suggest that, if designed intentionally to support motivational principles, PLCs do have the potential to engage GSIs in a variety of ways. Finally, these findings are situated in light of the conversation surrounding the challenge of GSI teaching development. Implications, limitations, and directions for future research are discussed.

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CHAPTER 1: INTRODUCTION

The lack of teaching development in higher education has been a topic of conversation spanning several decades (e.g., Bok, 1991; Boman, 2013; Buskist et al., 2002; Chew et al., 2018) as the majority of college courses are staffed with instructors who have little, if any, formal teacher training (Boysen, 2011; Buskist et al., 2002; Gurung & Schwartz, 2009; Meyers & Prieto, 2000). Some scholars argue that the best solution to this issue is to provide teaching development opportunities to graduate students as part of their doctoral programs (Boman, 2013; Meyers & Prieto, 2000), especially considering the frequency with which they teach undergraduate courses (Boysen, 2011; Meyers & Prieto, 2000). In response to this argument, teaching development opportunities for graduate student instructors (GSIs) have increased in recent years (Boman, 2013; Boysen, 2011; Buskist, 2013). Yet, research shows that even when available, GSIs choose not to participate in these opportunities (BrckaLorenz et al., 2020; Meyers & Prieto, 2000) despite reporting that they desire more support (Schwartz et al., 2020). *Why would GSIs - who desire more teaching support - choose not to take advantage of teaching development opportunities when they are offered?*

Research has yet to identify a clear answer to this question, but several explanations warrant consideration. First, GSIs may be actively discouraged and/or unwilling to take time away from research - which is often prioritized in doctoral programs - to focus on teaching. Indeed, teaching development does not significantly improve one's chance of being hired (Boysen, 2021) as pedagogical requirements for obtaining a teaching position in academia are low (Richmond et al., 2016). Second, even though teaching development opportunities have increased (Boman, 2013; Boysen, 2011; Buskist, 2013), the offerings may not directly meet GSI's needs. For example, university-wide teaching workshops, which are common, tend to

focus more on university policies and procedures (Buskist, 2013). GSIs who have little or no teaching experience may prefer smaller, more-targeted opportunities - like department-level workshops - that focus on discipline-specific instructional strategies (Mueller et al., 1997; Buskist, 2013). It makes sense then that GSIs would not be motivated to participate in teaching development opportunities if they are not meeting their needs - especially given the emphasis of many graduate programs on research over teaching.

There is some evidence that these speculations hold true, at least in my own local context. As the supervisor of a multi-section undergraduate educational psychology course at a large, Midwestern Research 1 University - I have observed this same general paradox in the group of GSIs I oversee. Questionnaire and interview data (Alberts & Galvin, 2022) revealed that GSIs teaching this multi-section undergraduate educational psychology course lacked training (e.g., "...I got thrown into it, and I was sweating bullets that first day") and desired more teaching support (e.g., "...I had no idea what I was doing, so being able to be shown at least someone else's tactics would be very, very helpful"). Yet, at the same time, they expressed some hesitancy to participate in teaching development opportunities (e.g., "...this isn't a teaching program, really. That's not why we came to this program"). Overall, findings from this local feedback effort were similar to national findings in that GSIs were not particularly motivated to participate in teaching development opportunities despite wanting more preparation and support.

There is a clear need then - both nationally and locally - for GSI teaching development opportunities that better address this underlying motivational paradox in which GSIs simultaneously desire and devalue professional development related to teaching. There have been calls for more research exploring innovative approaches to teaching development that better address GSIs' needs (BrckaLorenz et al., 2020; Buskist et al., 2002; Buskist, 2013; Chew et al.,

2018; Meyers & Prieto, 2000; Schwartz et al., 2020). Unfortunately, research has yet to pointedly examine what exactly these needs are. GSI feedback from my own local context, however, may offer some initial insight. For example, though GSIs were not interested in *existing* teaching development opportunities provided by their university, they did suggest that they could be swayed if more practical, course-specific support was offered (Alberts & Galvin, 2022). GSI feedback reported in Alberts and Galvin (2022) suggests that GSIs need support identifying a clear purpose related to student learning ("What is this course? What is the point of this course [for students]?") and that they desire space for collaboration ("...just having someone who has a little bit more experience just show off what they do…") and reflective dialogue ("I was hoping that maybe we can share our experience in the classroom and then try to solve the problem together"). These findings, though context-specific, may provide a starting point for informing new, innovative approaches to GSI teaching development that better take into account GSI's specific needs, and thus, better support their engagement in these opportunities.

One innovative approach to GSI teaching development that has not yet been explored are professional learning communities (PLCs). A PLC is a community of educators engaged in collective inquiry and reflective dialogue working collaboratively towards a shared vision of student learning (Dufour et al., 2016; Hilliard, 2012; Lomos et al., 2011). PLCs have been extensively explored in K-12 contexts as a successful approach to teaching development (Dufour, 2004), and may thus be useful in higher education contexts as well. Very little research has explored PLCs of GSIs, but certain key characteristics - a shared purpose focused on student learning, collaboration, and reflective dialogue - make PLCs a particularly promising approach for addressing GSIs' needs, at least locally, as they align with GSI feedback from Alberts and Galvin (2022). Further, PLCs are intended to evolve over time (Bolam et al., 2005; Stoll et al.,

2006). That is, PLCs have the potential to be more sustainable than existing opportunities, as they can grow and evolve in response to GSIs' changing needs both within and across semesters. For these reasons, PLCs may be more successful at engaging GSIs in teaching development compared to existing opportunities.

The broad aim of this study was to begin to explore PLCs as an innovative approach to GSI teaching development in higher education. Given the dearth of research examining PLCs of GSIs, the literature offers relatively little guidance on how to develop a PLC in this context, which further makes it difficult to judge the full potential of this approach for providing GSIs' teaching development. Thus, while my ultimate goal in this line of research is to improve GSI instruction, we first need to better understand how to develop PLCs of GSIs, and also whether PLCs have the potential to address limitations of existing opportunities. As a first step then, this study focuses first on designing and developing a PLC of GSIs that is mutually informed by the broader literature on PLCs and locally identified needs, and second, on examining GSI engagement in the PLC. Understanding PLCs' potential for engaging GSIs is important considering that GSIs often choose not to participate in existing opportunities. Towards this aim, I adopted an action research approach that allowed for a deeper examination of which aspects of a PLC are more or less successful at engaging GSIs in teaching development, as well as *why* they may be more or less engaging. In this way, the present study has the potential to inform local contexts by supporting the development of a group of GSIs teaching a multi-section undergraduate educational psychology course, as well as the broader literature by exploring the development and potential affordances of PLCs for engaging GSIs in professional learning.

CHAPTER 2: FRAMEWORK & LITERATURE REVIEW

As action research, this study followed an iterative cycle of observing, reflecting, planning, and action (O'Leary, 2004). In line with this process, different frameworks were needed at different times to inform these separate phases of the action research cycle. Specifically, I drew on different literatures to 1) design an action plan for developing a PLC of GSIs, 2) examine GSI engagement in different PLC design elements, and 3) explore *why* certain PLC design elements may be more or less engaging for GSIs. In the sections that follow, I describe the framework used for each of the phases and review relevant literature.

A Framework for Defining Professional Learning Communities

In order to examine the potential affordances of PLCs for engaging GSIs in teaching development, I first had to develop a PLC of GSIs. Research shows that PLCs must be thoughtfully developed over time (Stoll et al., 2006), though there is no common or empirically-supported method for doing so. Moreover, PLCs are ubiquitous in K-12 contexts, but they are not as common in higher education settings, and especially not with GSIs. Therefore, I needed to establish a framework for defining and developing a PLC in the context of the multi-section undergraduate educational psychology course I oversee. To this end, I drew on existing PLC literature and feedback collected from the GSIs of this course to develop a framework and action plan for establishing a PLC in this local context. The following section outlines this framework and reviews relevant literature that was used to inform the design of this action plan.

Broad Ideas and Key Characteristics

A PLC is a community of educators engaged in collective inquiry and reflective dialogue working collaboratively towards a shared vision of student learning (Dufour et al., 2016; Hilliard, 2012; Lomos et al., 2011). There is general agreement that PLCs can be defined in terms of a small number of key characteristics, and that it is these characteristics that distinguish

a PLC from just any group of people with an interest in schools (Dufour, 2004). Although there is some variation among models regarding the precise number and nature of these characteristics (e.g., Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006; Vescio et al., 2008), competing frameworks coalesce around four major characteristics. Thus, the PLC framework used in this study represents a synthesis across major PLC frameworks that is centered on the following four characteristics: a focus on learning, collaboration, a shared vision, and reflective inquiry and dialogue (see Table 1 for a visual representation of these key characteristics and the literature supporting them).

Table 1. *PLC Key Characteristics, Definitions, & Relevant Literature*

Key Characteristic	Definition	Relevant Literature
A Focus on Learning	Commitment to student success	Bolam et al., (2005) Lomos et al., (2011) Stoll et al., (2006) Vescio et al., (2008)
Collaboration	Opening up practice "in ways that encourage sharing, reflecting, and taking the risks necessary to change" (Vescio et al., 2008, p. 84)	Bolam et al., (2005) Lomos et al., (2011) Stoll et al., (2006) Vescio et al., (2008)
Shared Vision	A collective sense of purpose	Bolam et al., (2005) Lomos et al., (2011) Stoll et al., (2006)
Reflective Inquiry & Dialogue	Participating "in professional dialogues about specific educational issues" (Lomos et al., 2011, p. 124)	Bolam et al., (2005) Lomos et al., (2011) Stoll et al., (2006)

A Focus on Learning

A focus on learning refers to PLC members' commitment to supporting student success (Lomos et al., 2011; Louis & Marks, 1998). That is, at its core, the PLC is focused on student success and all efforts are directed towards improving student learning. Thus, the PLC invests in

the professional development of its members with the understanding that instructors' learning will ultimately lead to improved student learning (though maybe not for some time). A focus on learning has been named the most important condition for a fully functioning PLC (Dogan et al., 2016) and, not surprisingly, was the only characteristic linked to student success outcomes in one review (Vescio et al., 2008).

Collaboration

Collaboration refers to opening up practice "in ways that encourage sharing, reflecting, and taking the risks necessary to change" (Vescio et al., 2008, p. 84). Collaboration may include a variety of cooperative activities such as peer observation, peer feedback, collaborative lesson planning, group reflection on practice, etc. Collaborative efforts are focused on teacher learning with the idea that teacher learning will promote improved student learning. Collaboration is an important characteristic of PLCs as it is empirically linked to teaching culture shifts that facilitate instructor learning (Dogan et al., 2016; Vescio et al., 2008). Collaboration moves the PLC from a culture of isolated instructors teaching and solving problems within their own, individual classrooms, to a more collaborative culture of instructors working cooperatively to solve problems related to student learning.

Shared Vision

A shared vision involves a collective sense of purpose (Lomos et al., 2011). This shared vision serves an important function in a PLC - anchoring group efforts in a common purpose and promoting a shared understanding of PLC goals (Stoll et al., 2006). Further, the shared vision provides a framework for future reflective inquiry and dialogue (Louis et al., 1995). Though closely related, a shared vision refers to the content and skills being learned by students in the

course (Bolam et al., 2005; Hord, 2004; Stoll et al., 2006), whereas a focus on learning refers to a broad target of learning (first of teachers, then of students).

Reflective Inquiry and Dialogue

Reflective inquiry and dialogue refers to participating "in professional dialogues about specific educational issues" (Lomos et al., 2011, p. 124). This may include examining teaching practices, cooperatively solving problems of practice related to student learning, and even joint planning (e.g., Bolam et al., 2005; Hord, 2004; Stoll et al., 2006). This is an important characteristic of PLCs in that reflective inquiry and dialogue is the process that PLC members collaboratively and repeatedly engage in to determine the shared vision and maintain a focus on learning.

Importantly, research acknowledges that key characteristics of PLCs intertwine, overlap, and operate together (Hord, 2004; Louis et al., 1995; Stoll et al., 2006). For example, collaboration and reflective inquiry and dialogue may work synergistically as PLC members work cooperatively to reflect on their practice. Similarly, a shared vision may represent the specific content embodiment of the broader focus on learning. Further, PLCs are considered fluid entities meant to develop and evolve over time (Stoll et al., 2006). A PLC does not automatically start with a shared vision at the onset, for example. Instead, key characteristics are developed over time as the PLC evolves and matures (Stoll et al., 2006).

Developing Professional Learning Communities

In thinking about how to develop a PLC for this study, I drew on two sources of information. First, I reviewed relevant literature on how the four key PLC characteristics may be developed. Second, I reviewed relevant feedback - collected via questionnaire and focus groups - from the GSIs teaching the multi-section undergraduate course I oversee. Combining these data

sources enabled me to consider both the broader context of PLC development in education and the specific needs of GSIs from my local context in my action plan design.

Broader Professional Learning Community Literature

Based on the aforementioned framework, a mature PLC is one that exhibits all key characteristics - a focus on learning, collaboration, shared vision, and reflective inquiry and dialogue (Bolam et al., 2005; Stoll et al., 2006). Because PLCs are group-directed (Bolam et al., 2005), different PLCs have adopted different approaches to developing these characteristics including critiquing each other's syllabi using a Universal Design for Learning checklist (Ward & Selvester, 2012), informal roundtable discussions (Terry et al., 2018), action research (Johannesson, 2020), and structured seminars (Peskin et al., 2009). Across all these approaches, though, PLC members are engaging in reflective inquiry and dialogue to examine instructional challenges related to common ideas around student learning (Dufour et al., 2016; Roth et al., 2014). In practice then, PLCs may loosely resemble a research team in that its members are identifying issues, proposing and implementing solutions, and then gathering and reviewing evidence to determine if the solutions worked (Dufour et al., 2016; Roth et al., 2014). This allows PLCs to sustainably address new instructional challenges as they arise, and thus evolve in response to group members' changing needs (Bolam et al., 2005; Stoll et al., 2006).

Despite considerable variation in how previous studies have approached developing PLC characteristics, research has identified some general "best practices." For example, Bullough and Baugh (2008) suggest clearly communicating a purpose for the PLC. Without a clear purpose, participation may feel forced as a top-down command (Bullough & Baugh, 2008), which could negatively impact instructors' motivation and engagement in the PLC. Second, research also suggests that it may be worthwhile to start small, with community-building activities that

stimulate thinking around important issues, like student learning (Roth et al., 2014). Finally, research recommends - as an essential practice - designating a facilitator to guide the PLC (Avgitidou, 2009; Margalef & Robin, 2016; McLaughlin & Talbert, 2006). Enlisting a supervisor to serve as the PLC facilitator may help with member engagement, as long as they avoid taking on the role of "expert" (Roth et al., 2014). Instead, the facilitator's role is to foster an environment that supports professional development by establishing shared goals, encouraging instructors to reflect on their own practice, providing feedback, sharing relevant resources, and supporting a culture of experimentation (Avgitidou, 2009; Margalef & Robin, 2016; McLaughlin & Talbert, 2006; Roth et al., 2014).

It is important to note that the majority of PLC literature pertains to K-12 contexts (Dufour et al., 2016; Johannesson, 2020). Therefore, while these recommendations may provide a starting point for thinking about how to develop a PLC of GSIs, there are major differences to consider. For instance, K-12 educators likely all have some type of formal teacher training, whereas GSIs may have none at all. This could mean that the same processes used to develop PLCs in K-12 contexts do not translate directly to higher education. Therefore, in addition to understanding the broader PLC literature, it is equally important for the purpose of this study to understand the local context and its GSIs' needs specifically.

Context-specific Considerations

To better understand the local context in which this study takes place, existing questionnaire and focus group data were gathered, reviewed, and considered. As the supervisor of GSIs in this local context, I (prior to the current study) collected feedback via questionnaire and focus groups to better understand GSIs' professional development needs. These data were

collected intentionally to inform the present study (some initial findings were reported in Alberts and Galvin, 2022).

Former and current GSIs were invited to participate in focus groups about available and desired teaching development opportunities. Findings revealed several important considerations for the present study. Similar to findings reported in the broader literature on GSI teaching development, GSIs in my local context noted a lack of teaching development opportunities at their institution (Alberts & Galvin, 2022; see Appendix A, Section 1). Moreover, the same motivational paradox reported in the broader literature (BrckaLorenz et al., 2020; Meyers & Prieto, 2000) - in which GSIs simultaneously desire and devalue professional development related to teaching - was present in this local context as well. GSIs were not particularly motivated to take advantage of teaching development opportunities despite wanting more of them (Alberts & Galvin, 2022; see Appendix A, Section 2). Another important consideration is that GSIs had very different teaching backgrounds (Alberts & Galvin, 2022), so any plan for developing a PLC of GSIs in this context would need to consider how to engage members regardless of their teaching experience.

Finally, there were several findings from Alberts and Galvin (2022) that aligned with key PLC characteristics. For example, GSIs lacked a shared understanding of the purpose of the course in terms of student learning (see Appendix A, Section 3). This finding relates to the idea of creating a shared vision focused on student learning - a key characteristic of PLCs (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006). Creating a shared vision that communicates a clear purpose related to student learning then may be one strategy for developing a PLC that also directly addresses a local need. In addition to articulating a clear vision of student learning, GSIs expressed the desire for space to work through real-life teaching problems as they come up (see

Appendix A, Section 4). Further, GSIs indicated a willingness to engage in this dialogue if it involved opportunities to collaborate with other instructors (see Appendix A, Section 5). Taken together, these two findings closely align with the key characteristics of reflective dialogue and collaboration from the PLC literature. In this way, there is significant overlap between GSI needs and key PLC characteristics, suggesting that a PLC may be a promising approach to GSI teaching development, at least in this local context.

Designing An Action Plan for Developing A PLC of GSIs

Combining the framework for defining PLCs outlined in the previous section along with the aforementioned context-specific considerations, I developed an action plan for developing a PLC of GSIs in my own local context. Designing an action plan for developing a PLC was a necessary first step toward the broader aim of this study, which was to examine the affordances and limitations of this approach for engaging GSIs in teaching development. That is, it would be illogical to examine GSIs' engagement in a PLC without first developing a PLC. Though the specific procedure for implementing the action plan is described below in my "Methods" section, I briefly outline the three major design elements of the action plan here so that 1) it is clear how they evolved from my review of the broader PLC literature and data from my local context and 2) because the design of the action plan has implications for examining GSI engagement, which I will turn to in the next section.

Both the PLC literature and GSI feedback suggested a need to establish a clear purpose (Alberts & Galvin, 2022; Bullough & Baugh, 2008). Thus, the first PLC design element involved GSIs working collaboratively to create a shared vision of student learning for our multi-section course. As the first activity, it was also intended to serve as a uniting community-building activity (Roth et al., 2014). The second PLC design element - the Just-In-Time box - was

designed to encourage GSIs to share any teaching challenges they were currently facing and to work through them together as a group. This was included in the action plan in response to GSIs reporting that they desired a space to collaborate and talk through their real-life teaching experiences (Alberts & Galvin, 2022). The third PLC design element involved Problem-of-Practice (POP) teams in which GSIs assembled into teams and explored problems of practice related to the shared vision. This design element was intended to keep the PLC focused on student learning and further spark collaboration and reflective dialogue (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006; Vescio et al., 2008). Throughout all three PLC design elements, I (the supervisor) served as the PLC facilitator, as research shows this can help promote engagement (Avgitidou, 2009; Margalef & Robin, 2016; McLaughlin & Talbert, 2006; Roth et al., 2014).

To determine if this action plan - consisting of the three main PLC design elements: creating a shared vision, the Just-In-Time box, and POP teams - was successful in terms of engaging GSIs, I required a framework for thinking about GSI engagement in the PLC. I describe the framework and relevant research related to engagement in the following section.

A Framework for Defining Engagement

The broader literature shows that even though teaching development opportunities for GSIs have increased (Boman, 2013; Boysen, 2011; Buskist, 2013), GSIs often do not participate in them (BrckaLorenz et al., 2020; Meyers & Prieto, 2000). Thus, beyond having a thoughtfully designed PLC, it was also critical to this study to have a framework for understanding and evaluating GSIs' involvement in PLC activities. By its simplest definition, involvement could refer to attendance, which can be easily influenced by requiring GSIs' to attend PLC meetings as part of their teaching assistantship. Attendance alone, however, reveals nothing about the *quality*

of GSIs' involvement in the PLC. Ideally, GSIs would actively participate - or *engage* - in the PLC. Indeed, engagement is an important intermediary to learning (Linnenbrink-Garcia et al., 2016; Patall et al., 2022; Pekrun & Linnenbrink-Garcia, 2012), so a PLC is more likely to be a viable approach to teaching development if it can successfully engage GSIs. To this end, I examined GSIs' engagement in the three different PLC design elements - creating a shared vision, the Just-In-Time box, and POP teams - described above. The following section outlines the framework used in this study for thinking about engagement, as well as reviews relevant engagement literature.

Engagement: A Multidimensional Construct

Broadly, engagement involves active participation and a commitment to goals, usually in reference to education-related activities (Christenson et al., 2012). Fredricks et al. (2004) articulated a multidimensional framework consisting of three distinct, but interrelated, dimensions of engagement: affective, behavioral, and cognitive (see Table 2). This framework has been used to understand engagement among learners across a variety of age groups and a variety of formal and informal learning contexts (e.g., Beymer et al., 2018; Fredricks 2011; Schmidt et al., 2018).

Affective Engagement

Affective engagement is most commonly defined as individuals' emotional reactions (both positive and negative) to tasks, peers, etc. (Fredricks et al., 2004; Sinatra et al., 2015). Positive affect, like enjoyment, is most often related to positive learning outcomes (Broughton et al., 2011; Heddy & Sinatra, 2013; Sinatra et al., 2015), though it is possible for negative affect to lead to certain positive outcomes as well. For example, learners may experience anxiety (negative affect) whilst engaging in a high-stakes activity. The ease in which affective

engagement can be observed often depends on the emotion. Smiling and/or laughing are easily visible indicators of enjoyment, whereas a racing heart (anxiety) may not be as obvious.

Behavioral Engagement

Behavioral engagement is related to involvement in a group, activity, or task (Fredricks et al., 2004; Sinatra et al., 2015). In general, it can be thought of as being "on-task" or "doing what you are supposed to be doing." Behavioral engagement then, may look very different depending on the context and as a result, specific indicators of behavioral engagement can vary widely. In some cases, behavioral engagement is defined more broadly as attendance or participation (Finn, 1993; Finn et al., 1995; Fredricks et al., 2004), but can also include more task-specific indicators like effort, concentration, attention, positive conduct, contributing to discussions, etc. (Birch & Ladd, 1997; Finn et al., 1995; Finn & Zimmer, 2012; Fredricks et al., 2004).

Cognitive Engagement

Cognitive engagement refers to *psychological* effort (i.e., thinking hard about a task) or mental investment in a task (Fredricks et al., 2004; Sinatra et al., 2015; Wehlage & Smith, 1992). Indicators of cognitive engagement include believing a task to be valuable or important, going beyond the requirements, preferring a challenge, a focus on mastery, the use of self-regulation and metacognition (Connell & Wellborn, 1991; Finn & Zimmer, 2012; Fredricks et al., 2004; Newmann et al., 1992). As it is analogous to cognition and therefore not easily observable, cognitive engagement can be the most difficult dimension to measure (Sinatra et al., 2015).

These dimensions of engagement are considered conceptually distinct but overlapping constructs (Fredricks et al., 2004; Reeve, 2013; Sinatra et al., 2015), especially cognitive and behavioral engagement (Reschly & Christenson, 2012). Together, these three dimensions provide a broad framework for thinking about the multiple ways GSIs might engage in PLC

design elements. Engagement is believed to be malleable and heavily influenced by contextual factors (Appleton et al., 2008; Christenson et al., 2012; Fredricks et al., 2004), so the current study considered the ways that the three PLC design elements (i.e., creating a shared vision, Just-In-Time box, and POP teams) may invite and influence GSIs' engagement in different ways. For example, GSIs who expressed a need for a clearer course purpose may be more likely to engage in the process of creating a shared vision. Specifically, they may find creating the shared vision to be cognitively engaging; that is, valuable and important. Thinking about engagement in this way makes it possible to explore GSIs' engagement in different PLC design elements beyond the simplest indicator of behavioral engagement, which is attendance.

Table 2. *Engagement Dimensions, Definitions, & Example Indicators*

Dimension	Definition	Example Indicators
Affective	● Individuals' emotional reactions to a given situation (Fredricks et al., 2004; Sinatra et al., 2015)	● Smiling, laughing (positive affect) ● Scowling, sighing (negative affective)
Behavioral	● Being "on-task" (Fredricks et al., 2004; Sinatra et al., 2015)	● Attendance ● Participation ● Effort ● Concentration
Cognitive	● Psychological investment in a task (Fredricks et al., 2004)	● Believing something to be important ● Use of self-regulation or metacognition ● Going beyond requirements

A Framework for Exploring *Why* Different PLC Design Elements May Engage GSIs Differently

In the previous sections, I described frameworks and relevant literature for 1) designing an action plan for developing a PLC of GSIs and 2) examining GSI engagement in different PLC

design elements. In addition to knowing which elements were more (or less) engaging, it is equally important to consider *why* these PLC design elements - creating a shared vision, JIT box, and POP teams - may have supported or undermined GSIs' engagement in the PLC. Understanding why the PLC design elements were successful at engaging GSIs (or not) is useful for informing the continued development of this specific PLC of GSIs, as well as an important contribution to the broader literature on GSI teaching development. Therefore, in this final section, I describe my framework and relevant literature related to exploring *why* different PLC design elements may be more or less engaging for GSIs. This framework was developed in response to emergent findings *after* the action plan was implemented and data on GSI's engagement were collected for the purpose of situating findings in the broader context of GSI teaching development. In other words, unlike the a priori frameworks that informed the design of the PLC and the assessment of engagement, this explanatory framework was identified during the analytic phase as a means to help me make sense of the patterns I observed in GSI engagement across the different PLC design elements.

Contextual Features & Motivational Principles That Influence Engagement

Research has increasingly focused on identifying factors that support or undermine engagement. One important factor to emerge from the literature is motivation. Motivation is the process of initiating and sustaining goal-directed behavior (Linnenbrink-Garcia et al., 2016; Schunk et al., 2014). Engagement, in fact, is commonly conceptualized as the embodiment of motivation (Linnenbrink-Garcia et al., 2016). This suggests that where engagement is present, so too must be underlying motivation. Further, both engagement and motivation are context-dependent and scholars have proposed frameworks for thinking about and identifying contextual factors that support/undermine motivation, and in turn, engagement. One recent theoretically

integrated framework (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022) identifies five broad motivational principles that support engagement and learning. These principles are: value, autonomy, relatedness, perceived competence, and mastery goal orientation (for a review, see Linnenbrink-Garcia et al., 2016 or Patall et al., 2022). Whether a given context supports or undermines these five principles can influence engagement (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022). This integrated motivation framework serves as a useful tool for thinking about differences in GSIs' engagement as they relate to different PLC contexts (i.e., the design elements: creating a shared vision, the Just-In-Time box, and POP teams). See Table 3 for a summary of these principles, their definitions, and related contextual considerations.

Value

The concept of value is derived from Expectancy-Value Theory and is related to *why* an individual may engage in a task **(**Eccles et al., 1983; Linnenbrink-Garcia et al., 2016; Patall et al., 2022). In essence, value is indicative in an individual's answer to the question "Why should I do this task?" (Eccles & Wigfield, 2002). One type of value that that has been linked to engagement is utility value (Eccles & Wigfield, 2002; Johnson & Sinatra, 2013; Linnenbrink-Garcia et al., 2016). Utility value refers to whether a task is perceived as useful towards achieving one's goals (Wigfield & Eccles, 1992; Eccles & Wigfield, 2002). An individual, therefore, is more likely to engage in a task if it is perceived as useful. Learning environments that communicate a clear purpose and emphasize both personal and real-world relevance are value-supportive (Linnenbrink-Garcia et al., 2016; Patall et al., 2022). Value-supportive learning environments, in turn, support engagement (Linnenbrink-Garcia et al., 2016; Patall et al., 2022).

Autonomy

The concept of autonomy is drawn from Self-determination Theory (Ryan & Deci, 2017) and refers to the feeling that one's actions align with the self (Patall et al., 2022; Ryan & Deci, 2017). In general, autonomy is positively related to engagement; learners who feel autonomous are more likely to engage affectively, behaviorally, and cognitively (Assor et al., 2002; Linnenbrink-Garcia et al., 2016; Patall et al., 2022; Reeve, 2013). It is possible that a perceived lack of autonomy (i.e., feeling controlled) may still lead an individual to complete a task (behavioral engagement) because they feel forced, though they may experience negative emotions (affective engagement) while doing so. This is ultimately considered a maladaptive pattern of motivation and engagement, however. Learning environments that incorporate learner perspectives, provide opportunities for choice, and encourage learner agency are considered autonomy-supportive and thus engaging (Linnenbrink-Garcia et al., 2016; Patall et al., 2022).

Relatedness

Relatedness broadly refers to how connected an individual feels to others (Leary & Allen, 2011; Patall et al., 2022). According to Self-Determination Theory, relatedness is an important psychological need (Ryan & Deci, 2017; Ryan & Deci, 2020). Feelings of relatedness are positively associated with engagement (Patall et al., 2022). Particularly, learners who feel connected to their academic peers report more positive affective engagement (Furrer & Skinner, 2003). Learning environments that cultivate relatedness by providing opportunities for community-building, collaboration, and peer connection are more likely to elicit engagement (Linnenbrink-Garcia et al., 2016; Patall et al., 2022).

Perceived Competence

Perceived competence is a broad category referring to individuals' self-assessments of their capability for succeeding at a given task (Linnenbrink-Garcia et al., 2016). This category encompasses several constructs drawn from prominent achievement theories. Self-efficacy - drawn from Social Cognitive Theory (Bandura, 1997) - is an individuals' beliefs about their ability to execute the necessary steps to complete a task. Success expectancies - from Expectancy-Value Theory (Eccles et al., 1983; Eccles & Wigfield, 2002) - include individuals' predictions about how they will perform on an upcoming task. Finally, self-concept is defined as individuals' broader cognitive beliefs about different aspects of their self (Bong & Skaalvik, 2003; Linnenbrink-Garcia et al., 2016). Given the obvious overlap, these constructs are collectively known as "perceived competence" and all three are similarly related to engagement.

Specifically, higher perceived competence is associated with higher levels of engagement (Linnenbrink-Garcia et al., 2016; Patall et al., 2022). In general, learners who feel confident in their ability to do well (i.e., have greater perceived competence) are more likely to put forth effort (behavioral engagement), use metacognitive strategies (cognitive engagement), and experience more positive emotions (affective engagement). Learning environments that involve positive verbal feedback, challenging but attainable goals, and opportunities for mastery (including vicarious) experiences are more likely to support learners' perceived competence, and in turn, their engagement (Linnenbrink-Garcia et al., 2016; Patall et al., 2022).

Mastery Goal Orientation

Mastery goal orientation is closely related to the idea of growth mindset (Dweck, 1999). A growth mindset refers to the belief that one can improve with effort (Dweck, 1999). This is in contrast to a fixed mindset in which intelligence is believed to be unchangeable regardless of

effort (Dweck, 1999). Individuals with a growth mindset often adopt a mastery goal orientation, whereas individuals with a fixed mindset may adopt a performance goal orientation (Dweck, 1999). Mastery goals are focused on improvement and learning, while performance goals are focused on appearing "smart" (or at least avoiding being perceived as unintelligent) (Dweck, 1999).

In general, a mastery goal orientation is considered facilitative of engagement (Dweck, 1999). Learners who are focused on mastery goals are more likely to fully engage in a task (even when experiencing a setback) compared to learners with performance goals. In fact, individuals with performance goals and who have low confidence in their abilities may even disengage in order to avoid potential failure and being perceived as unintelligent. There are several features of a learning environment that can work to support a mastery goal orientation over a performance goal orientation. Learning environments that normalize setbacks and discourage social comparison promote mastery over performance goals and are more motivating and engaging (Linnenbrink-Garcia et al., 2016; Patall et al., 2022).

It is important to note that there is considerable synergy between these five key motivational principles (Linnenbrink-Garcia et al., 2016; Patall et al., 2022). For instance, incorporating learner choice (autonomy) affords learners more freedom to explore personally relevant or interesting topics (value). De-emphasizing social comparison in an effort to promote a mastery goal orientation can create space for community building (relatedness). In this way, these constructs are not isolated. Although each supports engagement on its own, they also have an additive effect on engagement. This framework then was used to examine each PLC design element for the presence of contextual features that support these five motivational principles in order to explain the differences in GSI engagement across the design elements.

Table 3. *Five Key Motivational Principles That Support Engagement*

Key Construct	Definition	Supportive Environmental Features
Value	*Why* an individual chooses to engage in a task (Eccles et al., 1983; Eccles & Wigfield, 2002; Linnenbrink-Garcia et al., 2016; Patall et al., 2022)	• Communicating Purpose • Emphasizing Relevance
Autonomy	The feeling that one's actions align with the self (Patall et al., 2022; Ryan & Deci, 2017)	• Incorporating Learner Perspectives • Opportunities for Choice • Encouraging Learner Agency
Relatedness	How connected an individual feels to others (Leary & Allen, 2011; Patall et al., 2022)	• Community-building, • Collaboration • Peer Connection
Perceived Competence	Individuals' self-assessments of their capability for succeeding at a given task (Linnenbrink-Garcia et al., 2016)	• Mastery Experiences • Positive Verbal Feedback • Challenging Attainable Goals
Mastery Goal Orientation	The idea that one can improve with effort (Dweck, 1999)	• Process Praise (vs Person Praise) • Normalizing Setbacks • Discourage Social Comparison

Research Questions

The three frameworks and related literature presented in this chapter furthered the aim of this study by informing different phases of the action research cycle: 1) designing an action plan for developing a PLC of GSIs, 2) examining GSI engagement in different PLC design elements, and 3) exploring *why* these different PLC design elements may be more or less engaging for GSIs. Specifically, this research explored the following research questions:

1. *In what ways did GSIs' engage in the different PLC design elements?*
2. *What do participant and researcher reflections, along with existing scholarship, suggest about why some PLC design elements were more (or less) engaging than others?*

Together, exploring the development of a PLC and its potential for engaging GSIs is a first step towards assessing this as one solution to the challenge of GSI professional learning If a PLC can be established in this context and successfully engage GSIs, then this approach would improve upon existing GSI teaching development opportunities (which have not been successful at engaging GSIs) and, given the link between engagement and learning, speak to PLCs' potential for improving GSIs' instruction.

CHAPTER 3: METHODS

The following chapter details the methodological approach used in this study. It describes the context and participants, as well as procedures, data sources, and data analysis strategies used. A researcher positionality statement is also included.

Methodology

This study employed an action research design to develop and examine engagement in a PLC of GSIs. Action research is aligned with an interpretivist paradigm in that findings are bound to the context in which they are generated (Koshy, 2010). The purpose of action research is to improve educational practice by gathering evidence in order to implement changes to practice (Cohen et al., 2011; Koshy, 2010). There are several models of action research (e.g., Elliot, 1991; Macintyre, 2000; O'Leary, 2004) and it is generally accepted that researchers should choose a model that best fits the purpose of their study. Researchers are also encouraged to further adapt any of these models if needed (Koshy, 2010). In this way, action research is intended to be flexible and responsive to the context in which it is being carried out. For the present study, I adopted a model of action research that most closely aligns with O'Leary's (2004) cycle of action research. This model includes the following phases: *observe* (collecting relevant information and data), *reflect* (critically reflecting on the data collected), *plan* (creating a strategic action plan informed by data and reflection), and *action* (implementing the strategic action plan). These four phases can be repeated in a cyclical fashion, if necessary, to reach the desired improvement to practice.

Including initial data collection efforts that were carried out intentionally to inform the present study (e.g., Alberts and Galvin, 2022), this research in its entirety involved one and a half iterations of O'Leary's (2004) action research cycle that unfolded across several semesters. See Appendix B for a diagram and timeline of all phases carried out as part of this larger action

research project. This study, however, hones in on implementing, observing, and reflecting on the action plan for developing a PLC of GSIs in order to examine their engagement in the three PLC design elements.

Defining A Case

In qualitative research, including action research designs, it is beneficial to define a case. A case is "a phenomenon of some sort occurring in a bounded context" (Miles et al., 2020, p. 24). A case is essentially a study's unit of analysis, determining what is studied and what is not (Miles et al., 2020). A case can be an individual or a group, and it can be bounded in different ways (by space, by time, etc.) depending on the research purpose. The case in this study was the PLC, bounded by the Spring 2022 semester. Though the PLC has individual members, the focus of this study was *not* on any given individual and their unique participation in the PLC. The focus was on the design elements of the PLC and how they collectively engaged its members over the course of a semester. Thus, the unit of analysis in this study was the PLC as a whole and not its individual GSI members.

Context & Participants

For this study, I focused on a local group of GSIs that were teaching the multi-section undergraduate course I supervise during the Spring 2022 semester. All procedures and measures were approved by the Institutional Review Board (IRB) at the university where the study was conducted prior to any data collection. All GSIs completed informed consent documents and were reminded that their participation was voluntary and that they could withdraw from the study at any time.

Context

The PLC was developed in the context of a multi-section educational psychology course at a large, Mid-western Research 1 university consisting of approximately 16 sections, 14 instructors, and 400 students each semester. This course is a required course in the teacher education program, though enrollment is open to students of all majors. Some sections (roughly half) are designated "Teacher Education (TE) -Focused" sections, while others are designated "Educational Psychology (EP)-Focused" sections. During the semester in which this study took place (Spring 2022), the course was offered in four different modalities: in-person (n = 5), hybrid (n = 1), online synchronous (n = 5), and online asynchronous (n = 2). Each section of the course is taught by a GSI who is the sole instructor of their assigned section (see Table 4 for a summary of section information for the Spring 2022 semester). The majority of GSIs teaching the course are Ph.D. students in the Educational Psychology and Educational Technology program (where the course is housed), meaning most have some knowledge of the course content. GSIs are provided with curriculum support in the form of content and assessments, standardized across sections. This support allows GSIs to focus on instructional aspects of the course rather than concentrating their efforts on developing course materials. As a required part of their appointment, GSIs must attend regular instructor team meetings. Given the ongoing concerns surrounding the COVID-19 pandemic, all instructor team meetings were held virtually, via Zoom, in Spring 2022.

Table 4. *TE 150 Instructor, Section Focus, & Modality Information for Spring 2022*

Instructor	Section Focus	Modality
Jun	Educational Psychology	In-person
Stella	Educational Psychology	In-person
Sabrina	Educational Psychology	Hybrid[b]
Jia	Educational Psychology	Occasional Synchronous[c]
Wes	Educational Psychology	Asynchronous[d]
Jun	Teacher Education	In-person
Jun	Teacher Education	In-person
Andrea	Teacher Education	In-person
Sophie	Teacher Education	Occasional Synchronous[c]
Max	Teacher Education	Occasional Synchronous[c]
Kimberly[a]	Teacher Education	Occasional Synchronous[c]
Max	Teacher Education	Occasional Synchronous[c]
Lila	Teacher Education	Asynchronous[d]

Note. All instructor names (except the researcher's) are pseudonyms.
[a] PLC facilitator (also the researcher)
[b] Combination of online and in-person classes
[c] Online section - majority asynchronous, with 4 synchronous Zoom sessions
[d] Online section - entirely asynchronous

Participants

GSIs

Participants were drawn from a convenience sample of GSIs teaching this course during the Spring 2022 semester. All nine[1] GSIs teaching during the Spring 2022 semester agreed to participate in the study. Participant demographic and teaching background information was

[1] There were also three sections of the course taught by two faculty instructors who did not attend team meetings nor participate in the study.

collected via questionnaire (see Appendix C) at the beginning of the semester. One participant chose to opt-out of the demographic questionnaire, so the data represents eight out of the nine GSI participants. The sample identified as majority White (62.5%) and majority women (75%). See Table 5 for full participant demographics.

Table 5. *Participant Demographic Characteristics (N = 8)*

Race/Ethnicity[a]	***n***	***Gender***	***n***
African American or Black	1	Man	2
Asian, Pacific Islander, or Asian-American	2	Woman	6
European American or White (non-Hispanic) or Caucasian	5	Non-binary	0
Hispanic or Latino/a	1	Prefer to self-describe	0
Native American	0		
Prefer to self-describe	0		

Note. This table represents demographic characteristics for eight out of the nine total GSI participants. One participant chose not to complete the survey.
[a] Participants could select all options that apply (i.e., the total exceeds 8, or the number of GSIs who completed the survey)

Participants were also asked about their teaching background and experience. All participants had previously taught this course, though some had previously taught in different modalities (face-to-face, online, etc.) Most participants (62.5%) also reported having a background in K-12 education, but experience and the amount of training varied widely. Finally, all participants reported having attended some teaching development opportunities, but again, the type of opportunity varied considerably (e.g., K-12 professional development, university-wide training, teaching workshops, formal coursework related to teaching). See Table 6 for a summary of participants' teaching background information.

Table 6. *Participant Teaching Background Demographics (N = 8)*

Number of Participants Who Have Received Formal K-12 Training	***n***
Yes	5
No	3
Other	0
Number of Participants Who Have Experience Teaching the Following Groups	***n***
PhD Students	0
Master's Students	4
Undergraduate Students	8
High School (K-12)	3
Middle School (K-12)	3
Elementary School (K-12)	4
Special Education	3
Other	1
Number of Participants Who Have Experience Teaching in the Following Modalities	***n***
Face-to-Face	8
Hybrid	2
Online Synchronous	6
Online Asynchronous	6
Other	0

Note. This table represents demographic characteristics for eight out to of the nine total GSI participants. One participant chose not to complete the survey.

PLC Facilitator

A facilitator is an important part of a PLC (Margalef & Robin, 2016; Roth et al., 2014). The goal of the facilitator is not to "run" the PLC, but instead cultivate momentum. For example,

the facilitator may coordinate meetings, push thinking, take notes, consolidate ideas and feedback, etc. (Avgitidou, 2009; Margalef & Robin, 2016; McLaughlin & Talbert, 2006). As the immediate supervisor of the GSIs teaching this course, I was already responsible for coordinating the required team meetings that are part of GSIs' assistantships and so it made sense for me to serve as the PLC facilitator. Moreover, research suggests that it is beneficial for supervisors to serve as PLC facilitators as it may support buy-in and engagement from members (Roth et al., 2014). As the facilitator, I was a 10th participant in this study, but in a different way than GSIs. While I coordinated meetings and participated in group discussions, I did not complete any survey measures. See my positionality statement for more about my own background and demographic information.

Procedure

Action Plan For Developing A Professional Learning Community of GSIs

The action plan consisted of implementing the three PLC design elements (i.e., creating a shared vision, the JIT box, and POP teams) during the Spring 2022 semester as part of the regularly scheduled and required instructor meetings. Though GSIs were required to attend these meetings as part of their assistantship, they were *not* required to participate in this study. All GSIs who attended meetings did, however, consent to their data being used for research purposes. The instructor meetings, therefore, functioned as PLC meetings. All PLC meetings were held virtually as a result of the ongoing COVID-19 pandemic. Research suggests that online synchronous PLC meetings function similarly to in-person PLC meetings (Macdonald & Poniatowska, 2011). The seven, hour-long PLC meetings were held synchronously via Zoom according to a bi-weekly schedule that varied occasionally to accommodate national and university holidays.

Creating A Shared Vision

The first PLC design element was to engage GSIs in creating a shared vision focused on student learning goals for the course. Not only is a shared vision a key PLC characteristic on its own (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006), but creating a shared vision could also help communicate a clearer course purpose - something GSIs teaching this course had previously reported they were missing (Alberts & Galvin, 2022). One study, Peskin et al. (2009), examined how a shared vision could unify university instructors (not GSIs) teaching separate sections of the same educational psychology course. Like Peskin et al. (2009), this course involved multiple GSIs teaching different sections of the same course. Thus, I adopted a process similar to that of Peskin et al.(2009) for creating a shared vision. Instructors reflected on the prompt, *What do our students need to know and be able to do with respect to educational psychology?* and developed a list of core principles that instructors agreed should be emphasized across all sections of the course. The resulting list of core principles served as the shared vision. Given that the guiding question used to elicit the shared vision was focused on student learning, the core principles were also meant to communicate a broad purpose for the course by identifying essential knowledge/skills that students should be learning. Creating this shared vision was intended to take place over the first two PLC meetings as an early exercise that would be used to inform later discussions (from the JIT box and POP teams) throughout the semester. This design element, however, took longer than anticipated and stretched into the fourth PLC meeting before the shared vision was finalized.

Just-In-Time (JIT) Box

The second PLC design element was a “Just-In-Time” (JIT) box. The JIT box was a virtual submission form (see Appendix D). GSIs were encouraged to submit (anonymously if

they wished) teaching-related challenges as they arose throughout the semester. PLC members collaboratively discussed solutions to these challenges and shared resources at the start of each PLC meeting. The JIT box was incorporated into the action plan as a way of addressing GSI's desire for a space to work through real-life teaching problems (Alberts & Galvin, 2022) and to support two key PLC characteristics - collaboration and reflective inquiry and dialogue (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006; Vescio et al., 2008).

Problem-of-Practice (POP) Teams

The third PLC design element of the action plan involved GSIs investigating problems of practice related to the newly established shared vision. As a whole group, the PLC first brainstormed pressing problems of practice related to the shared vision. GSIs then assembled into three teams of three GSIs each around these identified problems. Each problem-of-practice (or POP) team was encouraged to examine their problem through a process of brainstorming solutions, testing those solutions in their own classrooms, and then collaboratively assessing those solutions with their team. Acting as the PLC facilitator (Avgitidou, 2009; Margalef & Robin, 2016; McLaughlin & Talbert, 2006), I provided a guided note sheet (Appendix E) for each team to record their progress and findings to further encourage reflective dialogue and collaboration throughout this process (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006; Vescio et al., 2008). POP teams met for varying amounts of time (depending on the length of the JIT box discussions) across four PLC meetings (Meetings 4 - 7). At the final PLC meeting, each POP team shared what they learned from engaging with their problem of practice with the larger PLC.

Data Sources & Collection Procedures

Several different types of data were collected across the Spring 2022 semester as the action plan unfolded. Data collected during each of the seven PLC meetings included meeting transcripts, PLC artifacts, exit ticket surveys, and facilitator field notes. I also conducted group interviews with GSIs after the final PLC meeting of the semester. Each data source is described in more detail below. See Table 7 for a summary of data sources and collection procedures.

Table 7. *Summary of Data Sources and Collection Procedures*

Data Source	Collection Procedure
PLC Meeting Transcripts	All 7 PLC meetings were recorded and transcribed Whole group discussions were recorded by the PLC facilitator Separate small group discussions in breakout rooms were recorded by one GSI in each room Total Time Recorded: 7 hours, 45 minutes, 46 seconds
PLC Meeting Artifacts	11 total Artifacts included various note-taking sheets (e.g., Appendix E) and a questionnaire (Appendix F) that were either used or generated during PLC meetings
Exit Ticket Surveys	Exit tickets were administered at the conclusion of each of the 7 PLC meetings Asked GSIs about their engagement (affective, behavioral, cognitive) in that day's meeting 50 total responses out of a possible 63 (1 response per participant, per meeting) Non-responses (n = 13) were mostly due to GSI absences (77%) See Appendix G for the exit ticket surveys

Table 7 (cont'd)

Facilitator Field Notes	1 per PLC meeting (7 in total) Facilitator used a structured note sheet (see Appendix H) to record notes during and after each PLC meeting
Group Interview Transcripts	3 one-hour long interviews (1 per POP team) Semi-structured (see Appendix I for the Interview Guide) Conducted towards the end of the Spring 2022 semester, after implementing the action plan and after all PLC meetings

PLC Meeting Recordings & Transcripts

All seven PLC meetings were recorded and transcribed. These meetings were recorded virtually and with participant consent through Zoom, the platform used to host the meetings. Whole-group discussions that took place in the main Zoom room were recorded by the PLC facilitator (who is also the researcher). Small group discussions taking place in breakout rooms were recorded by a GSI in that room. The total time recorded across all seven PLC meetings was close to eight hours (7hrs, 45 min, 46 sec).

PLC Meeting Artifacts

A total of 11 artifacts were collected (see Table 8 for a summary). Artifacts varied by type (note-taking sheets, questionnaires, etc.) depending on each meetings' proceedings. Some artifacts were used across several meetings and evolved over time (e.g., POP team note sheets).

Table 8. *Summary of Artifacts Collected*

Artifact	Description
Meeting Agenda (n = 1)	Rolling meeting agenda for all PLC meetings for the Spring 2022 semester, including notes recorded by the facilitator and PLC members
JIT Box Submission Report (n = 1)	Instructors could submit individual problems of practice to the JIT box at any point in the semester. There were six submissions to the JIT box across the semester.
Shared Vision Documents (n = 5)	Brainstorming and planning documents used to develop the shared vision, including the final shared vision document. There were five shared vision artifacts created across the first four PLC meetings.
Shared Vision Questionnaire (n = 1)	Feedback questionnaire used to assess individual GSIs' perceptions of the shared vision - both process and product (see Appendix F).
POP Team Note Sheets (n = 3)	Note-taking documents - one per team for a total of three artifacts - where POP teams recorded their progress.

Exit Ticket Surveys

An exit ticket survey was designed to collect information regarding GSIs' self-reports of engagement in PLC meetings (see Appendix G). This six-item survey (modified from Conner and Pope, 2013; Schmidt et al., 2018; and Skinner et al., 2009) consisted of two items representing each of the three dimensions of engagement: affective engagement (*I enjoyed today's session; I was interested in today's session*), behavioral engagement (*I participated during today's session; I paid attention during today's session*), and cognitive engagement (*Today's session was important to me; Today's session was meaningful to me*). GSIs responded to each item on a scale ranging from *1(Not at all true) to 6 (Very true)*. This survey was administered to GSIs as an exit ticket at the end of each PLC meeting.

Facilitator Field Notes

Field notes are a "researcher's written documentation of participant observation," including their subjective interpretations of social interactions (Saldaña, 2021, p. 59). Researcher field notes are a common practice in action research (Koshy, 2010). As both the researcher and PLC facilitator, it was difficult for me to record detailed observations during PLC meetings. For this reason, I designed a structured note sheet (see Appendix H) to record "jottings" (Emerson et al., 2011; Miles et al., 2020) during PLC meetings. Jottings are essentially "analytic sticky notes" (Miles et al., 2020, p. 86) in that they are brief, consisting of no more text than what would fit on an actual sticky note. Jottings are meant to capture the researcher's "fleeting and emergent" reflections whilst in the field - or PLC meetings in my case (Miles et al., 2020, p. 86). They are useful for recording thoughts and reflections *in-the-moment* during data collection. I used the structured note sheet to record jottings related to several ideas but focused on identifying examples and counterexamples related to indicators of engagement of the PLC participants. I then used my jottings as a guide to record more detailed field notes after each meeting concluded. In total, I generated seven field note documents, one for each PLC meeting. The exact nature of these field notes varied from meeting to meeting, depending on that meeting's proceedings. This is common for field notes, as they may involve a variety of reflections (Saldaña, 2021). For this study, field notes included descriptive summaries of meeting events, participants' reactions/interactions, and noticings related to GSIs' engagement.

Group Interviews

After the final PLC meeting of the semester, I conducted hour-long semi-structured group interviews with each of the three GSI POP teams. Group interviews are useful in situations where a group of people have been working together for some time and/or share a common goal,

such as in a PLC (Cohen et al., 2011; Watts & Ebbut, 1987). Compared to a series of individual interviews, group interviews increase the potential for discussion and may yield a wider range of responses (Cohen et al., 2011). Since engagement can be difficult to observe (Sinatra et al., 2015), the main purpose of these group interviews was to further explore GSIs' engagement in the PLC, specifically honing in on each of the three design elements of the action plan. All interviews were scheduled and carried out within two weeks of the last PLC meeting. All three were held virtually and recorded via Zoom, the same platform used for PLC meetings, for consistency. These recordings were later transcribed.

The interview guide (Appendix I) was informed by relevant interview methodology literature (Brinkmann, 2013; Rubin & Rubin, 2012; Seidman, 1998). Questions were designed intentionally to support an encouraging and responsive interview style, one that communicated genuine interest in GSIs' unique perceptions (Brinkmann, 2013; Galvin, 2022; Rubin & Rubin, 2012). These questions were open-ended and focused on GSIs' engagement (affective, behavioral, cognitive) in the three main design elements of the action plan - creating a shared vision, the JIT box, and POP teams - as these three elements were intended to facilitate the development of key PLC characteristics.

Data Analysis

In alignment with this study's design and research questions, my analysis focused on the PLC as a whole and not its individual members. Therefore, while some of the data gathered was focused on *individual's* perceptions of engagement (e.g., exit tickets, field notes), these data were used in combination to build an understanding of the *collective* PLC's engagement rather than focus on any one individual's experience of engagement in the PLC. In line with this, the first step in my analysis process was a chronological readthrough of all data pertaining to each of the

seven PLC meetings. Once familiar with the entire data corpus, I began to organize and prepare the data for coding. Qualitative data sources such as transcripts, field notes, and artifacts, were organized and labeled in Nvivo (QSR International, 2020), a qualitative data management tool. Quantitative data, such as the exit ticket survey data, were entered into spreadsheets and prepared to perform simple descriptive statistics.

The next step in my analysis process involved an initial round of artifact memoing and descriptive coding. To further organize and categorize my data, I created an analytic memo for each artifact and field note, as well as the exit ticket survey results. Each analytic memo included a caption, descriptive summary, and my interpretation of the data (Galvin, 2022; Saldaña, 2021). All data - transcripts and analytic memos - were coded in an initial round of descriptive coding. Descriptive coding is used to describe and summarize the basic topic of qualitative data *chunks* (Miles et al., 2020; Saldaña, 2021). This type of coding is recommended as a first step in coding for studies involving multiple data forms (Miles et al., 2020). It was particularly useful in this study as a way of identifying the three PLC design elements (creating a shared vision, JIT box, POP teams) so that I could later examine GSI's engagement in each element. Before moving to the next round of coding, I paused to create an analytic *process* memo on this first round of descriptive coding, focusing on recording any initial noticings and emerging ideas related to answering my two research questions.

For my second round of coding, I used provisional coding. Provisional coding involves using a set of predetermined (a priori) codes (Saldaña, 2021). This set of a priori codes was developed based on the four key PLC characteristics: a focus on learning, collaboration, a shared vision, and reflective inquiry and dialogue (Bolam et al., 2005; Dufour et al., 2016; Lomos et al., 2011; Stoll et al., 2006; Vescio et al., 2008). These codes were applied across all data. The

primary purpose of this round of coding was to serve as a validity check for the action plan. That is, the action plan was designed to develop a PLC of GSIs. A PLC in this study is defined in terms of the aforementioned four characteristics. Thus, before turning to examine engagement, I believed it necessary to verify the presence of those key characteristics as a way of determining whether a PLC was, in fact, developed from implementing the action plan. After this second round of provisional coding, I paused to create another analytic process memo.

My third round of coding consisted of another round of provisional coding using a set of predetermined codes, this time based on Fredricks et al. (2004) multidimensional engagement framework: affective engagement, behavioral engagement, and cognitive engagement. These codes were again applied across all data, followed by another analytic process memo.

My fourth round of coding began as emergent in vivo coding (Miles et al., 2020; Saldaña, 2021). These emergent codes first grew out of GSIs' descriptions of their engagement in the different PLC design elements. However, it became clear that several of my emergent codes closely aligned with existing motivational principles. Given that engagement is often conceptualized as the embodiment of motivation (Linnenbrink-Garcia et al., 2016), I decided to change course and adopt a provisional coding structure based on a theoretically integrated motivational framework (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022). According to this framework, there are five broad motivational principles - value, autonomy, relatedness, perceived competence, and mastery goal orientation - whose presence support engagement (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022). Many of my emergent codes were aligned with this framework so I used a process of code mapping and sub-coding (Saldaña, 2021) to combine emergent and a priori codes. For example, *autonomy* was both an emergent code and an a priori code (as it is a motivational principle). These codes were reviewed and combined or

revised. Similarly, *perceived community* (an emergent code) was closely aligned with *relatedness* (a motivational principle and a priori code). These codes were also combined or revised. I followed a similar code mapping and sub-coding process to organize and combine all emergent and a priori codes. After completing this round of coding, I created another analytic process memo to explore new noticings and emerging ideas related to why GSIs may engage differently in the three PLC design elements in light of this motivation framework.

Following this final round of coding and code mapping, I completed one last analytic process memo reflecting on all findings in relation to my two research questions with the goal of synthesizing and integrating findings to build a coherent narrative about GSIs' engagement in the PLC as a whole. See Table 9 for a summary of each step of my data analysis procedure.

Table 9. *Data Analysis Procedure*

Step 1: Chronological Readthrough & Data Organization Complete chronological readthrough of entire data corpus. Data was further prepared and organized for analysis in Nvivo.
Step 2: Analytic Memoing & Round 1 Descriptive Coding An analytic memo was created for each artifact, each field note, and a summary of the exit ticket data. Data - transcripts (meeting, interview) and memos (artifact, field note, exit ticket summary) were coded based on design elements of the action plan (creating a shared vision, POP teams, JIT box) in an initial round of descriptive coding (Miles et al., 2020; Saldaña, 2021).
Step 3: Round 1 Coding Process Memo After Step 2, an analytic process memo was written to record initial noticings and emerging ideas related to answering the two research questions.
Step 4: Round 2 Provisional Coding A predetermined, or a priori, lists of codes (Saldaña, 2021) was applied to all data in a second round of provisional coding. The list of codes was based on the framework used to define a PLC in this study (Bolam et al., 2005; Dufour et al., 2016; Lomos et al., 2011; Stoll et al., 2006; Vescio et al., 2008).

Table 9 (cont'd)

Step 5: Round 2 Coding Process Memo After Step 4, another analytic process memo was written to record noticings and emerging ideas related to answering the two research questions.
Step 6: Round 3 Provisional Coding A predetermined, or a priori, lists of codes (Saldaña, 2021) was applied to all data in a third round of provisional coding. The list of codes was based on Fredricks et al. (2004) multidimensional engagement framework.
Step 7: Round 3 Coding Process Memo After Step 6, another analytic process memo was written to record noticings and emerging ideas related to answering the two research questions.
Step 8: Round 4 Emergent, Provisional Coding & Code Mapping Coding began as emergent in vivo coding in which codes initially emerged from participant descriptions of their engagement (Miles et al., 2020; Saldaña, 2021). Upon recognizing an obvious overlap between emergent codes and existing motivational principles, coding transitioned to using a set of a priori codes based on an integrated motivational framework (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022). The emergent and a priori codes were combined and revised using a process of code mapping and sub-coding (Saldaña, 2021).
Step 9: Round 4 Coding Process Memo After Step 8, another analytic process memo was written to record noticings and emerging ideas related to answering the two research questions.
Step 10: Final Process Memo A final analytic process memo was written to further analyze and synthesize all findings related to the two research questions in the interest of building a coherent narrative of GSI engagement in the PLC as a whole.

Researcher Positionality Statement

Before turning to my results section, I believe it is important to transparently state the motivations behind this work and to examine the different positions and identities I hold which could have potentially impacted my research process and participants.

My motivation for this research stems from my personal experience as an educator. I know how impactful teaching is (both positively and negatively). As a result, I believe educators should take their role seriously and develop their expertise. Yet, I know that the majority of college instructors are ill-prepared to teach (Boysen, 2011; Buskist et al., 2002; Gurung &

Schwartz, 2009; Meyers & Prieto, 2000). This was additionally concerning to me given that the undergraduate educational psychology course I oversee serves pre-service teachers. As the supervisor of the GSIs teaching the course, I felt it was my responsibility to ensure that instructors were modeling the same practices they were teaching their students. I found it challenging, however, to fulfill this responsibility whilst situated within a larger academic culture that tends to de-emphasize and underappreciate teaching expertise. This challenge encouraged me to take a more systematic approach to exploring this issue and adopt an action research design.

Action research sometimes uses a continuum framework to think about research positionality. This continuum ranges from *insider* (someone who has deep knowledge of the setting) to *outsider* (an outside change agent) (Herr & Anderson, 2005). Given my dual role as both researcher and practitioner, I positioned myself as more of an *insider* to this work. Indeed, I came to this research with deep tacit knowledge of the context and participants. Research suggests that this insider knowledge is advantageous in providing an emic perspective (Fecho, 1995; Herr & Anderson, 2005) and I do believe that it uniquely situated me to do action research in this context.

Still, it is important to consider how my closeness to this work may have influenced my findings. For example, in addition to being both the researcher and supervisor, I was also a fellow graduate student and course instructor. Occupying these very different - and sometimes competing - roles simultaneously added a layer of complexity to my relationship with this research and its participants. On one hand, these roles intertwined in some ways that were advantageous - like in the case of PLC facilitator. The literature suggests it is beneficial for a supervisor to facilitate the PLC *as long as they avoid being seen as the expert* (Roth et al., 2014).

This is challenging when there is an often-implicit association for many between leadership and expertise. I think my role as a fellow graduate student worked to close the divide between me as the supervisor and the GSIs of this course, and helped me to avoid being seen as the sole expert of the PLC. In this way, these overlapping roles were advantageous in helping me build rapport with GSIs so that the PLC felt like less of a top-down command.

On the other hand, I acknowledge that my overlapping roles could have differentially affected my participants' engagement in the PLC. Some GSIs may have felt more comfortable with a fellow graduate student as their supervisor and facilitator. These individuals may have engaged *more* in the PLC, either because they genuinely felt comfortable doing so or because they wanted to support a fellow graduate student's research. Others, however, may not have taken me seriously as the supervisor/facilitator because of my graduate student status and engaged *less*. In addition to this, I identify as a white, cisgender female. I recognize that my personal identities may intersect with these other roles to further complicate my participants' perceptions of me, my perceptions of them, and all of our engagement in the PLC. As a result, some participants may not have felt safe or comfortable sharing their experiences.

In light of this, I aimed to be reflexive throughout the research process and continually reflect on how my potential biases and personal identities may have influenced this work. I intentionally and honestly recorded in my field notes the times I felt tension between the various roles I occupied as well as notable participant reactions. These recordings were obviously my personal perceptions, so in addition, I provided opportunities for GSIs' to provide anonymous feedback. Triangulating data in this way allowed me to compare and consider how my own perceptions of PLC experiences may be similar or different to what participants were experiencing. In this way, I tried to embrace the insider role that action research allowed rather

than erroneously portray myself as an objective observer, whilst still doing my due diligence in reflecting on my positionality in the liminal space between the roles and identities that I occupy and the ways in which this may have influenced this work.

CHAPTER 4: FINDINGS

This chapter outlines my research findings. It begins with a brief presentation of findings related to the four PLC key characteristics, as it was necessary to first examine whether or not a PLC had, in fact, been established before turning to examine engagement in it. Toward this end, I examined the data for evidence of key PLC characteristics. From there, I present findings related to each of my two research questions: 1) *In what ways did GSIs' engage in the different PLC design elements? and 2) What do participant and researcher reflections, along with existing scholarship, suggest about why some PLC design elements were more (or less) engaging than others?* Lastly, I end this chapter by synthesizing and integrating findings from both research questions so that these connections can be further explored in light of existing literature in the discussion chapter that follows.

Evidence of PLC Key Characteristics

The goal of the action plan (creating a shared vision, the Just-In-Time box, and POP teams) was to develop a PLC of GSIs. A PLC in this study is defined by the presence of four characteristics: a focus on learning, collaboration, a shared vision, and reflective inquiry and dialogue. Researcher observations, participant focus group responses, meeting transcriptions, and collected artifacts provided ample evidence that all four key characteristics were present, suggesting that a PLC was, indeed, developed from the action plan. Evidence related to each of these characteristics is presented in turn.

A Focus on Learning

A focus on learning refers to PLC members' commitment to student success (Lomos et al., 2011; Louis & Marks, 1998) and is considered to be the most important characteristic of a PLC (Dogan et al., 2016). Meeting transcripts and field notes revealed multiple examples of a focus on learning across all seven PLC meetings, although it did look different across the

different design elements. For instance, the shared vision work required instructors to make decisions about student learning in order to develop a list of core principles that served to guide instruction. This led to discussions about what was important for students to learn in the course, specifically which skills and knowledge students needed to learn to be successful. One discussion from the very first PLC meeting centered around whether the course should emphasize knowledge outcomes (e.g., big picture ideas in educational psychology) or skill-development outcomes (e.g., critical thinking). This discussion led to the idea that facilitating the development of certain skills - like critical thinking - could empower students to engage more critically with course content, thus leading to a deeper knowledge of big picture ideas. For example, Andrea makes the point that if she encourages students to be critical thinkers, they may be empowered to question and examine course ideas more deeply:

> Andrea: *One thing that I've thought about, which is not specific to any of the units but for me, a goal, is to get the students in the course to be more critical thinkers. And so, to take a reading and not just read it as, oh, this is the only viewpoint on this issue…But that's sort of a vision I have for* [this course] *is using the information, but also, critically examining some of the theories. Right? And so, that's a piece in the content of talking about W.E.I.R.D research that it's all White and European industrialized, rich nations, that sort of thing….Yeah. I mean, I really feel like if we can have the students feel empowered to be like, "Hey, why are you doing it that way?" And to question how they're being taught as students. Right? We'll then have them hone those critical skills as learners. Right?* (MT1,Q1)[2].

I highlighted this example in my field notes because it illustrates both a focus on learning outcomes (critical thinking) and a commitment to student success (ideas about student empowerment). Indeed, this idea even carried through multiple meeting discussions and was

[2] I developed this naming convention to help the reader keep track of the qualitative data presented in this chapter. The first part of the naming convention indicates the data source (e.g., MT1 = Meeting Transcript 1; A2 = Artifact 2; GI1 = Group Interview 1) and the second part is a numbering system (Q1 = Quote 1; Q2 = Quote 2). For the reader's convenience, all quotes are also organized in the order they are introduced in Appendix J

ultimately included (albeit in a modified form) in the final shared vision artifact (see Figure 1; Item 3). Like this example, many shared vision discussions were directly and explicitly focused on student learning and success.

JIT box and POP team discussions were also focused on student learning, though perhaps less explicitly. JIT box discussions often involved instructors soliciting advice regarding a real-life scenario occurring in their classroom. Though questions were often framed in a way that elicited conversations about which actions the instructor should take, it was implied that these actions were being recommended because they were meant to support student learning. For example, one (anonymous) JIT submission was the following:

> *I've had quite a few students in the past two weeks write on learning styles with the assumption that learning styles is still a broadly accepted theory in educational psychology. While last semester there were a handful who were under this assumption, I had to confront this assumption with about 8 students in the past two weeks. I currently link the Wikipedia article on learning styles and direct students to the opening paragraph and the "criticisms" section for evidence against learning styles. Are there other ways to approach this? And where might this belief in the theory of learning styles come from?* (A2,Q2).

Similarly, meeting transcripts showed that POP Team discussions also tended to focus on instructor actions. Yet, it was clear from meeting transcripts, researcher impressions, and artifacts that the underlying motivation for these JIT and POP Team discussions was to support student learning. This suggests that, as a whole, the PLC was invested in the professional development of instructors with the understanding that instructors' learning would ultimately support student learning.

In this way, the PLC's focus on learning seemed to encompass both *what* students should learn and *how* students should learn, and different PLC design elements appeared to shape the focus in one direction or the other. That is, the shared vision work was more explicitly focused

on *what* students should learn (e.g., specific learning outcomes of the course) and the JIT box and POP team discussions tended to focus more on the *how* students learn and how instructors can support their learning through instruction.

Collaboration

Collaboration refers to opening up practice "in ways that encourage sharing, reflecting, and taking the risks necessary to change" (Vescio et al., 2008, p. 84). Opening up practice in these ways may look different at different times, including engaging in cooperative activities, peer feedback, or group reflection on practice. The defining tenet across all these examples is that collaborative efforts are focused on instructor learning with the idea that instructor learning will promote improved student learning. Similar to a focus on learning, meeting transcripts and field notes showed multiple instances of collaboration during all seven PLC meetings, though again, this looked slightly different across different elements. For example, creating the shared vision was itself a cooperative activity that required instructor collaboration. Instructors "opened up practice" in the sense that they reflected on course learning outcomes and iteratively shared ideas for change across multiple PLC meetings until group agreement was reached on a final vision. Collaboration within the JIT box and POP team discussions tended to present as group reflection on practice and peer feedback as PLC members talked through real-life classroom scenarios and offered advice to one another. As highlighted in my field notes, JIT box discussions felt especially collaborative and meeting transcripts showed that almost all GSIs participated in each discussion. The following excerpt from a JIT box discussion shows how several PLC members collaborated to suggest solutions to Max's JIT box question about how to help an international student who was struggling with his writing assignments:

Facilitator: *We were wondering if anyone else knew of any other resources besides the Writing Center? Because Max and I kind of looked for a minute, because like he was saying, we tend to be pretty supportive and hands on in a lot of revisions, but a lot of other professors will not do that at all. So, we were hoping we'd be able to provide the student with something a little more sustainable, but the Writing Center has always been my go-to, and he didn't seem to have a good experience. So, we were hoping others knew of other resources…?*

Wes: *Max, you said this is a first-year student, is that correct?*

Max: *Yep.*

Wes: *Okay. I'm trying to imagine who this person is and what's in their head and I'm wondering... so, you're getting these suggestions, maybe it's not one thing to do, but it's a combination of different things. And maybe one of the things is this is their first year and this is their first time where, I don't know, maybe they're putting...*

I'm not looking at the work. So, I don't know if it's impeding what they're trying to show their learning or if some of it is self-imposed where they're worried about being perfect when perfect writing is not needed. But I'm thinking if one of the ways that maybe you can ease the person into self-help, is to say, "Tell me your one biggest thing. And this is this thing I will quickly look through, and the rest you need to use this checklist for or Grammarly for or whatever for." And so, then you're giving them some sort of transition where it's like, they want handholding. You say, "I'll hold one finger. You got to do the rest." And then hopefully, over the next few weeks, they can transition to be more self-sufficient.

Max: *I like that. That's a good bit. Yeah, no, I appreciate that. Thanks, Wes.*

Andrea: *My other suggestion, I sometimes did back when I was teaching English language arts was to tell students to record their voices. Because sometimes it's easier to like have verbal command of English versus written English. And so, I would say, "Record yourself speaking, and then play it back and then type up what you said." Or they could do Zoom even and record themselves with the closed captions and then it would already be typed up and then they could edit that.*

Max: *Yeah. Thanks. Yeah.*

Facilitator: *Any other suggestions or comments?*

Lilly: *I don't know if it would be... Would it be helpful maybe to have an example paper? Not as if this is what you're supposed to do, but here's what students have done in the past because sometimes it's like, "I don't know where to start with this." So, I don't know that could help.*

Beth: *I think in addition to that, Lilly, having an exemplar.*

Max: *Yeah.*

Beth: *The student might need some sentence starters or just kind of a loose outline. So, at least they know how to, maybe, properly format it so they can use that similar format for the other parts of the prompt…*(MT2,Q3)

Within this JIT box exchange, there is both an element of group reflection on practice and peer feedback. Several instructors work together here to provide various suggestions in answer to Max's JIT box submission.

Shared Vision

A shared vision is meant to serve as a PLC's collective sense of purpose that anchors efforts in a shared understanding of PLC goals (Lomos et al., 2011; Stoll et al., 2006). Clear evidence of this key characteristic can be seen by the fact that the PLC produced multiple shared vision artifacts including several drafts that culminated in a finalized version of a shared vision document (see Figure 1). These artifacts were produced intentionally as part of the action plan.

Interestingly, while evidence of other key characteristics showed up across all three design elements, the shared vision was largely contained to one design element - the "creating a shared vision" element. Meeting transcripts show that the shared vision was occasionally referenced in JIT box and POP team discussions, but not often. The absence of the shared vision in other design elements was so noticeable that I made the same observation (e.g., "No mention of shared vision at this meeting") in my field notes across multiple meetings. This finding is discussed in further detail in other sections of this chapter.

Figure 1. *Final Shared Vision Document*

TE 150 Shared Vision for Student Learning

Guiding Question:
"What do our students need to know and be able to do with respect to educational psychology?"

"Big Picture" Vision

1. Educational Psychology has practical applications for teaching and learning, both in and out of the classroom.
2. Teaching and learning is context dependent *and* the individual plays a role in shaping their own learning. There is value in understanding the individual-level and contextual factors that influence learning.
3. There are multiple "lenses", or theories that we can use to understand the process of learning. This not only empowers us to reflect on our learning experiences, but also to support the learning of others.
4. Learning involves developing specific competencies (knowledge, skills, and attitudes) and knowing when to apply them to relevant situations.
5. While the *outcomes* of learning can be measured (and often are), learning is a life-long active *process* of acquiring new skills and constructing knowledge.

Reflective Inquiry & Dialogue

Reflective inquiry and dialogue refers to professional dialogue surrounding educational issues (Lomos et al., 2011, p. 124). Again, meeting transcripts and field notes revealed multiple examples of reflective inquiry and dialogue throughout all seven PLC meetings, and often

occurring synergistically with collaboration. The most common forms of professional dialogue seen in this study's PLC involved cooperatively solving problems of practice related to student learning and examining teaching practices (Bolam et al., 2005; Hord, 2004; Lomos et al., 2011; Stoll et al., 2006). The former - cooperatively solving problems of practice - occurred most often in JIT box and POP discussions. The latter - examining teaching practices - occurred most often in the smaller POP team discussions. Reflective inquiry and dialogue also appeared in shared vision discussions, but the scope of reflection was broader (i.e., course outcomes vs problems of practice). Thus, the main difference in how this key characteristic presented across design elements was in scope - all elements elicited inquiry and reflective dialogue, but the scope of reflection could range from reflecting on the entire course (shared vision) to specific problems of practice (JIT Box; POP Teams). Consider these two examples of reflective inquiry and dialogue from PLC meeting transcripts:

Example 1:

Jun: *We talked about our audience, at least for me, most semesters my classes, they're only about half TE students, the rest they come from all the backgrounds. And so when we... Even just describe the concepts maybe in the Ed Psych sections focusing less specifically on education even though this is a TE course, might get people to think about the concepts more flexible. I think Wes mentioned that too, kids get caught up thinking of this, like, "Oh, is this a teaching concept?" Even though it could be used in management leadership in general.* (MT1,Q4)

Example 2:

Kate: *…I just want to share my experience with my class. We talked about critical race theory, and we tried to look at the theory with an educational psychology lens because this is actually from the law field. We basically read together articles about CRT and I had the base groups so they can teach each other based on what they read. And then we had a discussion time. They had very brief notes about what they talked about in the base groups. I actually really want to come up with action items, like what are you going to do after you know all this? But it was my fault. I was really bad for time management because I was so excited about talking about this.* (MT7,Q5)

Both examples show evidence of reflective dialogue in that the conversation surrounds specific educational issues. However, Jun's example pertains to the course more broadly and how having students from different majors affects student learning and motivation. Kate's example is more specific, focused on an activity she carried out in her classroom and what she would do differently. Both are examples of reflective dialogue, but with different scopes.

Consistent with PLC literature, findings suggested that these four characteristics often operated together (Hord, 2004; Louis et al., 1995; Stoll et al., 2006). For example, reflective dialogue typically occurred alongside one or more of the other key characteristics. The JIT box and POP team discussions often involved reflective dialogue *and* collaboration, and were also at different times - and in different ways - focused on student learning. Creating the shared vision involved reflective dialogue and collaboration to produce an actual shared vision product which was explicitly focused on learning. As such, it was rare that these characteristics presented in isolation, but rather presented differently depending on the PLC design element. These findings are consistent with the idea that key characteristics are developed over time and change as the PLC evolves and matures (Stoll et al., 2006) which suggests that the action plan did indeed develop a PLC over the course of the semester and that each design element contributed to this development in different ways.

RQ1: In what ways did GSIs' engage in the different PLC design elements?

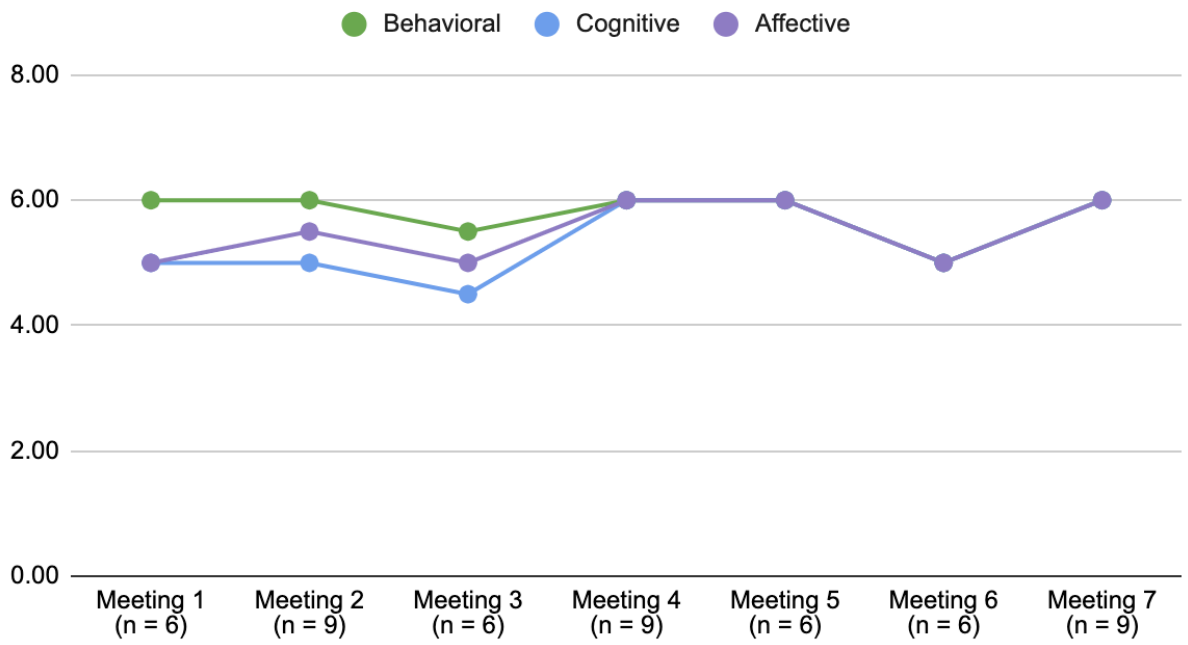
In this next section, I examine GSIs' engagement in the three PLC design elements. These design elements - creating a shared vision, the JIT box, and POP teams - were specifically designed with relevant PLC literature and data from the local context in mind to develop a PLC in a way that supported GSI engagement. Engagement in this study was conceptualized according to Fredricks et al.'s (2004) multidimensional framework consisting of three distinct,

but interrelated, dimensions of engagement: affective, behavioral, and cognitive. Qualitative and quantitative data from various sources (meeting transcripts, field notes, exit ticket surveys) were triangulated to first examine GSIs' engagement broadly *across* the seven PLC meetings, and second, to examine GSIs' engagement *within* each design element, focusing on the individual dimensions of engagement.

Broad Engagement Trends Across PLC Meetings

Broadly speaking, there was consistency between GSI reports of their engagement (on exit tickets) and facilitator perceptions of GSI engagement (from contemporaneous field notes and review of meeting transcripts) across the seven PLC meetings. Engagement in the PLC, in general, remained relatively high across the semester (see Figure 2). This suggests that GSIs were, as a group, engaged in all PLC meetings. Looking across all seven meetings, individual GSIs reported engagement levels ranging from one to six for behavioral and cognitive engagement and ranging from two to six for affective engagement when looking across all meetings and members. Yet, individual GSIs' reports were similar across dimensions for a given meeting. This means GSIs did not report being highly engaged in one way but not another - their affective, behavioral, and cognitive engagement ratings tended to hang together. Instead, individual GSIs' engagement then tended to vary more across meetings than across dimensions.

Figure 2. *Median Affective, Behavioral, and Cognitive Engagement Across PLC Meetings*



My field notes (which will be discussed in more detail in the following section) aligned with these exit ticket findings as I did not perceive any meetings to be "low engagement" meetings. While I did note some instances of *lower* engagement - either relative to other meetings or relative to other dimensions - I did not perceive any meetings to be characterized by really low engagement. Still, these instances of *lower* engagement are important to consider. Median exit ticket trends (see Figure 2) show slight declines in all dimensions of engagement at Meetings 3 and 6. Moreover, median cognitive and affective engagement ratings are noticeably lower than behavioral ratings across Meetings 1-3 before they coalesce at Meeting 4 and beyond. This suggests that while GSIs reported sustained participation in Meetings 1-3 (as indicated by higher, more stable behavioral engagement), they likely did not find these as valuable or enjoyable compared to other meetings (as indicated by lower and declining affective and cognitive engagement).

These exit ticket trends, however, say little about *which* design elements specifically GSIs found more or less engaging across the seven PLC meetings. Indeed, most PLC meetings involved two or more design elements - the only exceptions being Meetings 1 and 3, which were focused entirely on creating the shared vision as there were no JIT box submissions and POP teams had not yet been formed. As an example, Meeting 2 started with a JIT box discussion before picking up the shared vision work from Meeting 1. Though it is clear that GSIs reported relatively high (median) engagement for Meeting 2, it is not obvious if they engaged more or less - or in different ways (e.g., dimensions) - in the JIT Box discussion vs the shared vision portion of Meeting 2. To better understand GSIs' perceptions and reports of their engagement in different PLC design elements, I explore these broad findings further in the next section, honing in on individual dimensions of engagement.

GSIs' Affective, Behavioral, and Cognitive Engagement Within Each Design Element

In this next section, I take a deeper look at engagement within each design element to better understand how each was differently engaging for GSIs. In addition to meeting transcripts, exit tickets, and field notes, group interview data was especially helpful because GSIs were asked explicitly in these interviews to reflect on their engagement in PLC design elements. Their reflections, combined with meeting transcripts, artifacts, facilitator notes, and exit ticket responses, were triangulated to analyze GSI engagement within each PLC design element, focusing this time on individual dimensions of engagement.

GSI Engagement In Creating A Shared Vision

Meetings 1-3 were primarily dedicated to creating a shared vision for the PLC. Shared vision work began during Meeting 1 and concluded during Meeting 4, although only a very small portion of Meeting 4 was spent on shared vision work (just a few minutes on slight wordsmithing

and a vote of approval). Looking at my field notes and meeting transcripts, I perceived all GSIs to be generally engaged at the first meeting. In fact, meeting transcripts show that GSIs at first endorsed the idea of creating a shared vision ("That's a good idea too, about a consistent vision"), but then struggled to get started ("Shared vision - I really don't even know where to start"). By Meeting 2, I noted that at least three GSIs seemed less engaged across all dimensions. My field notes attribute this to the shared vision work specifically and not the JIT box discussion that occurred at the beginning of Meeting 2 (Meetings 1 and 3 did not have JIT box discussions). I note how at first all GSIs appear to be either listening or contributing to the JIT box discussion, even smiling and laughing while sharing ideas. Afterwards, as the shared vision work begins, three GSIs appear to withdraw from the conversation and I wondered in my jottings if they were doing something else entirely and perhaps "getting burnt out on SV [shared vision]?" This becomes more noticeable to me by Meeting 3 where I perceived the PLC as a whole to be less engaged compared to previous meetings, and affective engagement stood out as noticeably lower ("...the overall vibe was not excitement"). Meeting 4 was the opposite. I described in my field notes how most GSIs were actively participating in the JIT box and POP Team discussions by asking questions and joking with one another. I even wrote "out of all the meetings [thus far], I think this one has the highest affective engagement." The fact that exit ticket, field note, and transcription data all indicate a decline in engagement for Meeting 3 (which was dedicated solely to the shared vision work) and then a rise in engagement for Meeting 4 (when the shared vision work was completed) may indicate that creating the shared vision was less engaging compared to other design elements.

Examining different dimensions of engagement, exit ticket trends show affective and cognitive engagement were consistently lower than behavioral engagement for Meetings 1-3 (see

Figure 2). This suggests that GSIs were participating in creating the shared vision but did not find it as valuable or enjoyable as other design elements. Indeed, there was ample evidence that GSIs were behaviorally engaged and doing what they were supposed to be doing. In addition to their own exit ticket reports of their behavioral engagement (which were relatively high), artifacts collected across Meetings 1-4 show that GSIs produced four shared vision drafts and one final shared vision document (see Figure 1 above). These artifacts are evidence that GSIs' were "on task" and "doing what they were supposed to be doing" in terms of creating a shared vision during these meetings. They corroborate GSIs' own exit ticket reports of high behavioral engagement, as well as my own field notes.

There was less evidence, however, of GSIs' cognitive and affective engagement in creating the shared vision. The lower exit tickets reports for both cognitive and affective engagement across the first three PLC meetings suggest that not everyone found creating the shared vision to be as valuable or enjoyable compared to other design elements. When asked about this during group interviews, GSIs revealed some confusion surrounding the purpose of the shared vision:

Kate: *I think I did understand what we were doing when we were given a task. So, every two weeks or three weeks, when you give a direction,* ***I knew what we were doing, but I didn't know what's the end goal****.* (GI1,Q6)

Lilly: *So I enjoyed the activity, but I feel like in terms of relevance to how I'm teaching now, or perhaps it's something that I could go back to, but* ***I'm just like a little bit unclear about the purpose of it and what role it plays in future instruction****.* (GI3,Q7)

This confusion about the "big picture" and "end goal" behind the shared vision may explain why exit ticket ratings show lower cognitive engagement across Meetings 1-3. Cognitive engagement refers to mental investment in a task (Fredricks et al., 2004). GSIs may have found it difficult to mentally invest in the shared vision without a clear understanding of its purpose.

Notably, Kate and Lilly's reflections, indicate that even if GSIs did not see the "big picture" behind creating the shared vision, they still found the process of creating it somewhat enjoyable. Other GSIs shared a similar sentiment, recognizing the shared vision as more of a community-building activity:

> Sophie: *I **kind of recognized it*** **[the shared vision]** ***as something that was maybe more team building and community building**. We were all engaging with coming together to view the course the same way and I was just thinking of it as something that would be going to immediately change what we were teaching, more as just shape our group attitude or yeah, the mindset that we would all be bringing to what we would be helping direct our students to focus on, in the content that was already there….* (GI1,Q8)

Together, these group interview reflections may explain why engagement was *lower* (though arguably not low) during the shared vision work (compared to other design elements), and why behavioral engagement specifically remained higher across these meetings compared to cognitive and affective engagement. For example, Kate's comment indicates that behavioral engagement may have been higher because GSIs understood, in terms of the task, what they needed to do to create a shared vision. That is, they were able to behaviorally engage - do what they were supposed to be doing - despite not necessarily understanding the purpose of what they were doing. The fact that some GSIs still found the process enjoyable and/or appreciated it as a community-building exercise may further explain why affective remained slightly higher than cognitive engagement for these first shared vision meetings. Finally, this data may explain why there was a decline in all dimensions of engagement at Meeting 3. As mentioned above, GSIs initially bought into the idea of creating a shared vision at the first meeting. As they dove into this work, however, they report not understanding what the shared vision will be used for. It is possible that the decline in engagement seen at Meeting 3 is a result of asking GSIs to

continually work on a shared vision for which the purpose (beyond community-building) is becoming more and more unclear.

GSI Engagement in JIT Box Discussions

Across the semester, there were six JIT box submissions (see Table 10). Besides the first meeting during which the JIT box was introduced, the only meeting without a JIT box submission was Meeting 3. All other PLC meetings began with a JIT box discussion *and* either shared vision work or POP team meetings. For this reason, it is challenging to determine if one of these design elements was more engaging - or engaging in a different way - than the other based on exit ticket data alone. Yet, the fact that Meeting 3, which was the only shared vision meeting without a JIT box discussion (after it was introduced), had the lowest engagement (see Figure 2) suggests that the JIT box was more engaging for GSIs compared to the shared vision. Indeed, meeting transcripts, field notes, and group interview data all suggest that the JIT Box was generally successful at engaging GSIs, despite some initial skepticism.

Table 10. *JIT Box Submissions*

Meeting #	Submission(s)
1	None submitted - JIT box introduced
2	I have an international student who is struggling with writing in English. He has asked me to review his work (activities and assignments) before he turns it in. I don't have the time to review each of his assignments and grade it again later. I referred him to the Writing Center but he said it was not helpful and doesn't want to go back. I am wondering if there is anything else I can do to support this student without having to review every activity/assignment.
3	None submitted
4	This may not be a challenge. But I would like to know how other instructors spend Black history month. I'm also interested in articles, podcasts, or videos to share with my students.

Table 10. (cont'd)

5	I've had quite a few students in the past two weeks write on learning styles with the assumption that learning styles is still a broadly accepted theory in educational psychology. While last semester there were a handful who were under this assumption, I had to confront this assumption with about 8 students in the past two weeks. I currently link the Wikipedia article on learning styles and direct students to the opening paragraph and the "criticisms" section for evidence against learning styles. Are there other ways to approach this? And where might this belief in the theory of learning styles come from?
6	What do you do if you are worried about a student's mental health? I have students who aren't informing me when they're not coming to class, and not filling out the participation exit ticket that I ask them to fill out if they can't make it :(What to do?
7	I had a student who copied parts of the D2L reading verbatim in her journal response. How do I handle this?

Affective engagement stood out to me in particular according to my field notes. For all JIT box discussions, I jotted down evidence of GSI affective engagement, noting indicators like "smiling," "laughing," and "joking" during these discussions. I also described the JIT box discussions as feeling more "energized" than the shared vision. Indeed, group interview data suggests that GSIs did genuinely enjoy the JIT box discussions, specifically that they were collaborative and that they got to hear multiple perspectives on teaching issues:

Beth: ***I think the just in time box was more enjoyable*** [than the shared vision or POP Teams] *in the sense that I didn't always have the same issue that someone was having, but I felt that it was really practical.* (GI2,Q9)

Max: *I tried to spend more time with the Just In Time box because that was* ***so personal and interesting****...* (GI1,Q10)

Andrea: *I liked the Just In Time box because I thought it was like really... **We had really interesting discussions** around some of those questions as a whole group.* (GI3,Q11)

In addition to finding the JIT box affectively engaging, there was also evidence of cognitive engagement in that GSIs often talked about how useful the JIT box was for them:

Max: *...**having that kind of backstop was hugely helpful** and then to be able to have everyone as a resource for answering those questions. It was really fucking cool to be able to have that and everyone helped. **Everyone was a huge help** with my just in time box that question, so I really appreciated that.* (GI1,Q12)

Lilly: *I will say that the Just In Time Boxes, **the questions were also just really useful** because I never, I don't know, it was just so cool to like to bring up a problem and then just have everybody brainstorm together.* (GI3,Q13)

The fact that the JIT box discussions were both enjoyable and useful, made GSIs want to put more effort towards them. In other words, the fact that the JIT box was cognitively and affectively engaging made it more behaviorally engaging as well:

Sophie: *Okay. So, **I felt really wanted to put a lot of effort in when we were doing the just in time box** because it felt, the immediate relevancy was obvious like, "Oh yeah, I'm helping somebody with a problem or something that they've been thinking about that they're using right now." So, that felt important and I was inspired to give, I wanted to give a lot of effort to that one…* (GI1,Q14)

Max: ***I tried to spend more time with the Just-In-Time box** because that was so personal and interesting and yeah, it felt more like group problem solving.* (GI1,Q15)

Importantly, both more and less experienced GSIs reported being engaged in the JIT box discussions. According to meeting transcripts and group interviews, more experienced GSIs were less likely to submit to the JIT box, but still reported enjoying the JIT box discussions. They also recognized that it was important and valuable for newer GSIs and for community-building, albeit

less relevant to their own instruction. Less experienced or newer GSIs were more likely to make a submission and speak to how the discussions influenced their instruction. Together, this might suggest that the JIT box was successful at engaging GSIs, but perhaps to different degrees regarding the cognitive and affective dimensions. Less experienced GSIs tended to find the discussions *both* cognitively and affectively engaging, while more experienced GSIs found them *at least* affectively engaging. GSIs, regardless of their experience, were similarly behaviorally engaged, perhaps because enjoyment or relevance kept them on task. The fact that the JIT box was enjoyable, and often useful, worked to engage GSIs across different levels of expertise and thus the PLC as a whole.

GSI Engagement in POP Teams

GSIs formed POP Teams at the fourth PLC meeting (see Table 11) and met for different amounts of time thereafter depending on the length of the JIT discussions. The final PLC meeting involved GSIs sharing what they learned about their problem of practice with the other POP teams.

Table 11. *POP Team Members and Problems of Practice*

Team	GSI Members	Problem of Practice (POP)
POP Team 1	Sophie Max Kate	How to address equity, anti-oppression, and anti-racism in our class; How to manage an apolitical classroom.
POP Team 2	Wes Beth Jun	Assessing competencies beyond journal entries in an asynchronous/online format
POP Team 3	Andrea Lilly Sabrina	How to engage students in effective discussions in small groups and whole class formats online and in-person

Meeting transcript and field note data revealed that POP Teams 1 and 3 were significantly more engaged in examining their problem of practice than POP Team 2, which may explain the decline in exit ticket ratings for Meeting 6 (see Figure 2). Three out of the nine GSIs participating in the PLC were absent from this meeting due to illness. While other meetings also had absences, Meeting 6 was unique in that there was never more than one GSI absent from the same POP team until this meeting where two GSIs from POP Team 1 were absent. Because of this, POP Team 1 met asynchronously outside of the regular PLC meeting time and were not asked to complete exit tickets for Meeting 6. This is important because all GSIs from POP Team 2 (who were presumably less engaged in this design element) completed exit tickets, while three GSIs from the other, presumably more engaged POP teams, did not. This may explain why engagement reports were lower for Meeting 6 compared to other meetings involving POP Team discussions. Moreover, it would be reasonable to assume that the JIT box discussion was also affected by the higher ratio of less engaged individuals. Yet, meeting transcript and field note data show that while the JIT box was affected some - I note that it felt slightly less *affectively* engaging compared to other JIT box discussions- GSIs from POP Team 2 engaged *more* with the JIT box than their own POP team. This suggests that there was a difference in the ability of the two design elements to engage at least the three GSIs from POP Team 2 and that the JIT box was more successful at engaging the majority of the PLC, while the POP teams were successful at engaging *some* members of the PLC, depending on the POP team.

Looking more closely at individual POP team engagement, meeting transcripts and artifacts showed that all POP teams were behaviorally engaged but to different extents. All POP teams, for example, participated in discussions and recorded notes each time their POP team met as a group. POP Team 1, though, was perhaps the most behaviorally engaged in that they

attended a webinar related to their problem of practice outside of the designated PLC meeting time. This team then put more effort than required into examining their problem of practice. Although POP Team 3 did not engage with their problem of practice outside the PLC, the meeting transcripts, field notes, and artifacts pertaining to their team showed they were similarly behaviorally engaged *during* PLC meetings compared to POP Team 1 in that they were discussing their problems of practice and generating possible solutions. POP Team 2 on the other hand was noticeably less behaviorally engaged. Meeting transcripts show they were slow to start discussions and, in one case (Meeting 6), POP Team 2 sat in six minutes of silence before speaking. Conversations were also off topic or surface-level (e.g., critiquing the assessments but not examining alternatives) and notes were minimal.

Group interview data pointed to time as one obstacle to behavioral engagement. The original action plan designated about 45 minutes of five PLC meetings to POP team discussions, but both the shared vision and JIT box discussions ended up taking more time than initially anticipated. Thus, the amount of time GSIs spent in their POP teams was significantly less than the original plan outlined. This affected behavioral engagement (at least) in that several GSIs mentioned how they would have liked to put more effort into exploring their problem of practice but were limited by time constraints:

Kate: *I wanted to spend more time on the pop teams because the depth of the conversation kind of goes too deeper, but then we have a limited time.* ***So, it always kind of gives me the feeling that, "Oh, I wish I had more time."*** *Or we kind of start this earlier so we can kind of apply what we discussed to the classroom.* (GI1,Q16)

Sophie: *Well, I really enjoyed our pop group conversations. So personally, I feel like that was really effective for me, but* ***I don't know if we really had enough time*** *to make too many changes based off of it.* (GI1,Q17)

As Sophie's comment in particular suggests, POP teams may not have been given enough time to examine, discuss, *and* test out changes related to their problem of practice. The fact that some GSIs wished they could put more time into their POP teams suggests that GSIs found this design element to be meaningful in some way. Indeed, data showed evidence of cognitive engagement in POP teams, but the temporal referent of cognitive engagement was different for POP teams than it was for other design elements. For example, the JIT box was intended to provide practical solutions to real-time pressing issues, and GSIs tended to report it was meaningful for that reason - solving urgent and specific problems. GSIs spoke about their POP teams in a different way:

> Lilly: *I really enjoyed the Pop Team meetings because I felt that they were very generative in terms of coming up with ideas for practice.* ***And in the future****,* ***when we're teaching*** **[this course]** ***in the future.*** *And I felt that we were really able to come up with some good strategies and to reflect on things that we were implementing as we were implementing them. So to me, that was really useful.* ***And I feel like I walked away from it with a clearer idea of what I would do in the future****.* (GI3,Q18)

As Lilly's reflection suggests, GSIs viewed their POP team discussions as creative, generative spaces to plan for *future* instruction. This difference in temporal reference may be related to the time limitations mentioned above. GSIs may have been forced to think about how their problems of practice could be addressed in the future because they were not given enough time to actually implement and test solutions in the present. They were constrained to brainstorming solutions and planning to test them at a later point. In this way, lack of time may have shifted GSIs' cognitive engagement to be future-oriented for this design element. GSIs appeared to still find this meaningful though. Kate, for example, shared the following:

Kate: *I mean, I tried to apply some of the topics we discuss in the pop teams in the class, but it just takes a lot of time… thinking about our POP helped me to…to* ***develop the kind of mindset as an instructor****, what kind of things do we have to always thinking about as an instructor. Yeah, in that way it helps.* (GI1,Q19)

Kate uses the phrase "develop the kind of mindset as an instructor". This implies that, in addition to facilitating reflective dialogue around a specific problem of practice, POP teams may have been useful in shaping GSIs' *mindsets* regarding instruction.

In addition to finding POP teams meaningful for developing the mindset of an instructor, POP Teams 1 and 3 appeared to also really enjoy examining their problem of practice. This was not the case for POP Team 2. Indeed, I made almost the same exact note across Meetings 4-7 regarding POP teams and affective engagement: "Affective engagement varied across POP Teams; POP Team 2 = not much evidence of affective engagement." Looking across meeting transcripts, field notes, and group interviews, there was the most evidence of affective engagement for POP Team 3. Upon forming their team, POP Team 3 immediately chose a team name based on their mutual love for Taylor Swift music, and regularly were laughing and joking during team interactions. The following examples from POP Team 3's group interview illustrates how they perceived their POP team experience:

Lilly: *It felt like we had a cool balance of like reflecting on stuff that has worked in the past and then coming up with ideas for what to do in the future. Like that just felt really exciting because I feel like in our last one or two meetings, we were just kind of like riffing off of each other in terms of like just cool things to try. And that felt very energizing and exciting to do.* (GI3,Q20)

Andrea: *I think it's, I wish we had more time together to talk about our teaching and how to improve our practice. I think it's super, super important and I wish that we had more time as grad students to like do this work. So that's, I just agree with Lilly like, it was really nice to have that space where we knew we could come together on a regular basis during the semester to talk about these things. I wish we had more of it, honestly. Like, I'd be happy if this was all I did. You guys know that. But yeah, so I've always been a lot more, right. So, but yeah, that would be my only thought, I loved it so much I would like to do it way more.* (GI3,Q21)

Sabrina: *I think one thing I enjoyed about the Pop Team is that we kind of think about these issues or problems that we think is interesting and we find relevant in our own teaching. And kind of coming up with concrete strategies on how to deal with the problem of practice that we are interested in.* (GI3,Q22)

A theme across these reflections is that POP Team 3 tended to view this design element as both meaningful and enjoyable - that is, both cognitively and affectively engaging. More specifically, POP Team 3 seemed to think their POP team discussions were meaningful *because* they were fun; they saw importance in connecting with other GSIs to discuss teaching and share ideas.

Similar to POP Team 3, there was evidence that POP Team 1 was also affectively engaged. POP Team 1 regularly made jokes and even suggested (again, jokingly) that they were "better" than the other teams because they were literally the "#1" team. The following are selected reflections form POP Team 1's group interview that illustrate how they perceived their experience working together:

Sophie: *I liked having a small group of people that I worked with regularly that made it really comfortable to kind of have more in-depth conversations, as opposed to saying one thing in the large group and then making sure there was space for everybody to say something or add to it.* (GI1,Q23)

Max: *I would just echo a lot of what's already been said about the pop teams. I like the intimacy of it, being able to just chat with just another couple other people about something. So that was very enjoyable, especially during COVID, that was so important to be able to just be able to chat with others. That was really nice.* (GI3,Q24)

Kate: *You* [referring to Sophie and Max] *both were very inspirational for me, personally* (GI3,Q25)

As these reflections suggest, this design element was successful at engaging GSIs from POP Team 1 as well.

POP Team 2, on the other hand, was more of an outlier compared to the other two groups. There was little evidence that this team found the POP teams enjoyable or meaningful. To be clear, there was also no evidence that this team found their POP team discussions unenjoyable or useless - and indeed, it is important to remember here again that median engagement ratings (from exit ticket data) were overall relatively high for all dimensions of engagement and across all PLC meetings. Still, as previously discussed, there was a noticeable dip in exit ticket ratings for Meeting 6 - the only PLC meeting where POP Team 2 was more heavily represented in the data (due to three absences of GSIs from other POP teams). Moreover, the following is how members of POP Team 2 described working together to examine their problem of practice:

Wes: *... it just kind of felt like a thing to do…* (GI2,Q26)

Beth: *I think the three of us we've taught this course before so we had that foundational knowledge. Perhaps this wouldn't have been possible for someone who was a first year who didn't really know any problems at the time…* (GI3,Q27)

Jun: *Yeah I agree with Beth's point about a level of experience as being a prerequisite, how much you could employ, get out of and contribute to the pop portion, because if you've never done it, then you're not really sure what the problems of practice are.* (GI3,Q28)

The way POP Team 2 describes their POP team experience in these reflections is notably different than how POP Teams 1 and 3 describe their experiences in the same design element. Additionally, both Beth and Jun mention that examining a problem of practice might be difficult for novice instructors. Interestingly, neither Beth nor Jun were novice instructors. In fact, all GSIs from POP Team 2 were experienced educators, whereas the least experienced GSIs in the PLC were part of POP Teams 1 and 3. This suggests that the differences between POP teams are likely *not* explained by differences in expertise. Furthermore, even though Beth names time constraints as a potential obstacle to meaningfully exploring her team's problem of practice, other POP teams were faced with the same time constraints and, while it did seem to affect behavioral engagement in that teams had less time to implement changes to their instruction, both POP Teams 1 and 3 were still affectively and cognitively engaged. This may suggest that there was something different about the social dynamic of POP Team 2 that further limited their engagement (besides time constraints) compared to the other POP teams. Together then, these findings indicate that this design element successfully engaged POP Teams 1 and 3, but not POP Team 2 - at least not to the same extent. This finding is different from other design elements in that the JIT box was more engaging across all dimensions for a broader range of PLC members, the shared vision was less engaging across all dimensions for most PLC members, and the POP Teams were affectively and cognitively engaging for *some* PLC members. That is, the PLC as a whole engaged the most in the JIT box discussions and the least in creating the shared vision, while engagement in POP teams varied by team.

RQ2: What do participant and researcher reflections, along with existing scholarship, suggest about why some PLC design elements were more (or less) engaging than others?

Knowing that GSIs were observed to engage differently across different PLC design elements, it was important to explore *why*. In doing so, it became clear that GSIs' reflections on why they engaged (or not) in certain design elements aligned with an existing framework for understanding motivation. This framework synthesizes and integrates across major motivation theories, and outlines five broad motivational principles. These principles include value, autonomy, relatedness, perceived competence, and mastery goal orientation (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022). Given that engagement is considered the embodiment of motivation (Linnenbrink-Garcia et al., 2016), this framework is a useful tool for thinking about differences in GSIs' engagement as they relate to the different design elements. Whether or not a given context (or design element) supports or undermines these five principles could influence engagement (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022). To address this research question then, I examined each design element - creating a shared vision, JIT box, and POP teams - for evidence of these motivational principles to better understand variations in GSIs' engagement within and between the three design elements.

Evidence of Motivational Principles Within Creating A Shared Vision

Key findings from RQ1 suggest that GSIs engaged to a lesser extent in creating a shared vision compared to other design elements. It was also found that cognitive and affective engagement were lower than behavioral engagement for the shared vision. In this section, I explore *why* creating a shared vision may have been less engaging, and particularly less cognitively and affectively engaging, by examining this design element for evidence of each of the five broad motivational principles.

Value

Value is essentially an individual's answer to the question "*Why* should I do this task?" (Eccles & Wigfield, 2002). An individual may find value in a task because it is useful or personally relevant. As discussed in relation to RQ1, group interview data revealed that GSIs did not understand the purpose of the shared vision in terms of what the final product would be used for:

> Max: *I think that the instructions* [for the shared vision] *were well laid out, but I just think as a group, we were kind of finding our... Trying to figure out,* ***"Okay, what are we doing with this?*** *How long should we be talking about this?* ***What is this directly going to affect?"*** *If we had some of those things maybe, I think that it could have been a more rewarding process.* (GI1,Q29)

The fact that Max is asking questions like "Okay, what are we doing with this?" and "What is this directly going to affect?" suggests he *does not* have a clear answer as to "*Why* should I do this task?" (see also quotes GI1,Q6 and GI3,Q7). This is an indicator of a task having low value, specifically low utility value in that Max is suggesting he does not understand what the shared vision will be useful for. Along the same lines, GSIs indicated that they struggled to see the relevance of the shared vision to their instruction:

> Kate: *I couldn't see the big picture and then* ***how this is going to impact on my classroom directly or my instruction style*** *or* ***is it going to be helpful to my development as an instructor****? I didn't really know the impact.* (GI1,Q30)

These findings then suggest that the structure of this design element was not value-supportive, which ultimately may have affected GSI's engagement.

Examining the structure of this design element more closely, one explanation for why creating a shared vision was not value-supportive is that I, as the PLC facilitator, failed to communicate a clear purpose for the shared vision. Indeed, one contextual feature that supports

value is communicating a clear purpose (Linnenbrink-Garcia et al., 2016; Patall et al., 2022) as it helps individuals answer the question of "*Why* should I do this task?" (Eccles & Wigfield, 2002). The following is an excerpt from my introduction of shared vision at the first PLC meeting:

Facilitator: *…One of the goals for this semester is to try to create a more sustainable, professional learning community for instructors. So the last couple years, and then if you've been with us longer than that before I was in this position, a lot has been changing. We've been changing the curriculum, we have instructors who are with us for many, many semesters, we have some instructors who come and teach for one semester and then they go on to do other things.*

And it's been confusing I think, getting everyone on the same page of like, "What is this course?" Because we have all these instructors moving, the curriculum's changed every semester. We have now these [different sections]*, so there's all of these moving parts. And so one of the goals is to create this professional learning community of instructors that is sustainable and useful for instructors with all levels of experience.*

So hopefully you can get something out of it if you've been teaching for a really long time or if you're a new instructor who's never taught before. And to get everyone on the same page about like, "What is the purpose of this class?" Now that we've landed on a more solid curriculum there, hopefully the course revisions are done now and we might make some small changes but the bulk of the curriculum will stay the same, at least for the coming future.

And so we can start thinking about like, "What do we want to do with this course? What small changes do we want to make?" And all get on the same page about what we want our students to learn and leave this course with.

So with that said, one thing we're going to try to do this semester that I'm hoping you all will be involved in is creating a shared vision for [this course]*, that goes beyond the standards that we're required to meet… that's what we're working with now but those standards aren't necessarily reflective of what we… want students to take away from our course… so this is our chance to think about what do we want students to leave with when they finish the semester in our course.*

So, what do we want them to know about Ed Psych? What are the important takeaways beyond just [the standards]*... It could be skills, it could be knowledge, but what do we want them to take with them into their teaching or their future career? And hopefully we can come up with some shared vision for the course that we can all agree on… and then that shared vision can last beyond this semester. So as instructors come and go, we can refer to that shared vision as some guide for the course.*

So that's what I'm hoping that we can work on today and the next meeting. And then our goal this semester is to work on some of those and then try to enact that shared vision in the course or in our work this semester and in the following semesters, if we can nail that shared vision down…

> *Cool. All right. So then we're going to start today, get right into it with talking about our shared vision and just do a brainstorming activity. So the question I want to pose to everyone is* ***what do our students need to know and be able to do with respect to Educational Psychology?****..and we can think like, "What do students need to know, skill-wise?" I don't know, disposition-wise, knowledge-wise…and we'll just start generating.* (MT1,Q31)

In all of my explanation, the only purpose communicated about the shared vision was "to get everyone on the same page" about the purpose of the course. Although true, it is vague. I do not say anything specific about what GSIs will use the shared vision for or how it will help their instruction. In other words, I did *not* emphasize relevance when communicating the purpose of the shared vision. While it is possible for individuals to generate their own ideas about the relevance of a task, the data suggests that GSIs in this context struggled to do so. Furthermore, my own field notes reveal that I may have picked up on this issue as early as the first meeting: "Don't feel like I am explaining the purpose of the shared vision well." At the time, I did not know why I felt this way, but perhaps it was because the "emphasizing relevance" piece was missing. The lack of clear purpose and relevance may have unintentionally undermined GSIs' perceptions of value for this design element, which in turn, likely negatively influenced their engagement.

Autonomy

Like value, the process of creating the shared vision may have inadvertently undermined autonomy as well. Autonomy involves feeling like one has control over one's self and actions (Patall et al., 2022; Ryan & Deci, 2017). An autonomy-supportive environment is one that incorporates individuals' perspectives and provides opportunity for agency and choice (Linnenbrink-Garcia et al., 2016; Patall et al., 2022). A perceived lack of autonomy, or feeling forced to do something, can negatively impact engagement (Assor et al., 2002; Linnenbrink-

Garcia et al., 2016; Patall et al., 2022; Reeve, 2013). Group interview data indicates that at least some GSIs perceived a lack of autonomy in creating the shared vision:

> Jun: ***I felt like there was an answer that was already expected of us to generate****. I know this is going to sound contradictory that, oh, it's unstructured, but* ***I felt there was a certain response that was desired****. We just didn't know what it was,* ***it wasn't a creative exercis****e or whatever answer we gave was correct.* ***I think there was a set right answer, but it wasn't clear what that was supposed to be****. I also wasn't sure if it was fair for that burden to be placed on the instructors… I don't know.* ***I don't feel like that workload should have been put on them****… I still felt I was in a weird position going through the process.* (GI2,Q32)

According to Jun, at least some GSIs did not feel they had choice or agency in creating the shared vision; they felt there was a predetermined "correct" answer from the onset. This suggests that this design element was not autonomy-supportive, and judging from Jun's comment here, may have even undermined GSI perceptions of autonomy.

Examining this further, the fact that this course used a standardized curriculum may have played a role. Even though the shared vision was *intended* to be separate (yet complimentary) to the course curriculum, the process began with me (the facilitator) posing the following question: "What do our students need to know and be able to do with respect to Educational Psychology?" (see MT1,Q31). If GSIs interpreted this question as referring to course topics (i.e, the "*what*" students need to know), then it makes sense that they would feel like there was a "set right answer" (GI2,Q32) - the topics outlined in the standardized curriculum. This is supported by meeting transcripts that show GSIs' - who were working in smaller groups at the time - initial brainstorming was focused solely on course topics:

Group 1:

> Sabrina: *Okay, so any thoughts? What do our students need to know and be able to do with respect to educational psychology?*

Wes: *I like starting with cognitive biases. I think it's a good way to introduce that topic and the idea of our own fallibility.*

Sabrina: *I like that…*

Wes: *Yeah. I like starting the course with cognitive biases because it gets the learners to consider ways that they, I guess, the fallibility of their own mind as they start on that course.* (MT1,Q33)

Group 2:

Andrea: *All right. So, shared vision. Yeah, I really don't even know where to start.*

Sophie: *Okay. The idea I had was if we look at each unit and then, talk about each unit for a couple minutes, and try and outline what's the big one or two takeaways from each thing.*

Andrea: *Yeah. That seems like a good approach…*

Sophie: *Yeah. Sorry, hold on. I need to pull up my syllabus or something.* (MT1,Q34)

As the meeting progressed, the conversations did start to shift away from specific course topics and there was even a whole group discussion about whether we should approach the question from a knowledge outcome perspective (e.g., topics in educational psychology) or skill-development perspective (e.g., critical thinking). Still, if GSIs' natural inclination was to answer the question through examining course topics, then they may have felt little agency in shaping an answer beyond the given curriculum. This is further supported by group interview data in which GSI reflections specifically point to feeling a lack of control in regard to creating a shared vision:

Beth: *…we know that we have sometimes **little control** over the content we're teaching…* (GI2,Q35)

Andrea *I think maybe was a bit of feeling like it was **outside of my control**. So even though we were working on this group document of the Vision, I think I didn't feel like invested in it because I felt like **how much of this is like anything I could have any sway over as an instructor**...* (GI3,Q36)

In this way, the process of creating the shared vision may have unintentionally *emphasized* GSIs' lack of autonomy over what they teach, thereby undermining autonomy in the context of this design element.

Importantly, not all GSIs felt the same way about the shared vision and at least one GSI actually viewed the shared vision as autonomy-supporting:

Max: *Yeah and the shared vision, I think that was helpful for everybody to be able to kind of see where this course is going. **So, it's not just like, "Kimberly's our captain and we will follow Kimberly." But to feel like we're kind of a part of it is nice.*** (GI1,Q37)

While Max's (above) and Jun's (GI2,Q32) reflections represent two ends of a spectrum, the data suggests that the majority of GSIs were somewhere in the middle: For most GSIs, this design element was not autonomy-supportive, but they also did not have the same level of negative reaction to the process as Jun did. Ultimately then, this design principle was not very autonomy-supportive but to different degrees depending on the GSI.

Relatedness

Although not particularly value- or autonomy- supportive, this design element was supportive of GSIs' relatedness. Relatedness refers to how connected an individual feels to others (Leary & Allen, 2011; Patall et al., 2022) and group interview data especially indicated that creating a shared vision facilitated connection between GSIs:

Sophie: *I kind of recognized it as something that was maybe more **team building and community building**. We were all engaging with coming together to view the course the same way.* (GI1, Q8)

Max: *It was nice to be able to kind of talk with everybody, but again, that's probably more COVID shit just being like, "**It's just nice just to see people and talk to people**."* (GI1,Q38)

Implied in Matt and Sophie's reflections is that the shared vision had some value for GSIs *because* it facilitated connection and relatedness. It is possible then that relatedness functioned as somewhat of a buffer for value, and in turn, perhaps engagement as well. This may explain why engagement was lower for this design element, but not altogether low - because it served as a community-building activity that supported GSIs' relatedness.

Perceived Competence & Mastery Goal Orientation

Finally, there was little to no evidence of the other two motivational principles - perceived competence and mastery goal orientation - related to this design element. Perhaps creating the shared vision did not have much influence on how GSIs viewed their competence or ability to improve because they did not really understand the purpose of the shared vision. That is, the shared vision activity may not have connected in meaningful ways to their self-perceptions (of competence or orientation toward goals) because they did not view it as having personal relevance to them. For this reason, these motivational principles were not necessarily supported or undermined like the other three.

Overall then, the design element of creating a shared vision both undermined and supported certain motivational principles, and likely, engagement. Both value and autonomy were undermined by not communicating a clear purpose for the shared vision and its relation to a standardized curriculum. The fact that GSIs did not understand the intended purpose of this design element limited its ability to support GSIs' perceived competence and mastery goal orientation in that the shared vision was not personally relevant to GSIs and thus not likely to factor into their self-perceptions. Instead, this design element functioned first and foremost as a

community-building activity that helped to support relatedness among GSIs. This ultimately may have acted as a buffer that kept GSIs engaged in the shared vision, despite other principles being undermined.

Evidence of Motivational Principles in JIT Box Discussions

A key finding from RQ1 was that the JIT box was more successful at engaging *the most* GSIs compared to other design elements. In exploring the "why" behind this finding, one reason may be that the JIT box facilitated an environment that was supportive almost all five motivational principles. Evidence for each is presented below.

Value

Unlike for the shared vision, most GSIs perceived the JIT box discussions as having utility value. During the group interviews, the majority of GSIs spoke about how useful and relevant the JIT box discussions were:

Wes: ***For me the just in time box was most useful****. I made use of it and I got good advice based on that…* (GI2,Q39)

Max: *I actually had a just in time box submission.* ***I thought that was incredibly helpful to*** *be able to have a kind of comment box to slide that into* [because of] *my lack of experience in teaching…* (GI1,Q40)

Kate: *…the just in time box, for me,* ***it was very helpful****. It was an outlet where I can ask some questions, because the last time when I* [taught this course], *I didn't know where to ask.* (GI1,Q41)

In addition to the three GSIs' above, Beth (GI2,Q9), Lilly (GI3,Q13) and Sophie (GI1,Q14) also described the JIT box in terms of being practical, useful, or relevant respectively.

Similar to how the JIT Box was engaging for GSIs regardless of their teaching experience, so too was it valuable for both novice and experienced GSIs - but in different ways. For example, Max and Kate - who were all newer, less experienced GSIs - emphasized how the

JIT box was useful to *them*, whereas Sophie (a more experienced GSI and educator) emphasized how it was useful for helping *others* (e.g., "the immediate relevance was obvious like, 'Oh yeah, I'm helping somebody with a problem'"). More experienced GSIs who were less likely to make use of the JIT box, could still recognize its value in supporting the teaching development of *others*. Less experienced GSIs saw value in the JIT box because it was useful *to them*. Indeed, GSIs who submitted to the JIT box - who were usually novice instructors - did report acting on the advice they received. For example, Max, who was a less experienced GSI and also the first to utilize the JIT box, submitted a question about how to help a student who was struggling with a writing assignment (see quote MT2,Q3 for a portion of this discussion). His submission was discussed at the beginning of the second PLC Meeting. After this discussion, GSIs broke off into smaller teams to continue working on the shared vision. According to Meeting 2's transcript, while the rest of his group moved on to discussing the shared vision, Max was still thinking about the JIT box discussion and was actually using the advice he had received to follow up with his student:

Andrea: *Max and Sophie, what do you guys think of that first theme?*

Sophie: *Yeah. I'm just reading the rest of the bullet points on that again, to make sure I'm not seeing anything that I think is missing, but I agree. I think that's solid.*

Max: *…Yeah, it looks good. I got foolishly distracted. I was actually sending an email to that student that y'all helped with. Again, I appreciate that…* (MT2,Q42)

The fact that Max instantly acted on advice from the JIT box suggests that it met an immediate need for him. Even though In this way, the JIT box was value-supportive, particularly for novice

instructors, in that it allowed GSIs to submit and receive advice related to personally relevant teaching issues.

Autonomy

Surprisingly, there was little evidence of perceived autonomy in relation to the JIT box. This was unexpected considering that GSIs had the freedom to submit whatever and whenever. To be clear, there was also no evidence that the JIT box undermined autonomy in any way (like creating the shared vision did). It's possible that autonomy was just less salient compared to other ideas (e.g., like value or relatedness) and was not fore fronted during the group interviews.

Relatedness

As discussed in relation to RQ1, multiple data sources (meeting transcripts, field notes, and group interviews) all showed that GSIs were affectively engaged in the JIT box discussions, specifically that they found these discussions to be enjoyable and interesting (see quotes GI2,Q9; GI2,Q10; GI1,Q11). One reason why the JIT box was enjoyable/interesting may because, similar to the shared vision, it supported relatedness:

Kate: *It was just **interesting just hearing what's going on in other instructors' classes**.* (GI1,Q43)

Beth: ***I think it was a great way to bounce ideas off of other people**. Also in a sense **build community within the teaching cohort** because people were allowed to be vulnerable and present other solutions.* (GI2,Q44)

Wes: *Just in time was also **interesting because you got to hear of the struggles of the other instructors**, things that they came across, which maybe you shared that issue or things that you're like, what I don't have to deal with that. Ah, that's so interesting. So then it became, even though it wasn't maybe useful for me* [referring to a given submission, not the JIT box as a whole]*, **it became a very interesting conversation to listen to**.* (GI2,Q45)

Max: ***I enjoyed the thing about the just in time box****, because I don't know,* ***it's kind of nice to get that little fly on the wall experience of being in someone else's classroom****, just how they bring up a problem that's happening in their class and then how they seek resources to try and solve, quote unquote solve the problem.* (GI1,Q46)

Sophie: *I didn't end up putting any items in the box, but* ***I liked hearing about what was going on in other people's classrooms and being helpful and part of the conversation****.* (GI1,Q47)

As these group interview reflections suggest, GSIs enjoyed learning about issues other instructors were facing and collaborating to help solve them. That is, GSIs enjoyed connecting with other instructors through the JIT box discussions. The fact that the JIT box created space for this connection suggests it was relatedness-supportive.

Perceived Competence

In addition to value and relatedness, there was evidence to suggest that the JIT box also supported GSIs' *perceived competence*. Perceived competence refers to an individual's self-perceptions of their capability for succeeding at a given task (Linnenbrink-Garcia et al., 2016). Theory posits that two sources of perceived competence include vicarious experience and verbal persuasion (Bandura, 1997). That is, individuals are more likely to feel capable if they 1) see others who are similar to oneself succeed at a similar task or 2) receive positive encouragement or feedback about their ability to do a task. The JIT box provided both these sources of perceived competence. For example, the JIT box submission for Meeting 7 asked the PLC how to handle a case of plagiarism (i.e., "I had a student who copied parts of the D2L reading verbatim in her journal response. How do I handle this?"). Meeting transcripts show that during this 20-minute discussion, six GSIs (and the facilitator) shared solutions, most drawing on their own experiences with student plagiarism - a vicarious experience. Indeed, Kate (who was *not* the GSI

who submitted the question about plagiarism) shared how she was still able to learn from that discussion:

> Kate: *It was really helpful for me to think whenever I have some problem…What would other instructors do?" Because when I had a student who almost plagiarized, I was like, oh, I want to punish her because this is not acceptable. But then I was like, "Okay, let's calm down and let's think about what another instructor would do." Because I'm a newbie here. [Another instructor might] think about why the students would copy and paste the websites in the first place.* (GI1,Q48)

Kate continues to say that when dealing with plagiarism previously, she would first seek to punish students, but hearing about other situations during the JIT box discussion caused her to think more deeply about the reasons behind why a student might plagiarize. In turn, this compelled her to want to take a different approach to discussing plagiarism in the future. Instead of only seeking to punish, Kate plans to enact consequences whilst also aiming to uncover *why* a student plagiarized in order to help the student make better choices in the future:

> Kate: *Because English is my second language, sometimes when I emailed students* [before]*, I would say rather directly, "You can't do this!" But rather* [now] *I can say, "I understand you're having this problem but…* (GI1,Q49)

This is one example then of a GSI feeling empowered to change their practice after learning vicariously from other instructors during a JIT box discussion.

In terms of verbal persuasion, both meeting transcripts and facilitator field notes showed that the JIT box discussions felt energized (e.g., "I love this conversation though guys, really cool insights!*"*) and were generally positive and encouraging (e.g., *"*Anyway, I just wanted to put the offer on the table, that if anybody wanted to do an accountability check-in thing, or had another idea, that I would be game for that!"). GSIs noted this in their group interview reflections as well:

Andrea: *I loved it. Yeah, I hope the Just In Time Box stays. I think it was really helpful. Yeah, and I thought that we had really rich discussions off of some of those questions and I thought* ***it was really cool too to see all the instructors invested in helping one another succeed and problem-solve****.* ***There was a sense of just like cooperation and like we're in it together. We have a shared goal of helping you figure this out. And that felt like a cool belonging thing,*** *I guess, in a way for the instructor group.* (GI3,Q50)

Taken together, this evidence shows that the JIT box facilitated an environment that supported GSIs' perceived competence through sharing vicarious experiences and positive verbal persuasion.

Mastery Goal Orientation

In addition to showing how the JIT box supported perceived competence, Andrea's reflection (GI3,Q50 above) also highlights how the JIT box supported GSIs' mastery goal orientation. Mastery goal orientation is closely related to "growth mindset" which refers to the belief that one can improve with effort (Dweck, 1999). Environments that support a mastery goal orientation emphasize collaboration and cooperation over competition, and normalize failure as an important part of the learning process (Linnenbrink-Garcia et al., 2016; Patall et al., 2022). Andrea's perception that GSIs had a "shared goal of helping" suggests that the JIT box discussions emphasized cooperation and de-emphasized competition. Other GSIs shared this same sentiment:

Kate: *I mean, I think the structure, there is an outlet for the instructor is also helpful, but at the same time, the instructor,* ***everyone is very, I don't know, nonjudgmental*** *and they do know, they just want to give a, share the resource.* ***They're not competitive****.* ***This is not a competition anyway****…* (GI1,Q51)

Sophie: *I agree with that, too,* ***encouraging us to recognize that practice is something that we're constantly growing in*** *and* ***we're not supposed to not have problems****.* ***We're supposed to have things that we want to work on and then share them****.* (GI1,Q52)

Max: *Yeah and I think you* [the facilitator] *provided a* ***low stakes environmen****t to be able to do that. That was very helpful.* [I was] ***not feeling like if I opened my mouth, you would be like, "You're an idiot, learn how to teach."*** (GI1,Q53)

These reflections paint a picture of the JIT box as a safe, judgment-free space where GSIs are encouraged to share mistakes and work through them as a team. In turn, the JIT box discussions made space for normalizing mistakes and developing a growth mindset toward instruction. This worked to facilitate a collective sense of trust that created more space for GSIs to connect with one another, further reinforcing opportunities for relatedness:

Max: ***I knew that everyone wasn't going to be judgmental****, that was really nice.* (GI1,Q54)

Lilly: *And I think, especially because I was teaching alone for the first time, I just felt like there were lots of things that were coming up and I feel very fortunate that I could always ask out questions. I could ask Sabrina,* ***I feel like I could ask anybody really*** *who was* [an instructor] ***and they would have encouragement or advice****.* (GI3,Q55)

Overall then, data revealed evidence that the JIT box supported four out of the five motivational principles and that there was synergy among them (e.g., mastery goal orientation and relatedness). The JIT box was valuable, especially for novice instructors, in that it addressed GSIs' pressing issues of practice. The fact that these issues were solved collaboratively facilitated opportunities for relatedness and thus worked to create a space where mistakes could be shared free of judgment. Openly discussing mistakes only further supported GSIs' perceived competence and mastery goal orientation. Though autonomy was not specifically mentioned by GSIs in relation to the JIT box, there was also no evidence to suggest that this design element did not support autonomy. It may just not have been as salient for GSIs. Lastly, compared to the shared vision, one reason for why the JIT box was more engaging may be because it supported more motivational principles.

Evidence of Motivational Principles Within and Between POP Teams

A key finding from RQ1 was that this design element engaged GSIs to different extents depending on their POP teams. POP Teams 1 and 3 were highly engaged, suggesting that the POP teams and JIT box design elements were similarly engaging for these GSIs. POP Team 2, however, stood out as being noticeably less engaged in their POP team. In examining this design element for evidence of motivational principles then, it was important to look at both within the design element itself and across POP teams. Looking within, POP teams as a design element was supportive of a number of motivational principles, which is likely the reason why it was so engaging for POP Teams 1 and 3. Looking between POP teams, there was a clear difference in the type of problem of practice that POP Team 2 chose compared to the other two teams. There is evidence to suggest that it was this choice - of their problem of practice - that limited this design elements' inherent ability to support the same motivational principles for POP Team 2, and ultimately, their engagement. Evidence of these motivational principles - both within and between POP Teams - is presented in turn.

Value

Similar to the JIT box, POP teams were value-supportive in that they were intended to be practically useful to GSIs, and they were, for POP Teams 1 and 3. GSIs from these POP teams described this design element as "effective" (GI1, Q17), "useful" (GI3,Q18), and "relevant" (GI,Q22) in their group interviews. Compared to the JIT box though, GSIs were more likely to talk about how their POP team discussions had value *for the future* rather than the present moment. This is most likely the result of unanticipated time constraints. As discussed in relation to RQ1, there was less time available for GSIs to work in their POP teams than originally planned because both the shared vision and JIT box discussions took longer than anticipated.

This made it more difficult for GSIs to iteratively implement changes in their classrooms during the semester, limiting how useful the POP team discussions could be "right now". Indeed, a common point of feedback from *all* POP teams was that they wished they could have "start[ed] this earlier so we [could] kind of apply what we discussed to the classroom" (see also GI1,Q16; GI1,Q17; GI3,Q18). According to GSIs' reflections from their group interviews, however, this did not necessarily undermine the value of POP teams (at least for Teams 1 and 3), but instead shifted its focus towards being useful for future instruction.

Looking across POP Teams, POP Team 2 was less likely to describe this design element in terms of value. In fact, there was not a single instance of any GSI from POP Team 2 referring to their POP team as "effective," "relevant," etc. There were also no instances of POP Team 2 saying their POP team was *not* valuable, relevant, etc. That is, it is not necessarily that this design element was *not* value-supportive for POP Team 2, but certainly to a different extent than for POP Teams 1 and 3. This could be due to time constraints, but given that all POP teams were faced with the same obstacle and two were still able to find value in this design element suggests that there was something different about POP Team 2 that prevented them from shifting their focus forward towards the future like the other teams. This idea will be explored further in the next section.

Autonomy

POP teams were arguably the most inherently autonomy-supportive design element in that they provided opportunity for choice. GSIs had the freedom to choose their team, their problem of practice, and how they wanted to examine it. This agency was well-received by GSIs from POP Teams 1 and 3 who spoke in the group interviews about how they appreciated the freedom of choice and direction:

Sophie: *...**we got to choose our topic**. It was something that we were all interested in.* (GI1,Q56)

Sabrina *The thing that I kind of wanted to think more about and put more effort into was the Pop Team, like everyone else said. **Because we have the choice of what issues are relevant?** What are things that we really want to think about to address some problems. So I think for me in that sense, yeah the Pop Team kind of appeal to my interest a bit more and something that I wanted to think about more.* (GI3,Q57)

POP Team 2, on the other hand, showed some signs of regret in terms of their problem of practice choice:

Beth: *...I think at least with our group, **what I had identified was not something we could necessarily readily employ**...I think **if we had been able to identify this early on and had a little bit more time to put it into practice, I think that would've been maybe a little bit more meaningful**.* (GI2,Q58)

As Beth suggests, POP Team 2 chose a problem of practice that was difficult for them to examine. In addition, I noticed during the group interviews that there was a stark difference in how POP Team 2 spoke about what inspired their problem-of-practice choice vs how Teams 1 and 3 answered the same question. For instance, the following is how POP Team 1 responded to what inspired their problem of practice (i.e., How to address equity, anti-oppression, and anti-racism in our class; How to manage an apolitical classroom):

Facilitator: *What inspired your problem at practice or why was it important to you?*

Max: *Oh, I think it's just because it goes beyond just teaching the material and I think that really, that's being part of a university course, we have to hit, practically, right. We have to hit X, Y, and Z for the class to be legitimate, right...We have to hit all these notes so that they know the material but being able to then take it that step further to be like, "This isn't just about the material. It's about the underlying pieces that undergrad education in general." So, being able to have that conversation was one of the reasons that I decided to join the team.* (GI1,Q59)

Kate: *My inspiration* [for choosing this problem of practice] *was my students because…I noticed that a lot of my students are white students and then, they don't really mention about their race, even though I understand that it's because they're a majority and they rarely have a chance to think about their racial identity….Anyway, yeah anyway, the inspiration from my student and also my identity and I think we are, what we are teaching is very closely tied to race and political issues…* (GI1,Q60)

Sophie: *I would just add that, yeah that the student driven part and as* [Kate] *was talking about how the content is so close to a lot of political and social issues, it kind of seemed weird if we don't say anything. I get that it's not a core standard or a core part of what we're teaching them, but if you don't at least acknowledge all of this content in actual political and social context, then that just makes it seem less relevant…* (GI1,Q61)

All three GSIs from POP Team 1 have clear ideas about why their problem of practice is important to them and why they are interested in examining it. Similarly, this is how POP Team 3 responded to the same question about their problem of practice (i.e., How to engage students in effective discussions in small groups and whole class formats online and in-person):

Facilitator: *…What inspired your team's problem of practice or why was it an important thing to investigate this semester?*

Lilly: *I feel like engagement this semester has been a little tricky. I feel like there have been times where it's been difficult to encourage student discussions and encourage collaboration, even attendance has been spotty…So one thing that I really liked about our pop was just like brainstorming ways of dealing with that, because it's such a present issue that I'm honestly still kind of dealing with and still trying to use strategies that we've brainstormed. Yeah, just like, I don't know, I think just the fact that it was such like an urgent and present issue that I was in and still dealing with.*(GI3,Q62)

Andrea: *And then the, why did we do engagement? Yeah, similarly to what [Lilly] was saying, this semester has just been super hard. And I think partially it could be because we started online and then moved into the classroom. That's my hypothesis. That's a little bit of the problem this semester, is that students just got used to doing norms in Zoom land and then moving into the classroom, there was like a few weeks where it just felt awkward between the students. Like, you could sense it where they're just like, "Where do I sit?" And, "These are my group and I saw them on zoom, but like, I don't really know them." And it just, so overcoming, that was a really big hurdle this semester.*(GI3,Q63)

Sabrina: *...It's my first time teaching a hybrid section where I just meet students once a month. But some of them, I was surprised that they enjoy at least meeting once a month, just kind of meet with each other and kind of engage with the content. So something I tried* [from the POP discussions] *was doing check-ins… I think something that I like about the pop teams is how we're like following up on, we used this strategy, like how did it go? Like what worked, what didn't work…* (GI3,Q64)

Like POP Team 1, POP Team 3 then also had clear ideas about why they were interested in examining how to support student engagement during small group discussions. These two teams' responses were noticeably different from how POP Team 2 answered the same question about their problem of practice (i.e., Assessing competencies beyond journal entries in an asynchronous/online format):

Facilitator: *So can you talk a little bit about what inspired your team's problem of practice and why you thought that was an important problem to investigate?*

Beth: *…would you mind just repeating the question one more time?*

Facilitator: *Yep. Hold on. Let me, I'll put this* [POP Team 2's note sheet] *in the chat too in case anyone wants to look…So that's the link to your pop team notes if you need a reminder. The question was what inspired your team's problem of practice and why did you think that was an important problem to investigate? Or we can do one at a time.*

Beth: *Sure. I think I suggested this problem of practice so I can speak to what led me to offer this as a potential problem of practice. I enjoy the journal entries and I do think when the students take the time the questions are reflective. I do think the assignment can become repetitive and I do know that sometimes at the end of a unit, students are really just trying to finish. So they aren't necessarily taking the time to make these responses very meaningful.*

As we discussed in our group, there is a lot of variety in the types of responses you get. I have some students who meet the requirement by being very succinct and to the point and then some who are writing pages and pages. Sometimes those pages are really great. Sometimes there's a little bit of fluff in them, but I think we were just wondering different ways for students to interact because in an asynchronous class or at least online, it is very much you need to produce something in writing. So what were some other ways to engage students in that way and have them be more reflective through other means or just exploring different mediums in which they could use.

Facilitator: *Yeah. Does anyone else want to add why you are interested in examining this problem of practice or being on this team? You can also say no. I just want to make sure that I'm giving you enough wait time, but I can't tell.*

Jun: *I don't think I got to contribute to the pop group as much about the idea of assessment beyond the reflections, but as I'm thinking it over I think the main reason was I feel* [this course] *still has an identity crisis. Even though it's a foundational conceptual class, since we're talking openly, I do feel the class sometimes may feel useless to students. I think it's that you learn this theory first, but you're not going to use until year five potentially when you're in your internship...*

I'm like, oh crud. But what do they get? Compared to [other teacher education courses] *that I know of, there's no capstone, I think the interview project is an improvement, but the unit reflections, they still feel kind of do it for the sake of doing it because it's an assessment. But for the students, it's not as useful, right?*

So all of it accumulates to this thing, but for [this course]*, it's not really that right. You kind of do this unit and then you're done, you do know the unit then you're prompted to recall back, but beyond just the philosophical thoughts and because not everyone is a teacher, it still feels the assignments are kind of once they leave this class and they're finished, they can put it away and never think about it again. So I think that was the underlying reason why because I was like, yeah, what could we do to give some more tangible value for the people in the class?*

Facilitator: *Yeah. Okay. Okay. [Wes], did you want to add anything or are you good? I just want to check in case you're still thinking. All right.*

Wes: *...No, I have no additional things to say.* (GI3,Q65)

In comparing these responses, a few things stand out. First, POP Teams 1 and 3 easily spoke about why their problems of practice were important, whereas POP Team 2 required a lot of additional prompting from me (the facilitator) to answer. Second, the responses from GSIs in POP Teams 1 and 3 all involved some articulation of how their problem of practice was related to their instruction. Only one GSI from POP Team 2 (Beth) related her team's problem of practice to her own teaching - *after* needing to review what the problem of practice was. Even after reviewing their team notes, Jun and Wes's responses were off-topic and either critical or

non-existent respectively. The difference in how POP Team 2 spoke about their problem of practice did not stand out to me in the moment but became more obvious in hindsight during coding. Even by the first round of coding, after reading through the entire data corpus, I was wondering in my process memo: "Was POP Team 2 even interested in their problem of practice??" Finally, a third noticing, was that POP Teams 1 and 3 chose problems of practice related to *instruction*, while POP Team 2 chose a problem of practice related to *curriculum*. As previously discussed, the course curriculum (including assessments) was standardized and not something GSIs had control over. Ironically then, POP Team 2 freely chose a problem of practice for which they had little agency to examine. In a way then, the autonomy this design element afforded could be both a blessing and a curse. POP teams who chose a problem of practice related to their own *instruction* thrived in this autonomy-supportive design element that also allowed them the space to shift their focus towards future instruction when faced with time constraints. POP Team 2, however, was unable to take advantage of the autonomy this design element afforded because their problem of practice was tied to a curriculum over which they had no control, now or in the future. Autonomy then may be a key factor in understanding the differences in engagement between the different POP teams.

Relatedness

Meeting transcript, field note, and group interview data all showed that at least POP Teams 1 and 3 were highly affectively engaged in their POP teams. Like the JIT box, this likely had something to do with relatedness. Both POP Teams 1 and 3 spoke warmly about their respective teams and genuinely seemed to enjoy spending time together (see also GI3,Q20; GI3,21; GI3,Q24):

Lilly: *And also just like* ***knowing that other folks were trying new stuff out too*** *was* ***really cool to just hear how it was going for Sabrina and Andrea****, and just getting to reflect on that together.* (GI3,Q66)

Sabrina: *…****We could jump off from each other's ideas****. And I think I* ***found that part most helpful and enjoyable***.(GI3,Q67)

They also spoke about group size, and how this aspect of the design element further supported relatedness (see GI1,Q23 and GI1,Q24 also):

Andrea: ***I think one thing I liked a little bit better about the Pop team was just the size of the group****. So I think like having the whole group versus the smaller group, I feel like in the smaller group, we're able to share ideas a little bit quicker maybe and like hear all of our like small group's voices, whereas the Just In Time Box with the full team, maybe the full team not everybody would necessarily be heard in that space.* (GI3,Q68)

These reflections from Andrea (above), Sophie (GI1, Q23), and Max (GI1,Q24) suggest that, in a way, POP Teams 1 and 3 functioned as sort of mini-PLCs within the larger PLC; their problem-of-practice discussions were more intimate JIT box discussions - but for future instruction.

Relatedness worked differently for POP Team 2. In fact, this design element may have actually undermined relatedness for these GSIs. It was clear from meeting transcripts that POP Team 2 did not have the same dynamic as other teams. For example, while other teams got to conversing right away, POP Team 2 often sat in silence for a few minutes (sometimes a full six minutes as in Meeting 6) and seemed reluctant to begin conversation. According to my field notes, I regularly described POP Team 2's conversations as "awkward" and "slow to start." Moreover, GSIs from POP Team 2 did not naturally share the same glowing reviews of their POP team experience as POP Teams 1 and 3. Instead, they described it as follows:

Jun: *I guess I'll just say it. I feel like the odd one out. So talking to people about my thoughts on ... I feel I'm not close enough with any of the other instructors to really talk about what I'm going through. And I don't think other people are going to talk to me because we're not that close. So all the people that I'm close with are no longer here or weren't teaching* [this course this semester]. *So that relationship aspect, I think made it difficult for me…That's also on me too because you don't just make friends automatically. You got to put in the work, but just discussing what kind of contextual factors, I think the not feeling that close with people impacted how much I could engage with others.* (GI3,Q69)

Beth: *I would agree with that, Jun….I felt a little disconnected…* (GI3,Q70)

These comments suggest that this design element undermined relatedness for GSIs in POP Team 2. Instead of feeling more connected to a core group of instructors, they felt more disconnected. Similar to autonomy then, this design element had a drastically different effect on GSIs' sense of relatedness, depending on the POP team.

Perceived Competence & Mastery Goal Orientation

POP team discussions supported perceived competence and mastery goal orientation in similar ways as the JIT box - for POP Teams 1 and 3. This design element provided the same two sources of competence - vicarious experience and verbal persuasion - as well as normalized failure (mastery goal orientation), sometimes all in the same discussion:

Kate: *I actually want to know how the privilege walk went and how does that work?*

Max: *It didn't go well, only in the terms of, that was the last thing I did and I thought I was going to have more time to have a talk about it, but I ended up just sprinting through because I had these slides and it was basically like mark a tally if this happened to you and it was a form of oppression. So, the more tallies, the more oppressed. So, I wanted to have a conversation or maybe break into groups, and talk about how this felt. Just a way of starting to have this conversation and being like, "It's okay to start the conversation. I'm not asking for perfect breakout room conversations." To be perfect about this. I think one of the biggest things about this is you have to start talking. You can't just be like, "Well, unless I'm perfectly educated in how I speak about different race, gender, whatever form of oppression. Unless I'm perfect, I can't talk about it."*

So I wanted them to at least start, right? To be like, even if you're going to fuck up, the idea is that act, right? Apologize, correct, and try again. Because that's such a big thing when having these conversations. I wanted them to be able to do that, but ran out of time.

I was talking about each slide too long. I repeated the questions too much and we just ran out of time. I'm like, "Okay, think about it. Okay, bye. I don't want to keep you after, bye.". But I don't know. I like to think it went well. Try to talk about many different forms of privilege and oppression to try and get that in there. So hopefully, it got them thinking. It would've been nice to have a conversation with breakout groups. But, such is life.

Kate: *That kind of makes me feel good, like I'm not the only person who feels rushed at the end of the class.*

Max: *Oh man. I swear that's part of the art. I still remember in class I'd be like, "All right, I'm going to be fine." When we're in person is what I mean. "Oh, we're going to be fine." Ends 20 minutes early. I'm like, "Shit I had nothing else for today. Bye!". And then other things I'm like halfway through, because we got into a cool conversation and I look at the clock and I'm like, "I don't know how to tell you guys. I messed up. I know that I'm an instructor. We'll try and get through this next time." That's an art.*

So, props to teachers who can actually budget that time well or know how to stop a conversation. Be like, "All right, we've talked about this for 15 minutes. We got a good conversation going, but everyone shut up. We're moving on.". Like to be able to do that well.

Sophie: *Well it matters what the conversation's about, though. Sometimes breaking your schedule to allow more space for students to talk about something that they really want to talk about is more beneficial to their learning than sticking to your lesson plan. You've got to be able to make that judgment call.* (MT7,Q71)

Not only does this exchange involve Max sharing a teaching experience, but importantly, an experience of "failure" (in the sense that instruction did not go as planned). Max's story serves as a vicarious experience for Kate and Sophie, and simultaneously is normalizing "failure." In this way, this short exchange is supporting both perceived competence and mastery goal orientation. Max also encourages Kate after she shares that she, like Max, sometimes struggles with timing in her lectures. This is verbal persuasion which further supports perceived competence. Similar to the JIT box, these two motivational principles - along with relatedness - created another, perhaps

more intimate safe space for GSIs within the larger PLC. This further facilitated a sense of trust among POP Teams 1 and 3:

Andrea: *...I was going to say **it was creative**. And that **we could just be like brainstorming**. **There was no bad idea**, right. **We could just totally be creative** and see what we all came up with. And I think we came up with some really cool stuff that we want to try next semester, even, with the affinity groups and so that was just like really neat process. Yeah, **and then underlying that is just a sense of like safety**, right….*

*So it worked really well at the time that we were generating those ideas and like trying them and being accountable. And I'm really thankful for that. And **I think it was a great energy boost**, like at that point in the semester that they needed.* (GI3,Q72)

Lilly: ***And I enjoy just spending time with* [Andrea and Sabrina]**, *as a whole. Which I know isn't really going to help necessarily, but because **I felt comfortable with both of them**, if like **there was no aspect of uncertainty or of like one of this idea sounds dumb**. It was just kind of like it's* [Andrea and Sabrina] *and we're working to solve a problem. **And that felt like very fun**. Just kind of like brainstorming with friends in a sense.* (GI3,Q73)

Once again, this was not the case for POP Team 2, however. There was little evidence - both for or against - whether this design element supported POP Team 2's perceived competence or mastery goal orientation. This may be because POP Team 2 chose a problem of practice they had little control over and spent much less time conversing in their POP team. Similar to the shared vision then, this design element may not have influenced their self-perceptions (of competence or orientation toward goals) because POP Team 2 was unable to make meaningful connections between their problem of practice and their own instruction.

Overall then, this design element greatly differed in its ability to support motivational principles depending on the POP team. Although it supported all five motivational principles for POP Teams 1 and 3, it did not support any for POP Team 2 - and may have actually undermined value, autonomy, and relatedness for this group. Given the difference between the problems of practice POP Team 2 vs POP Teams 1 and 3 chose, autonomy could be a double-edged sword

feature of this design element. That is, this design element is structured in a way that has great potential for supporting key motivational principles, and thus engagement, *if teams choose a problem of practice they have some agency to examine and influence*. Both POP Teams 1 and 3 chose problems of practice related to their instruction - something they control - and were more engaged than POP Team 2 who chose a problem of practice related to curriculum - something they had no control over. This paradox of choice may be an important determinant in whether this design element supports GSI engagement.

Synthesizing and Integrating Findings from RQ1 and RQ2

In this next section I summarize and synthesize findings from RQ1 and 2, illuminating important connections between key PLC characteristics, motivational principles, and GSI engagement.

PLC Key Characteristics Supported By Different Design Elements

First, an integral part of this study - before I could even begin to examine engagement - was to develop a PLC of GSIs. The evidence presented above demonstrates that the action plan was successful at developing a PLC in this context, as defined by the four key PLC characteristics. Indeed, there was evidence that three out of four key characteristics - a focus on learning, collaboration, and reflective inquiry and dialogue - presented across all seven PLC meetings. The exception - the shared vision - presented at the first four PLC meetings, but infrequently thereafter. This means that the all three design elements - creating a shared vision, the JIT box, and POP teams - were successful at maintaining a focus on learning and facilitating collaboration and reflective dialogue (see Table 12). The process of creating a shared vision was additionally successful at developing a shared vision for the PLC, but not in a way that sustained GSIs' focus on it.

Table 12. *Summary PLC Key Characteristics Supported By Each Design Element*[3,4]

	Creating A Shared Vision	JIT Box	POP Teams
A Focus On Learning			
Collaboration			
Shared Vision			
Reflective Inquiry & Dialogue			

Further, there were slight nuances in the way that each design element supported these different key characteristics. For example, the process of creating a shared vision was focused on student learning in terms of specific course content, while the JIT box and POP teams were also focused on student learning, but more so in terms of instructional strategies. Similarly, the process of creating a shared vision involved reflective inquiry and dialogue in regard to reflecting on the purpose of the course, whereas the reflective dialogue that occurred during the other two design elements involved examining specific (and often real-time) instructional challenges. In this way, the action plan as whole supported the development of a PLC, and each design element played a role in facilitating the development of specific key characteristics, sometimes in different ways.

[3] Check mark icon created by kliwir art from Flaticon.com
[4] X mark icon created by hqrloveq from Flaticon.com

GSI Engagement in the Different Design Elements

Although the three design elements were more or less similar (again, with the one exception of the shared vision) in how they facilitated the development of key PLC characteristics, they diverged in the ways they were engaging for GSIs (see Table 13). The JIT box was the most engaging in the sense that it supported all three dimensions of engagement for the majority of GSIs. POP teams had the potential to be similarly engaging for GSIs, and indeed this design element supported all types of engagement for the majority of POP teams. Yet, for POP Team 2, it was the least engaging design element. For everyone else besides POP Team 2, creating a shared vision was the least engaging design element. This was largely because it unintentionally worked to undermine cognitive engagement due to the lack of clear purpose for having a shared vision. Even though the three design elements were similarly supportive of PLC key characteristics then, each had different implications for actually engaging GSIs in the PLC that are worth considering. Looking across design elements briefly, behavioral engagement was the most commonly-supported dimension, followed by cognitive and then affective engagement. In terms of engaging GSIs in a PLC then, getting GSIs to "do what they are supposed to do" may be the easiest to achieve, while convincing them it is important and/or enjoyable could be more difficult.

Table 13. *Summary Of GSIs' Engagement (By Dimension) In Each Design Element*

	Creating A Shared Vision	JIT Box	POP Teams	
			Teams 1 & 3	Team 2
Affective Engagement				
Behavioral Engagement				
Cognitive Engagement				

Motivational Principles Supported By Different Design Elements

Like engagement dimensions, there were differences in which motivational principles each design element supported (see Table 14). According to data from this study, POP teams had the most *potential* out of the three design elements for supporting the most motivational principles. At the same time, POP teams also carried the most risk in that it actually undermined three motivational principles - and supported none - for POP Team 2. Whether or not POP teams supported or undermined motivational principles was dependent on individual POP teams and seemingly their choice of problem of practice. The JIT box offered similar potential for supporting a variety of motivational principles, but with seemingly less risk. That is, it supported the most motivational principles for the most GSIs. Autonomy was, surprisingly, the one motivational principle for which the JIT box lacked evidence of supporting. It is possible - and probably likely considering that GSIs had the choice of both when and what they wanted to submit - that this design element does indeed support autonomy; it just may not have been as salient compared to other motivational principles and thus not mentioned by GSIs in their

interviews. Still, this raises the question of why autonomy was not as salient as other motivational principles given the amount of choice the JIT box supported. Lastly, creating a shared vision supported the least number of motivational principles - and undermined some - for the most GSIs. In other words, the process of creating the shared vision: 1) supported the least amount of motivational principles and 2) undermined the most motivational principles for the most PLC members. The three exceptions to this were GSIs from POP Team 2. For them, creating the shared vision was less detrimental than their own POP Team.

Table 14. *Summary of Motivational Principles Supported By Each Design Element*

	Creating A Shared Vision	JIT Box	POP Teams	
			Teams 1 & 3	Team 2
Value	↓	↑	↑	↓
Autonomy	↓	—	↑	↓
Relatedness	↑	↑	↑	↓
Perceived Competence	—	↑	↑	—
Mastery Goal Orientation	—	↑	↑	—

Looking across the design elements, relatedness may be the most easily supported motivational principle. Of course, this was not the case for POP Team 2. Still, the fact that it was supported across design elements - and for two out of three POP teams - may suggest that it is more easily supported if one were to be mindful of smaller group social dynamics. Autonomy presented somewhat of paradox, at least in this local context, in that choice - which is generally autonomy-supportive backfired in the case of the shared vision and POP Team 2, but for different reasons. For the shared vision, it was the structure of the design element itself that undermined autonomy. Instead of providing opportunities for GSI agency, it actually emphasized their lack of control over the curriculum. For the POP teams, allowing GSIs to choose their problem of practice was not an inherent design flaw; it actually was autonomy-supportive for POP Teams 1 and 3. Instead, specific choices *became* autonomy-undermining if they focused GSIs on aspects of teaching that they had little control over (like the curriculum). This then may have had an added effect on value in the sense that POP teams had less value for POP Team 2 because they chose a problem of practice that prevented them from making changes to their instruction. Similarly, the process of creating the shared vision limited its own value by emphasizing GSIs' lack of autonomy over the curriculum and through lacking a clear purpose related to instruction. Finally, perceived competence and mastery goal orientation proved more difficult to support through these design elements, and especially in the absence of other motivational principles. Indeed, in the spaces where they were supported (the JIT box and POP Team 2), relatedness was also supported. This suggests a possible synergistic affect between the three.

Synergies Between Motivational Principles & Engagement

In examining which motivational principles and engagement dimensions were supported by each design principle, some interesting patterns emerged. First, design elements that supported relatedness also showed evidence of affective engagement, which may suggest some relation between the two. Second, design elements that undermined both value and autonomy showed less evidence of cognitive engagement. Cognitive engagement was also lower for design elements that showed little evidence of perceived competence and mastery goal orientation supports. These findings suggest some sort of relationship between one or more of these motivational principles and cognitive engagement. Third, perceived competence and mastery goal orientation were only found to be supported by design elements that were also supportive of value and relatedness. This may suggest that value and/or relatedness is a prerequisite for supporting perceived competence and mastery goal orientation. Fourth, patterns related to behavioral engagement were not as easy to discern. For example, patterns of behavioral engagement followed those for relatedness fairly closely; however, POP Team 2 was still able to behaviorally engage in their POP team despite relatedness being undermined. This suggests that relatedness is not necessarily a requirement for behavioral engagement then. The same could be said for the other four principles given that GSIs were behaviorally engaged in the shared vision work despite both these other principles being absent or undermined. Together then, these patterns indicate that there are connections between which motivational principles are supported and the different ways in which the design elements engaged GSIs. These patterns will be discussed further in the following section.

CHAPTER 5: DISCUSSION

The broad aim of this study was to begin to explore PLCs as an innovative approach to GSI teaching development in higher education. As an initial step towards exploring this approach, this study focused on the development of a PLC of GSIs and its potential for engaging GSIs affectively, behaviorally, and cognitively. Together, findings presented in the previous chapter *do*, in fact, suggest that not only was a PLC established, but that it was successful at engaging GSIs. However, these findings also illuminated several important caveats related to considering PLCs as a solution to GSI teaching development. In this chapter, I discuss these findings and caveats in light of relevant literature and implications for future research. I also address limitations and delimitations of this study.

Implications for Developing PLCs of GSIs

I initially proposed PLCs as a solution to the challenge of GSI teaching development because the key characteristics that comprise a PLC appeared to be inherently complimentary to what extant literature and local feedback suggest GSIs want and need. For example, a major criticism of existing teaching development opportunities, such as university-wide workshops, is that they are not actually focused on evidence-based teaching practices, but rather on communicating university policies and procedures (Schwartz et al., 2020). In other words, they are not focused on instructor or student learning. PLCs, on the other hand, are inherently focused on learning - both instructor and student learning (Dogan et al., 2016; Lomos et al., 2011; Louis & Marks, 1998; Vescio et al., 2008). In my local context, GSIs also asked for more clarity about the purpose of the course they were being asked to teach (Alberts and Galvin, 2022) which aligns with the idea that a PLC should have a shared vision (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006). Lastly, GSIs expressed a strong desire to discuss teaching issues with other instructors (Alberts and Galvin, 2022). PLCs are positioned to address this need as

well because they are intended to facilitate both collaboration (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006; Vescio et al., 2008) as well as reflective inquiry and dialogue (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006). In this way, PLCs stood out as a promising opportunity for GSIs because they are theoretically and conceptually aligned with identified gaps in existing teaching development opportunities for GSIs.

Broadly, this idea that PLCs are uniquely equipped to support GSIs' teaching development needs was supported. The action plan informed by extant literature and GSI feedback was indeed successful at developing a PLC of GSIs, as there was clear evidence of all four key characteristics present during the semester. The process of implementing the action plan did, however, reveal two important considerations related to the role of key PLC characteristics in PLCs of GSIs compared to K-12 contexts where they are most commonly studied. First, a focus on learning functioned differently in a PLC of GSIs than what literature might suggest. For instance, a focus on learning refers to a broad target of learning, first of teachers, then of students (Lomos et al., 2011; Louis & Marks, 1998). PLCs that are implemented in K-12 environments tend to emphasis student learning. In one empirical review, Dogan et al. (2016) found that PLCs of K-12 educators often explicitly discussed student learning through a variety of activities, including using student data to conduct needs assessments (Brown et al., 2011; Jones et al., 2013; Nelson, 2009; Nelson & Slavit, 2007) and implementing targeted learning interventions (Guzey et al., 2014). In the present study, however, the PLC was more explicitly focused on instructor learning. Indeed, both the JIT and POP team discussions tended to focus on what instructors should do (often in reference to a specific real-time teaching issue) and even though there was an underlying assumption that instructor support would lead to improved student support, none of these conversations were similar to what a PLC of K-12 educators were

discussing (at least according to Dogan et al.'s (2016) review). Even while creating the shared vision, where GSIs were explicitly asked to discuss student learning in terms of content, GSIs did not review student data or undertake any of the activities described in Dogan et al. (2016).

Therefore, while a focus on learning was maintained across the PLC of GSIs in this study, it looked significantly different from K-12 environments. This makes sense when considering contextual differences - the most obvious being PLC members' level of expertise. K-12 educators presumably all have at least some formal training in teaching and thus have the skills to conduct needs' assessments or design targeted learning interventions. A group of GSIs, on other hand, are likely not as experienced as a group of K-12 educators. It follows that GSIs may first need to focus on their own learning in order to equip themselves with the teaching skills needed to shift their focus more directly onto student learning. In this way then, a focus on learning - which was indeed an important characteristic of a fully functioning PLC (Dogan et al., 2016) - functioned differently for GSIs than for K-12 educators in the sense that there was a stronger emphasis on (and need for) instructor learning that likely results from a difference in teaching expertise.

Similarly, the shared vision was the other key PLC characteristic that took on a unique role in this study's context. Scholars agree that there must be a shared vision for there to even be a PLC - hence why it is a key characteristic (Bolam et al., 2005; Lomos et al., 2011; Stoll et al., 2006). The theory behind this is that the shared vision is necessary because it functions as a uniting force that anchors group efforts in a common understanding of PLC goals (Bolam et al., 2005; Lomos et al., 2011; Louis et al., 1995; Stoll et al., 2006). In this study, the PLC did have a vision (i.e., Figure 1) and it was "shared" - all GSIs agreed on it and had a hand in creating it. It was also unifying. The process of creating the shared vision functioned as a community-building

activity that facilitated relatedness amongst GSIs. It shifted perceptions of individual GSIs teaching their separate sections to that of a more unified team of instructors all teaching the same course. It did not, however, function to anchor group efforts in a common understanding of PLC goals. In fact, the majority of GSIs reported being confused about the purpose of the shared vision and did not reference it beyond the meeting when it was created. In this way, the key characteristic of the shared vision was achieved, albeit imperfectly.

There may be several reasons the shared vision did not function in this PLC of GSIs as theory might suggest. One possibility is that this key characteristic has different functions in different contexts. Perhaps it has a dual purpose of both unifier and anchor in a PLC of K-12 educators but is only the former in PLCs of GSIs. Another possibility is that the process of creating the shared vision used in this study was flawed. In K12 contexts, the shared vision is often created through a collective and collaborative process (e.g., Dufour et al., 2016). For this reason, I initially believed that involving GSIs in a similar process would simultaneously develop this key characteristic and fulfill GSIs' need for a clearer purpose (Alberts & Galvin, 2022). Perhaps the shared vision could both unify GSIs and anchor PLC efforts if developed through a different, modified process.

In reflecting on these possibilities, I revisited GSI feedback from Alberts and Galvin (2022)[5] that informed the process used to create a shared vision in this study:

GSI 1: *I wasn't sure whether… is there an expectation? I guess I would have liked to know, how much of the material are we supposed to be expecting them to know when they come into class? How much are we supposed to do a lecture*

[5] Note: Although there was some overlap, the GSIs who participated in Alberts & Galvin (2022) were not necessarily the same GSIs that participated in this study. For this reason, GSIs are referred to generally here and not by pseudonyms.

about? If there was maybe some standardization about that, that would have clarified some things.

GSI 2: *Maybe even just a conversation about what this course is, just to piggyback off of what* [others] *were saying here. What is this course? What is the point of this course?*

Interviewer: *Would it be fair to say maybe that you feel like there's a little bit of an identity crisis, and you would like some support on how to, once the identity of the course is clear, how to carry out that purpose?*

GSI 2: *Yes. Thank you for finding the thought again.* (FG1,Q74)

In this exchange, GSIs are essentially inquiring about the big picture behind the course and their role in carrying it out. Importantly, GSIs are first and foremost asking for a *clear* vision here. In hindsight, the process used to create a shared vision in this study did not meet this need. It resulted in a shared vision - in the sense that GSIs all contributed and agreed upon the vision for the course - but it did not provide GSIs with a clear vision for the course. In fact, it seemed to unintentionally exacerbate their confusion and magnified their lack of control over the curriculum. Thus, an important difference between K-12 literature and this study is that in K12 contexts, similar processes resulted in a vision that was both shared and clear. In this PLC of GSIs, however, the same collective and collaborative process produced a vision that was shared but not clear.

There are a few important differences between K-12 educators and GSIs that may shed light on why the shared vision developed differently from the same process in these different contexts. The first, which was mentioned previously in relation to a focus on learning, is level of

expertise. K-12 educators are presumably better equipped to grasp the "big picture" of a course and to articulate it through a shared vision. Second, GSIs often have little control over what they teach so asking them to create a shared vision without any real agency to do so - as was the case in this study - would likely only exacerbate confusion about the task and would not clarify expectations. Of course, K-12 educators may also be constrained in their ability to shape the curriculum, but more experienced educators often know how to work within these constraints to realize their own goals. In any case, understanding the place of a shared vision in the GSI context is worth considering since creating the shared vision was found to unintentionally undermine GSIs' autonomy in this study.

Overall then, the shared vision as a key characteristic of PLCs, as well as the process used to create it, may need to be revised or reconsidered when applied to a PLC of GSIs. Specifically, the "shared" aspect of the vision which is emphasized in K12 spaces may be secondary to articulating a *clear* vision. This then has implications for how this key characteristic might be developed in a PLC of GSIs. For instance, it may work better for the facilitator to directly communicate a vision to GSIs rather than involving them in the process of creating it, especially if they do not have the ability to make changes to the curriculum. Although this may seem less autonomous, inviting GSIs to make changes when they have no real authority to do so (as was the case in this study) is even more detrimental to motivation and engagement (Wallace & Sung, 2017). Instead, it may be more beneficial for the PLC facilitator to provide a clear vision and allow space for GSIs to discuss and ask clarifying questions. Ultimately, this approach could still lead to a *shared* vision in the sense that all GSIs would still have an understanding of PLC goals, but in a way that may more appropriately considers the current expertise of its members and the constraints of a standardized curriculum. In other words, it is just as important

that GSIs understand and enforce the shared vision, but this does not necessarily mean GSIs need to self-generate the shared vision like PLCs of K-12 educators do.

Finally, collaboration and reflective inquiry and dialogue - the last two PLC characteristics - functioned similarly for both GSIs and K-12 educators. If anything, these two characteristics may have held more importance for GSIs than for K-12 educators. For example, PLC literature points to a focus on learning as the most important characteristic of PLCs of K-12 educators (e.g., Dogan et al., 2016). In this study, however, GSIs engaged more (and in more ways) in design elements that best supported collaboration and reflective inquiry and dialogue. These two characteristics were also two things that GSIs specifically asked for in Alberts and Galvin (2022) and that were often missing from other teaching development opportunities. Thus, while a focus on learning and the shared vision may be the main driving forces behind PLCs of K-12 educators, opportunities for collaboration and reflective inquiry and dialogue were more so the driving forces of this PLC of GSIs - and their engagement. Ultimately, this suggests that what existing PLC frameworks consider to be the most important characteristics of K-12 PLCs may be different in other contexts.

In terms of implications for the design of PLCs of GSIs then, findings from this study suggest that existing PLC frameworks – those used in K-12 contexts – can be adapted to design and develop PLCs of GSIs with some considerations. First, a focus on learning may require more of an emphasis on instructor learning first in a PLC of GSIs given they do not have the same teaching background and expertise as K-12 educators. Second, while a shared vision is important in both contexts, a different process may be needed to develop this key characteristic in a PLC of GSIs. Specifically, it may be more beneficial for the PLC facilitator to provide a course vision and create space for GSIs to ask clarifying questions rather than ask GSIs to self-generate a

course vision. This process may better account for GSIs' varying experience and avoid emphasizing their lack of autonomy over the curriculum in cases where it is standardized. Finally, PLCs of GSIs should include ample opportunity for collaboration and reflective inquiry and dialogue since these were emphasized by GSIs in this study as top needs related to teaching development. Future research may continue to explore to other PLC activities (besides the JIT box and POP teams) that could develop these key characteristics.

Affordances Of PLCs For Engaging GSIs

Beyond reflecting on whether PLC frameworks align with GSI teaching needs, a main aim of this study was to examine the affordances of PLCs for engaging GSIs. Perhaps the most valuable affordance of PLCs is that they are flexible and intended to evolve over time (Bolam et al., 2005; Stoll et al., 2006). This is important because extant research has specifically called for GSI teaching development opportunities that better address GSIs' needs (BrckaLorenz et al., 2020; Buskist et al., 2002; Buskist, 2013; Chew et al., 2018; Meyers & Prieto, 2000; Schwartz et al., 2020). The fact that PLCs are flexible and evolving makes them inherently responsive to GSIs' needs in ways that existing opportunities are not. This ability to be responsive is what further and uniquely positions PLCs to better engage GSIs. That is, engagement is believed to be malleable and heavily influenced by contextual factors (Appleton et al., 2008; Christenson et al., 2012; Fredricks et al., 2004) so teaching development opportunities that make space for contextual changes could be better leveraged to facilitate engagement.

Another affordance of PLCs is that they have the potential to engage GSIs in a variety of ways. The PLC in this study, for example, was successful at engaging GSIs, at relatively high levels, in three different ways - affectively, cognitively, and behaviorally. Other teaching development approaches have struggled to engage GSIs in even one way. That is, research has

found that GSIs often choose not to attend (or behaviorally engage) in existing teaching development opportunities (BrckaLorenz et al., 2020; Meyers & Prieto, 2000). The potential for PLCs to engage GSIs in multiple ways is important because engagement is often a precursor to learning (Linnenbrink-Garcia et al., 2016; Patall et al., 2022; Pekrun & Linnenbrink-Garcia, 2012) - which is the ultimate goal of teaching development. In fact, research suggests that the more ways an individual is engaged, the more likely it is to lead to learning (Pöysä et al., 2020; van Rooij et al., 2017; Schmidt et al., 2020). This means then that PLCs may be more likely to lead to actual teaching development then other teaching development opportunities because they have the potential to engage GSIs in more than one way. Future research should further explore connections between GSI engagement in PLCs and teaching development outcomes.

Although findings from this study largely support the potential of PLCs for engaging GSIs in a variety of ways, they do also illuminate several important considerations. First, not all PLC activities were equally engaging. Creating the shared vision, for example, was less engaging - specifically less cognitively engaging - than the JIT box and POP teams. This suggests that certain activities may be more facilitative of engagement than others. Second, in addition to some activities being more or less engaging relative to others, there were also differences between individual and group engagement in the PLC. For example, the majority of GSIs characterized creating the shared vision as less engaging than other activities due to a lack of autonomy. One GSI - Max (GI1,Q37) - spoke about how the shared vision was autonomy-supportive. This suggests that, at times, individual PLC members' engagement (and related attributions) deviated from that of the PLC as whole. Although examining individual members' engagement was not the goal of this study, it could be an interesting direction of future research. In K-12 contexts, some research has even constructed *profiles* of engagement, looking at how the

different engagement dimensions are present (or not) for each individual during different learning activities (Schmidt et al., 2018). Adopting such an approach to examining GSI engagement may further illuminate affordances (or limitations) of PLCs for engaging GSIs in teaching development by focusing on individual GSIs' experiences rather than the PLC as a whole.

Regardless of the grain size used to examine engagement, this study speaks to the importance of adopting a multidimensional approach. Had I only focused on attendance - or even behavioral engagement more broadly - as many studies evaluating teaching development opportunities do (BrckaLorenz et al., 2020; Meyers & Prieto, 2000), I would have missed significant and nuanced insights into how this PLC engaged GSIs and in what ways. Future research examining GSI teaching development, through PLCs or another approach, should consider outcomes beyond a single indicator of behavioral engagement. In fact, even though this study adopted the most commonly used engagement framework to examine three dimensions of engagement, there are other emerging frameworks that propose additional dimensions, such as social or agentic engagement. Social engagement, for example, refers to individuals following written and unwritten rules of behavior (e.g., interacting appropriately with others; not withdrawing or exhibiting antisocial behaviors) (Finn & Zimmer, 2012). Social engagement may be the key to explaining the different social dynamics that occurred across POP teams, specifically POP Team 2's sometimes awkward conversations. Similarly, Reeve et al. (2020), recently proposed a revised framework that adds agentic engagement as a fourth engagement dimension. Agentic engagement refers to learners taking a proactive initiative to influence their learning (Bandura, 2006, 2018; Reeve, 2013; Reeve et al., 2020). Given the connection between autonomy and engagement found in this study, considering GSIs' agentic engagement in a PLC

may be beneficial. Overall then, this study highlights the importance of using a multidimensional approach to examine teaching development opportunities beyond a single measure of engagement, and yet, it may only scratch the surface in terms of PLCs' potential for engaging GSIs. Future research should explore these expanded engagement frameworks.

Designing Engaging Teaching Development Opportunities for GSIs

In addition to examining whether GSIs engaged in the PLC or not, it is perhaps even more important to explore *why*. Understanding which factors facilitate or undermine GSI engagement has important implications for designing engaging teaching development opportunities for GSIs, including PLCs. For example, the previous section discussed how engaging GSIs in more than one way was beneficial to learning (Pöysä et al., 2020; van Rooij et al., 2017; Schmidt et al., 2020). A related question is *How does one engage GSIs in more than one way*? This study points to a five-principle motivational framework as a helpful tool for designing engaging teaching development opportunities. These five motivational principles are value, autonomy, relatedness, perceived competence, and mastery goal orientation. The fact that these principles emerged organically from GSIs' own reflections on their engagement aligns with how scholars characterize the relation between motivation and engagement. For example, engagement is commonly conceptualized as the embodiment of motivation (Linnenbrink-Garcia et al., 2016). This suggests that anywhere engagement is present, so too is underlying motivation. This same pattern was observed in this study - GSIs' reflections on their engagement reports revealed an underlying connection to motivation.

Further, there are other theoretical and conceptual links between the five motivational principles and three dimensions of engagement. Value, for example, is conceptually similar to cognitive engagement. Value is an individual's answer to "Why should I do this task?" and is

closely related to relevance (Eccles & Wigfield, 2002; Linnenbrink-Garcia et al., 2016; Patall et al., 2022). In other words, an individual is more likely to perceive a task as valuable if it is personally relevant. Cognitive engagement refers to psychological effort and research shows that individuals are more likely to give this effort if they believe a task is valuable or important (Finn & Zimmer, 2012; Fredricks et al., 2004; Sinatra et al., 2015). In this way, there is a theoretical link between value and cognitive engagement such that if an activity emphasizes relevance, then an individual is more likely to perceive it as valuable; and because the individual finds it valuable, they are more likely to cognitively engage. This was the case in this study - the PLC spaces that supported value (i.e., the JIT box and for POP Teams 1 & 3) were also found to be more cognitively engaging compared to spaces that undermined value (creating a shared vision; POP Team 2).

Interestingly, this same pattern was found for autonomy and cognitive engagement. Spaces that supported autonomy (i.e., POP Teams 1 & 3) were found to be more cognitively engaging compared to spaces where autonomy was undermined (creating a shared vision; POP Team 2). Autonomy refers to the feeling that one's actions align with the self and is most often supported by allowing individuals to make their own choices (Patall et al., 2022; Ryan & Deci, 2017). Given that the sam110e relation to cognitive engagement exists for both autonomy and value, along with the fact that both were supported/undermined by the same design elements, may suggest some connection between the two. For example, perhaps the freedom and choice that autonomy-supportive environments provide create opportunities for individuals to discover personal relevance and thereby perceive value. In fact, research does suggest that relevance information can be directly-communicated or self-generated (e.g., Canning & Harackiewicz, 2015) and that self-generated relevance is more beneficial for individuals with lower confidence

in their abilities. Autonomy-supportive environments may be particularly important for novice GSIs then in that they could provide GSIs enough freedom to explore and discover personal relevance which ultimately could lead to perceived value and cognitive engagement. Overall then, these findings suggest that it may be possible to cognitively engage GSIs in teaching development opportunities by designing either value- or autonomy-supportive activities. While the former may be a more direct approach, the latter may be more beneficial for a group of inexperienced GSIs.

Another, different pattern was found between relatedness and affective engagement. Relatedness refers to how connected an individual feels to others (Leary & Allen, 2011; Patall et al., 2022), while affective engagement is most often conceptualized as emotions (both positive and negative) (Fredricks et al., 2004; Sinatra et al., 2015). It makes sense that feeling a connection to others or not (relatedness) would facilitate positive or negative emotions (affective engagement) respectively. Again, that seemed to be the case in this study. PLC spaces that supported relatedness (i.e., creating a shared vision, the JIT box, and POP Teams 1 & 3) were found to be more affectively engaging compared to spaces where relatedness was undermined (e.g., POP Team 2). Although GSIs' reflections did suggest they felt a sense of connection or belonging (see quote GI3,Q50), they more frequently spoke about *enjoying* certain design elements. This may be because enjoyment, a common emotion, is more salient and identifiable than a deeper sense of connection. Indeed, GSIs would often say they enjoyed a design element and then give an example that was indicative of relatedness (e.g., GI3,Q73). These findings, therefore, suggest a link between relatedness and affective engagement.

It was more difficult to tease out potential relationships between perceived competence and mastery goal orientation and specific engagement dimensions and one reason for this is

because they appeared less often in the data. However, where evidence of these two principles was present - like the JIT box and for POP Teams 1 and 3 - value and relatedness were also present. Theoretically, this aligns. For example, perceived competence refers to an individuals' self-assessments of their capability for succeeding at a given task (Linnenbrink-Garcia et al., 2016) and mastery goal orientation refers to the belief that one can improve with effort (Dweck, 1999). Fundamentally then, both these constructs are self-perceptions (of competence or orientation toward goals). It makes sense that value would need to be present for these two principles to be influenced. That is, unless a task is viewed as being relevant to the self then it would not be meaningful enough to influence an individual's self-perceptions. Additionally, self-perceptions are often sourced through others (e.g., through vicarious experiences, normalizing failure, encouragement) (Linnenbrink-Garcia et al., 2016; Patall et al., 2022). It also makes sense then that relatedness would be an important factor tied to perceived competence and mastery goal orientation. This idea that value and relatedness function almost as prerequisites for perceived competence and mastery goal orientation is supported by findings from this study. Indeed, evidence for perceived competence and mastery goal orientation was only present in the JIT box and for POP Teams 1 and 3 - all spaces that also supported value and relatedness. Neither perceived competence nor mastery goal orientation were present for POP Team 2 - and neither was value nor relatedness. Interestingly, creating the shared vision was the one design element that supported relatedness but not value, yet there was still no evidence for perceived competence nor mastery goal orientation. This could point to value specifically playing a key role, maybe even more than relatedness, in supporting perceived competence and mastery goal orientation. Again, it makes sense that even if relatedness is providing sources of these self-perceptions through connections to others, individuals may not pay attention to that information

if it is not first made personally relevant. In this way, value - in addition to supporting cognitive engagement - may also function to support other motivational principles. Specifically, value may encourage individuals' receptiveness to other motivational principles by helping them make personal and meaningful connections to the activity at hand.

An important caveat related to this discussion is that there were exceptions to some of the patterns and ideas presented thus far. For example, the POP teams, which provided significant opportunities for choice, were only autonomy-supportive for POP Teams 1 and 3. Autonomy was undermined for POP Team 2 despite the opportunity to choose their own problem of practice. This may be attributable to the fact that this team chose a problem of practice that they could not easily examine. In a sense then, this created a paradox surrounding autonomy in that GSIs were free to choose their problem of practice, which also opened them up to making the wrong choice. This paradox has been found in other research as well. For example, Wallace & Sung (2017) found that choice was only autonomy-supportive in non-threatening contexts. A threatening context could be one where expectations are not clear, there is the possibility of making a wrong choice, fear of failure, etc. Whether or not POP teams were a threatening context hinged on each team's problem of practice choice. Because POP Teams 1 and 3 chose a problem of practice that could easily be explored, their POP team environments were non-threatening and autonomy-supportive. That is, expectations matched their ability. POP Team 2, on the other hand, chose a problem of practice that was not easily explored. They essentially made a choice that made it difficult for them to succeed; expectations did match up with the actions they could take as a result of their choice. For POP Team 2, their choice may have felt less free because it ultimately was a determinant of success. In other words, there may not have been a "right" choice when it came to choosing problems of practice, but there were "wrong"

choices. As another example, GSIs found value in certain activities for different reasons. The JIT box was valuable to novice GSIs as a source of advice. It was valuable for experienced GSIs, however, as an opportunity to help others. Together, these two examples illustrate how the same activity can be differentially supportive of motivation (and likely engagement) for different individuals. This ultimately speaks to the importance of considering context in the design of PLCs or other teaching development opportunities for GSIs.

In summary, conceptualizing engagement as the embodiment of motivation may be a helpful approach to designing engaging teaching development opportunities for GSIs as there are established frameworks - like the one from this study (Linnenbrink-Garcia et al., 2016; Patall et al., 2022) - that researchers can use as tools to intentionally design motivationally-supportive environments that in turn support engagement. These frameworks could be applied to developing PLCs of GSIs or more broadly to the design of GSI teaching development opportunities. Another takeaway is that, in general, findings from this study suggest that the more motivational principles an environment supports, the more likely it will facilitate engagement. Researchers and/or PLC facilitators may aim to support as many of the five motivational principles as possible to increase the likelihood that GSIs will engage in a variety of ways. Engaging GSIs in a variety of ways is in turn more likely to lead to learning (Pöysä et al., 2020; van Rooij et al., 2017; Schmidt et al., 2020). There was also some initial evidence of connections between specific motivational principles and dimensions of engagement. While more research is certainly needed to further explore these potential connections, they are exciting in that they may allow researchers and/or PLC facilitators to adopt a more targeted approach to supporting specific engagement dimensions. Given that PLCs are highly flexible, PLC facilitators could use information to respond to GSIs' needs and continue to evolve the PLC beyond its initial design.

Finally, both motivation and engagement are heavily context-dependent (Linnenbrink-Garcia et al., 2016 or Patall et al., 2022) and so it is important for researchers and PLC facilitators to know their learners and their context, as well as to remember that the same environment may have different effects on individuals' motivation and engagement. This further highlights the importance of looking beyond one measure (e.g., attendance) and instead taking a multidimensional approach to designing and examining teaching development opportunities - including PLCs - for GSIs.

Limitations & Delimitations

There were several limitations and delimitations of this study. First, as a result of ongoing concerns around the COVID-19 pandemic, all PLC meetings were held virtually and most GSIs were also teaching online in different modalities. Although research suggests that online PLC meetings function similarly to in-person meetings (Macdonald & Poniatowska, 2011), some of the PLC design elements from this study may have worked differently in person. For example, several GSIs spoke about how they enjoyed the POP teams because they provided opportunities to socialize with other instructors. On one hand, meeting in-person could elevate social interactions and make POP teams even more engaging. On the other hand, whether in-person or online, POP teams may not be as engaging outside of pandemic times as GSIs may have a wider variety of opportunities to fulfill their need for social connection. Similarly, the JIT box could work differently online vs in-person. Indeed, GSIs often asked and discussed vulnerable questions. It may have been easier for them to be vulnerable in an online space than if they had been sitting face-to-face in a room with their peers and supervisor. Future research could explore whether these activities work the same or differently both in-person or during non-pandemic times.

Second, this study did not look at individual GSIs' engagement in the PLC. Although GSIs responded to exit tickets individually, they were anonymous. For this reason, it was impossible to track any given GSIs' engagement across PLC meetings. This in turn made it impossible to determine if the same GSIs, for example, were consistently reporting lower engagement or if it was different GSIs. While a limitation, anonymous exit tickets were both intentional and critical to the study's success. Given my role as supervisor, I do not believe I would have gotten the data I did if I had asked GSIs to identify themselves on the exit tickets. Doing so would also raise ethical concerns. A direction for future research may be to examine individual GSIs' trajectories - or even profiles - of engagement in the PLC.

Finally, this study focused on the most commonly used framework for engagement consisting of three dimensions: affective, behavioral, and cognitive. There are, however, other emerging engagement frameworks that propose additional dimensions of engagement, such as social or agentic engagement. As discussed above, examining these additional dimensions may have been beneficial in explaining certain findings (e.g., why POP Team 2's experience was so different from that of POP Teams 1 and 3). These expanded frameworks could be explored in future research.

Conclusion

The broad purpose of this study was to explore PLCs as an innovative solution to the challenge of GSI teaching development. As an initial step towards this aim, this study focused on the development of a PLC and its potential for engaging GSIs. Overall, this research supports the idea that a PLC of GSIs is a viable solution to this challenge and that PLCs may even be inherently and uniquely situated to address the limitations of existing teaching development opportunities. Indeed, PLC conceptual frameworks and key characteristics align with what

literature and GSI feedback (at least in this context) suggest GSIs want and need. Further, findings from this study show that PLCs have the potential to engage GSIs in multiple ways and beyond behavioral engagement (e.g., attendance). In fact, this study suggests that if designed intentionally to support five important motivational principles (value, autonomy, relatedness, perceived competence, and mastery goal orientation), PLCs have the potential to engage GSIs behaviorally, cognitively, and affectively - all of which are individually and synergistically important intermediaries to learning (Linnenbrink-Garcia et al., 2016; Patall et al., 2022; Pekrun & Linnenbrink-Garcia, 2012). Although more research is needed to explore whether PLCs can support GSIs teaching development in terms of improving instruction, this research serves as a starting point and offers a new approach to an old challenge of GSI teaching development.

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APPENDIX A: SELECTED FINDINGS FROM ALBERTS & GALVIN (2022)

Section 1: Findings Related To A Lack of Teaching Development
"Especially a first semester going into this stuff. Again, this goes back to the inexperience thing. You go right in there, and it's like, what are we—what's happening to prepare you for this? Nothing is happening."
"Realizing that most teachers probably don't have—or most [course] teachers don't come in with a lot of teaching experience. That kind of stuff, it is scary when you first start teaching. I remember being scared about that when I first started teaching, too, and all other kinds of stuff like that. PDs on how do—what do you do in those type of situations? Not just, "How do you engage your students?" but what do you do if you're sitting up there frozen 'cause some student asks you a question and you don't know what to do."
"The incoming TA training thing that's for all of the grad students, I did that last year because my advisor recommended that I take it. They had this whole section on boundaries between students and instructors. I thought that was really helpful. There wasn't really as much about building relationships in the first place. "
"Yeah, that sounds right based on the training that we get in our program. We don't learn how to teach or learn. We learn ed psych concepts. If TE Ph.D. students were teaching this course, I would expect the opposite, maybe, that they'd be more confident in their pedagogical skills and not as much in the context."
"I got thrown into it, and I was sweating bullets that first day. I had no idea what I was doing, so being able to be shown at least someone else's tactics would be very, very helpful."
"For somebody—I can speak to my own experience—coming from computer science, no teaching background whatsoever, that's nerve-wracking to be in that situation and have to compose what this new relationship looks like with zero training."
Section 2: Findings Related To Devaluing Teaching Development
[In response to a question about obstacles to teaching development] GSI 1: "I would just say financial." GSI 2:"I'll say a different resource is your time." GSI 3: "I was gonna say that too." GSI 2: "That's the main resource, right?"

“Since I know people's time is really valuable, I am wondering to what extent we can do some of this communication asynchronously, like if you have an idea for an activity—”
“I think I would say [teaching development should be] strictly optional because I know that they're not gonna pay for training, so definitely 100 percent optional.”
[In response to a question about whether or not GSIs have a responsibility to develop as teachers.] GSI 1: “Not as a requirement. They're not teachers.” GSI 2: “They are TAs, so I think, yes, they're teachers, but I don't think that they should be required to have training. I do think that, if it's your first time, you should do the coteaching. I think that that should be—I don't think training should be required. I think that coteaching should be required your first time.” GSI 3: “I was just gonna say, I think people have different priorities of what they want out of teaching, so that's why it's more highly encouraged to be optional instead of required.”
[In response to a question about supporting GSI’s teaching development] “Yeah, it's tough 'cause it's not—this isn't a teaching program, really. That's not why we came to this program.”
[In response to a question about supporting GSI’s teaching development] “That's generally not students' focus in this program. They want to be good teachers, but they're not—we're not in a TE program for a reason. We're in an ed psych/ed tech program for a reason too.”
“Again, paid or optional, not built into something that the instructors already have to do, not adding something to what they're already getting paid for.”
Section 3: Findings Related To A Shared Vision Focused on Student Learning
“I think that one of the things that I struggle with is what is this course? Maybe that was just me first coming into it thinking like, oh, I'm gonna learn what teaching is like. Maybe that's unfair. Is there another TE course that is like, this is what teaching is like, or is that not until the second year? “
“What is this course? What is the point of this course?”
“...having a conversation with the students like, this is what this course is. If it's the first TE course that students take, I think it would be cool if it said something about what being a teacher is, so they're not blindsided in their second year.”

Section 4: Findings Related To A Desire for Reflective Dialogue
“...get exposure to real-life scenarios in real time, trying to set it up so that students or TAs get to see more experienced TAs manage a tricky situation and make pedagogical moves or present tricky content is really one of the best ways to do it. I don’t know if a lot of other formal PD works as well as that type of student teaching-style experience.”
“PDs on how do—what do you do in those type of situations? Not just, "How do you engage your students?" but what do you do if you're sitting up there frozen 'cause some student asks you a question and you don't know what to do.”
“I was also hoping that we could spend our biweekly or monthly meeting time to share how—safely share what problems you encountered last classes or—and then just ask other instructors, "How you would tackle this? How do you respond to this?"
“I was hoping that maybe we can share our experience in the classroom and then try to solve the problem together. Then also, with the materials, academic or—with the materials, I think that that's a really good discussion subject for the weekly meeting or monthly meeting.”
“...we’ve all had some situations with certain students where you’re just like, “I don’t know what to do right now. I don’t know what’s okay to do as a person in my position. I don’t know what I should be saying, what I shouldn’t.” I think those are the things that—and you can’t predict those.”
“They’re all unique, but if there was a way to help prepare students and give them maybe an explicit unique example of like, “Here’s a student who has this problem or is communicating with you in this way. How would you handle it? Here’s how you could.”
“...just have scenarios or practice case studies where you practice brainstorming how to handle different situations and what your options might be.”
“...learning about the application in real time can be really challenging, so even if you have a few good strategies in your pocket, knowing when to pull them out of your pocket [laughter] and how to implement them can be tricky, so even if you feel super prepared knowledge-wise, when it comes to pedagogy, doesn’t always play out that way.”
Section 5: Findings Related to GSIs’ Desire to Collaborate
... I think that showing, if there were to be these meetings where people show off what they're doing, it might be more exciting to see someone else have a cool project instead of just a lecture. That could be more exciting.”
“...the fact, if you can be mentored by someone first just so you have experience of someone else teaching. You can see how they approach certain topics, help with the grading initially,

and then have that—do that during your first semester, and then in second semester, maybe be on your own.”
“I think that this—we could do something like the collaborative professional development where we're all sharing our ideas.”
“I would be okay with the meetings if I felt like they were more collaborative. Yeah. If it felt like it was more like a conversation than like, I don't know, here's a bunch of stuff. Like, here's an agenda. We're gonna read some stuff.”
“Also, a lot of people in the program have been teachers. Maybe just drawing on people's knowledge that they already have or in research that they're already doing.”
“I think that some advice—and this would probably be just one of these collaborative sessions that we have with the TAs where we talk about our teaching strategy. “
“..., just having someone who has a little bit more experience just show off what they do or what they would do in a classroom could help a lot.”
“...having something where people like, "Hey, I thought about this," and then maybe the group can iterate over the idea. Someone's like, "I don't know what to do," and someone has this really cool idea…”

APPENDIX B: ACTION RESEARCH CYCLE

Figure 3. *Diagram*[6] *Depicting The Phases Of Action Research Carried Out In This Study*

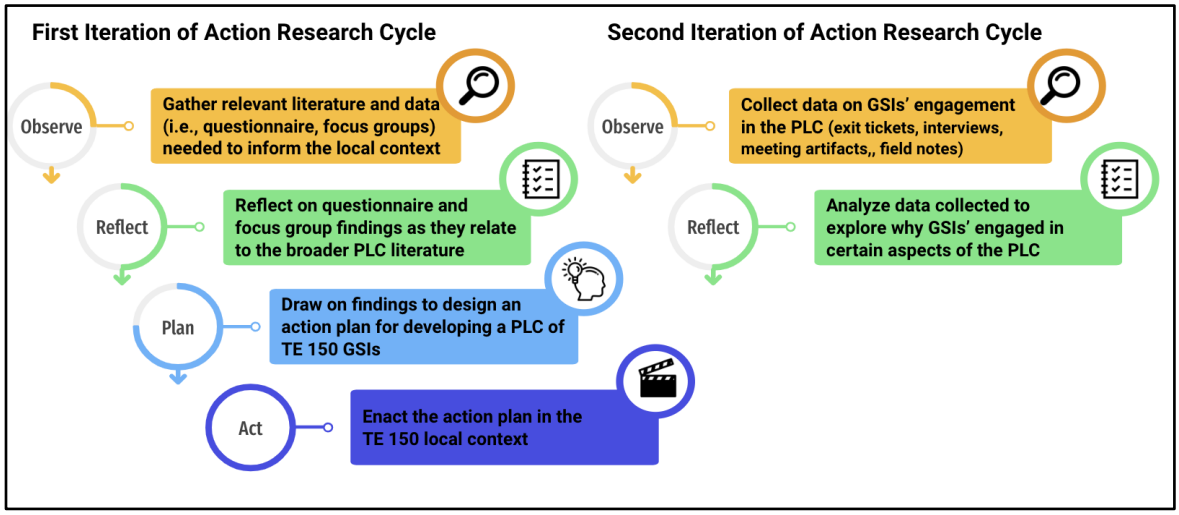


Figure 4. *Timeline Of The Phases Of Action Research Carried Out As Part of This Research*

Phase	Definition According to O'Leary's (2004) Model	Present Study	Timeline
Observe	Collect relevant information and data	Gather relevant literature and data (i.e., questionnaire, focus groups) needed to inform the local context	Summer & Fall 2021
Reflect	Critically reflect on the data collected	Reflect on questionnaire and focus group findings as they relate to the broader PLC literature	Summer & Fall 2021
Plan	Create a strategic action plan informed by data and reflection	Draw on findings to design an action plan for developing a PLC of TE 150 GSIs	Fall 2021
Act	Implement the strategic action plan	Enact the action plan in the TE 150 local context	Spring 2022
Observe	Collect relevant information and data	Collect data on GSIs' engagement in the PLC (exit tickets, interviews, meeting artifacts, field notes)	Spring 2022
Reflect	Critically reflect on the data collected	Analyze data to explore why GSIs' engaged in certain aspects of the PLC	Spring 2022 and beyond

[6] Diagram created using Slidesgo and Freepik

APPENDIX C: DEMOGRAPHIC QUESTIONNAIRE

Section 1: Demographic Information

1. Please indicate your gender identity:
    - Man
    - Woman
    - Non-binary/Third Gender
    - Prefer to self-describe: _____

2. In terms of racial/ethnic group, I consider myself to be (check all that apply):
    - African American or Black
    - Asian, Pacific Islander, or Asian-American
    - European American or White (non-Hispanic) or Caucasian
    - Hispanic or Latino/a
    - Native American
    - Prefer to self-describe: _____

Section 2: Teaching Background

1. How many total years of teaching experience do you have? Please explain below.
2. In what settings do you have teaching experience? Check all that apply.
    - Face-to-face
    - Hybrid
    - Online Synchronous
    - Online Asynchronous
    - Other: _____
3. Which groups of students do you have experience teaching? Check all that apply.
    - PhD Students
    - Master's Students
    - Undergraduate Students
    - High school (K-12)
    - Middle School (K-12)
    - Elementary School (K-12)
    - Special Education
    - Other: _____
4. Have you received formal training or do you have formal experience as a K-12 educator?
    - Yes

- No
- Other: _____

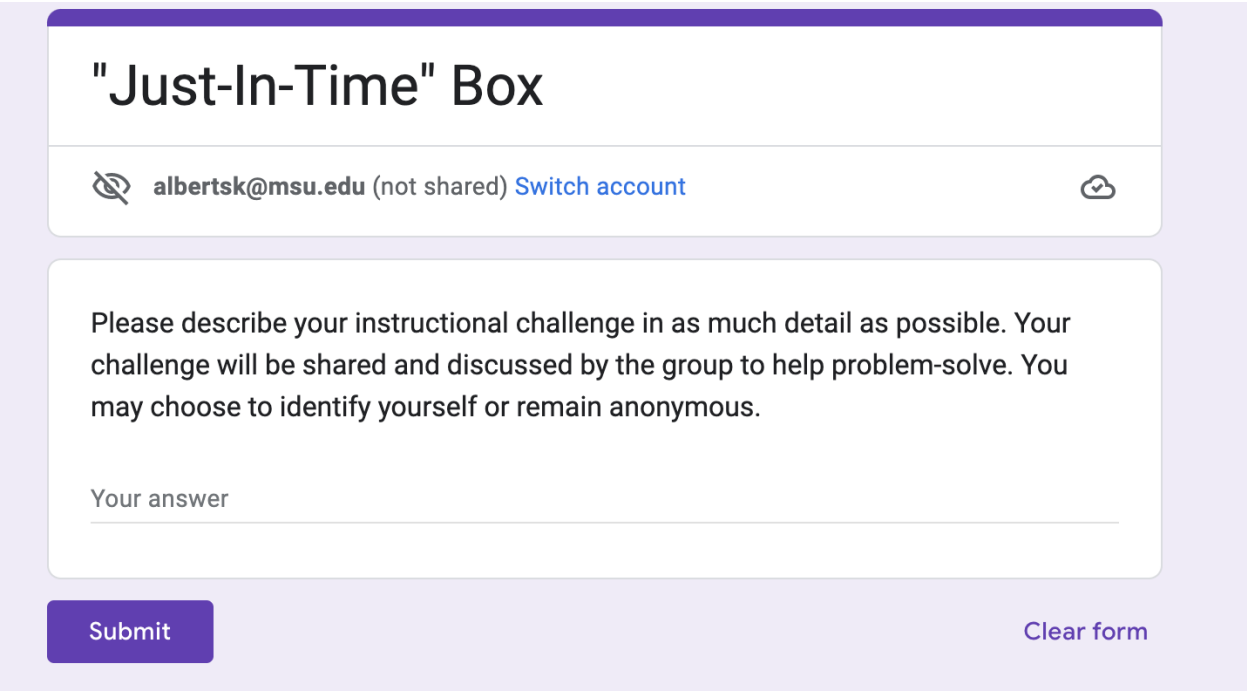
5. If you answered "yes" to the previous question, what formal training or experience did you receive?

Section 3: Teacher Training

6. Which of the following teaching development opportunities have you participated in? Check all that apply.
   - K-12 professional development (in school)
   - K-12 professional development facilitated outside of a K-12 school (e.g., university or outside program offered to K-12 educators)
   - Required university-wide teaching assistant training
   - MSU's Graduate School Teaching Workshops (Lunch & Learn, teaching assistant training, etc.)
   - Online workshops/modules (e.g., MAET or DISC workshops)
   - Teaching Seminar Course
   - Other teaching development opportunity: _____
7. Please explain your answers from above.
8. What did you like about these teaching development opportunities?
9. What didn't you like or what could be improved?

APPENDIX D: JIT BOX SUBMISSION FORM

Figure 5. *Just-In-Time Box Submission Box*



APPENDIX E: POP TEAM NOTE SHEET

Figure 6. *Example POP Team Note Sheet*

Meeting 5 Guiding Questions
● What is your POP? ● How is your POP related to the shared vision? ● How does your problem of practice relate to student learning? ● Brainstorm ways of addressing problem of practice: ● What action items will you be trying in your class to address the POP?
Meeting 6 Guiding Questions
● Have you done anything between now and the last meeting to address your POP? ● How did it go? ● What action items will you be trying in your class over the next week to further address the POP?
Meeting 7 Guiding Questions
● Have you done anything between now and the last meeting to address your POP? ● How did it go? ● What are the takeaway ideas from examining this POP in your class?

APPENDIX F: SHARED VISION QUESTIONNAIRE

- Rank each idea in order of how important it is that students learn this in TE 150
  Scale: *1 = Most Important, 5 = Least Important*
    - Use this box to provide any comments regarding your rankings
- Rate how much you know about how to reinforce each idea in your section.
  Scale: *1(I don't know a lot about this), 3 (I know a little about this), 5 (I already know a lot about this)*
    - Use this box to provide any comments regarding your ratings
- Rate your desire to learn more about how to reinforce these ideas in your section
  Scale: *1 (No desire) - 5 (Strong desire)*
    - Use this box to provide any comments regarding your ratings
- Do you feel like the shared vision represents the goals of our course? Please explain.
- In what ways, if any, was participating in the development of a shared vision helpful to you as an instructor?

APPENDIX G: EXIT TICKET SURVEY

6-point Likert scale (1 = *Not at all true*, 6 = *Very true*)

Behavioral Engagement Items

- I participated during today's session
- I paid attention during today's session

Cognitive Engagement Items

- Today's session was important to me
- Today's session was meaningful to me

Affective Engagement Items

- I enjoyed today's session
- I was interested in today's session

APPENDIX H: FACILITATOR FIELD NOTE SHEET

Figure 7. *Facilitator Note Sheet*

Session Purpose:	
A Focus on Learning	
Collaboration	
Shared Vision	
Reflective Dialogue	
Behavioral Engagement	
Cognitive Engagement	
Affective Engagement	
Other Observations:	
Memo:	

APPENDIX I: GROUP INTERVIEW GUIDE

Theme	Questions
Consent	Thank you all for participating today. I will first read and record a statement of participant consent as a record of your consent to participate in this study. You have also been provided with an electronic copy of the consent form VIA email. [Insert Consent Form Text Here] If you have any questions or concerns about the study, please contact Kimberly Alberts at albertsk@msu.edu. Please use the link in the chat to indicate that you consent to continue with this focus group. **If there are no additional questions or concerns, then I would like to ask for permission to record this focus group.** ● **If you agree to video recording, could you please type "yes" in the Zoom chat.** ● **Thank you everyone for agreeing to record. We will start recording now.**
Engagement Framework	*We spent our time together this semester on 3 broad focus areas - the shared vision, JIT box, and POP teams…* ● Were any of these focus areas to be more useful or important to you? (cognitive) ● Were any of these focus areas more interesting or enjoyable to you? (affective) *For this next question, I want to remind you that I am not asking as your supervisor, but rather trying to figure out what kinds of focus areas are most engaging for GSIs. So with that in mind…* ● Were there certain aspects of this work that you gave more effort to than others? (behavioral)
Shared Vision	*Now that we talked broadly about all three, I want to switch focus and ask a series of questions about each focus area, starting with the shared vision. This is the first thing that we did to try to frame the semester…* ● What was this process like? [*probe based on answer to previous questions*: ● You mentioned it was/wasn't important. Why is that? ● You mentioned it was/wasn't enjoyable. Can you say more about that? ● You mentioned you did/didn't feel it was worth the effort. Why is that?

	● Are there ways I could structure this focus area differently in the future to make it feel more important, enjoyable, and worth some investment of effort?]
JIT Box	*Moving to the JIT box…* ● What did you think of adding the JIT box to the beginning of each meeting? [*probe based on answer to previous questions*: ● You mentioned it was/wasn't important. Why is that? ● You mentioned it was/wasn't enjoyable. Can you say more about that? ● You mentioned you did/didn't feel it was worth the effort. Why is that ● Are there ways I could structure this focus area differently in the future to make it feel more important, enjoyable, and worth some investment of effort?]
POP Teams	*Now thinking about the work you did in your POP teams…* ● What inspired your team's problem of practice? ● Why was it important to you to investigate this problem? [*probe based on answer to previous questions*: ● You mentioned it was/wasn't important. Why is that? ● You mentioned it was/wasn't enjoyable. Can you say more about that? ● You mentioned you did/didn't feel it was worth the effort. Why is that ● Are there ways I could structure this focus area differently in the future to make it feel more important, enjoyable, and worth some investment of effort? ● Tell me about how your problem of practice relates to the shared vision from the first few meetings? ● Tell me about how your problem of practice relates to student learning?] ● How would you characterize your engagement in exploring your team's problem of practice? ○ Was there anything that prevented you from engaging in the way you wanted to?
Perceptions of Participating in the PLC	As you know, I am interested in building a sustainable professional learning community for GSIs: ● Did you feel like you were part of a professional learning community this semester? ● In what ways do you think we moved toward this goal? ● In what ways, didn't we? Or, what else might help me grow an engaging and meaningful learning community?
Feedback	● Before we end the interview, is there anything else you would like to add?

APPENDIX J: SELECTED QUALITATIVE DATA

Below are all the quotes used in this study organized in order by section. All quotes are labeled using a consistent naming convention: The first part of the naming convention indicates the data source (e.g., MT1 = Meeting Transcript 1; A2 = Artifact 2; GI1 = Group Interview 1) and the second part is a numbering system (Q1 = Quote 1; Q2 = Quote 2).

Chapter 4: Findings **Section: Evidence of PLC Key Characteristics**	
Andrea:	*One thing that I've thought about, which is not specific to any of the units but for me, a goal, is to get the students in the course to be more critical thinkers. And so, to take a reading and not just read it as, oh, this is the only viewpoint on this issue…But that's sort of a vision I have for [this course] is using the information, but also, critically examining some of the theories. Right? And so, that's a piece in the content of talking about weird research that it's all white and European industrialized, rich nations, that sort of thing….Yeah. I mean, I really feel like if we can have the students feel empowered to be like, "Hey, why are you doing it that way?" And to question how they're being taught as students. Right? We'll then have them hone those critical skills as learners. Right?* (MT1,Q1).
Anonymous JIT Box Submission	*I've had quite a few students in the past two weeks write on learning styles with the assumption that learning styles is still a broadly accepted theory in educational psychology. While last semester there were a handful who were under this assumption, I had to confront this assumption with about 8 students in the past two weeks. I currently link the Wikipedia article on learning styles and direct students to the opening paragraph and the "criticisms" section for evidence against learning styles. Are there other ways to approach this? And where might this belief in the theory of learning styles come from?* (A2,Q2).
Facilitator: Wes: Max: Wes:	*We were wondering if anyone else knew of any other resources besides the Writing Center? Because Max and I kind of looked for a minute because like he was saying, we tend to be pretty supportive and hands on in a lot of revisions, but a lot of other professors will not do that at all. So, we were hoping we'd be able to provide the student with something a little more sustainable, but the Writing Center has always been my go-to, and he didn't seem to have a good experience. So, we were hoping others knew of other resources…?* *Max, you said this is a first-year student, is that correct?* *Yep.*

	Okay. I'm trying to imagine who this person is and what's in their head and I'm wondering... so, you're getting these suggestions, maybe it's not one thing to do, but it's a combination of different things. And maybe one of the things is this is their first year and this is their first time where, I don't know, maybe they're putting… *I'm not looking at the work. So, I don't know if it's impeding what they're trying to show their learning or if some of it is self-imposed where they're worried about being perfect when perfect writing is not needed. But I'm thinking if one of the ways that maybe you can ease the person into self-help, is to say, "Tell me your one biggest thing. And this is this thing I will quickly look through, and the rest you need to use this checklist for or Grammarly for or whatever for." And so, then you're giving them some sort of transition where it's like, they want handholding. You say, "I'll hold one finger. You got to do the rest." And then hopefully, over the next few weeks, they can transition to be more self-sufficient.*
Max:	*I like that. That's a good bit. Yeah, no, I appreciate that. Thanks, Wes.*
Andrea:	*My other suggestion, I sometimes did back when I was teaching English language arts was to tell students to record their voices. Because sometimes it's easier to like have verbal command of English versus written English. And so, I would say, "Record yourself speaking, and then play it back and then type up what you said." Or they could do Zoom even and record themselves with the closed captions and then it would already be typed up and then they could edit that.*
Max:	*Yeah. Thanks. Yeah.*
Facilitator:	*Any other suggestions or comments?*
Lilly:	*I don't know if it would be... Would it be helpful maybe to have an example paper? Not as if this is what you're supposed to do, but here's what students have done in the past because sometimes it's like, "I don't know where to start with this." So, I don't know that could help.*
Beth:	*I think in addition to that, Lilly, having an exemplar.*
Max:	*Yeah.*
Beth:	*The student might need some sentence starters or just kind of a loose outline. So, at least they know how to, maybe, properly format it so they can use that similar format for the other parts of the prompt…* (MT2,Q3)

Jun:	*We talked about our audience, at least for me, most semesters my classes, they're only about half TE students, the rest they come from all the backgrounds. And so when we... Even just describe the concepts maybe in the Ed Psych sections focusing less specifically on education even though this is a TE course, might get people to think about the concepts more flexible. I think Wes mentioned that too, kids get caught up thinking of this, like, "Oh, is this a teaching concept?" Even though it could be used in management leadership in general.* (MT1,Q4)
Kate:	*...I just want to share my experience with my class. We talked about critical race theory, and we tried to look at the theory with an educational psychology lens because this is actually from the law field. We basically read together articles about CRT and I had the base groups so they can teach each other based on what they read. And then we had a discussion time. They had very brief notes about what they talked about in the base groups. I actually really want to come up with action items, like what are you going to do after you know all this? But it was my fault. I was really bad for time management because I was so excited about talking about this.* (MT7,Q5)
Chapter 4: Findings **Section: RQ1: In what ways did GSIs' engage in the different PLC design elements?**	
Kate:	*I think I did understand what we were doing when we were given a task. So, every two weeks or three weeks, when you give a direction,* ***I knew what we were doing, but I didn't know what's the end goal****.* (GI1,Q6)
Lilly:	*So I enjoyed the activity, but I feel like in terms of relevance to how I'm teaching now, or perhaps it's something that I could go back to, but* ***I'm just like a little bit unclear about the purpose of it and what role it plays in future instruction****.* (GI3,Q7)
Sophie:	*I* ***kind of recognized it [the shared vision] as something that was maybe more team building and community building****. We were all engaging with coming together to view the course the same way and I was just thinking of it as something that would be going to immediately change what we were teaching, more as just shape our group attitude or yeah, the mindset that we would all be bringing to what we would be helping direct our students to focus on, in the content that was already there….* (GI1,Q8)
Beth:	***I think the just in time box was more enjoyable*** [than the shared vision or POP Teams] *in the sense that I didn't always have the same issue that someone was having, but I felt that it was really practical.* (GI2,Q9)
Max:	*I tried to spend more time with the Just In Time box because that was* ***so personal and interesting****...* (GI1,Q10)

Andrea:	*I liked the Just In Time box because I thought it was like really... **We had really interesting discussions** around some of those questions as a whole group.* (GI3,Q11)
Max:	*...**having that kind of backstop was hugely helpful** and then to be able to have everyone as a resource for answering those questions. It was really fucking cool to be able to have that and everyone helped. **Everyone was a huge help** with my just in time box that question, so I really appreciated that.* (GI1,Q12)
Lilly:	*I will say that the Just In Time Boxes, **the questions were also just really useful** because I never, I don't know, it was just so cool to like bring up a problem and then just have everybody brainstorm together.* (GI3,Q13)
Sophie:	*Okay. So, **I felt really wanted to put a lot of effort in when we were doing the just in time box** because it felt, the immediate relevancy was obvious like, "Oh yeah, I'm helping somebody with a problem or something that they've been thinking about that they're using right now." So, that felt important and I was inspired to give, I wanted to give a lot of effort to that one…* (GI1,Q14)
Max:	***I tried to spend more time with the Just-In-Time box** because that was so personal and interesting and yeah, it felt more like group problem solving.* (GI1,Q15)
Kate:	*I wanted to spend more time on the pop teams because the depth of the conversation kind of goes too deeper, but then we have a limited time. **So, it always kind of gives me the feeling that, "Oh, I wish I had more time."** Or we kind of start this earlier so we can kind of apply what we discussed to the classroom.* (GI1,Q16)
Sophie:	*Well, I really enjoyed our pop group conversations. So personally, I feel like that was really effective for me, but **I don't know if we really had enough time** to make too many changes based off of it.* (GI1,Q17)
Lilly:	*I really enjoyed the Pop Team meetings because I felt that they were very generative in terms of coming up with ideas for practice. **And in the future, when we're teaching** **[this course]** **in the future.** And I felt that we were really able to come up with some good strategies and to reflect on things that we were implementing as we were implementing them. So to me, that was really useful. **And I feel like I walked away from it with a clearer idea of what I would do in the future.*** (GI3,Q18)
Kate:	*I mean, I tried to apply some of the topics we discuss in the pop teams in the class, but it just takes a lot of time… thinking about our POP help me to, or*

	develop the kind of mindset as an instructor*, what kind of things do we have to always thinking about as an instructor. Yeah, in that way it helps.* (GI1,Q19)
Lilly:	*It felt like we had a cool balance of like reflecting on stuff that has worked in the past and then coming up with ideas for what to do in the future. Like that just felt really exciting because I feel like in our last one or two meetings, we were just kind of like riffing off of each other in terms of like just cool things to try. And that felt very energizing and exciting to do.* (GI3,Q20)
Andrea:	*I think it's, I wish we had more time together to talk about our teaching and how to improve our practice. I think it's super, super important and I wish that we had more time as grad students to like do this work. So that's, I just agree with Lilly like, it was really nice to have that space where we knew we could come together on a regular basis during the semester to talk about these things. I wish we had more of it, honestly. Like, I'd be happy if this was all I did. You guys know that. But yeah, so I've always been a lot more, right. So, but yeah, that would be my only thought, I loved it so much I would like to do it way more.* (GI3,Q21)
Sabrina:	*I think one thing I enjoyed about the Pop Team is that we kind of think about these issues or problems that we think is interesting and we find relevant in our own teaching. And kind of coming up with concrete strategies on how to deal with the problem of practice that we are interested in.* (GI3,Q22)
Sophie:	*I liked having a small group of people that I worked with regularly that made it really comfortable to kind of have more in depth conversations, as opposed to saying one thing in the large group and then making sure there was space for everybody to say something or add to it.* (GI1,Q23)
Max:	*I would just echo a lot of what's already been said about the pop teams. I like the intimacy of it, being able to just chat with just another couple other people about something. So that was very enjoyable, especially during COVID, that was so important to be able to just be able to chat with others. That was really nice.* (GI3,Q24)
Kate:	*You* [referring to Sophie and Max] *both were very inspirational for me, personally* (GI3,Q25)
Wes:	*… it just kind of felt like a thing to do…* (GI2,Q26)
Beth:	*I think the three of us we've taught this course before so we had that foundational knowledge. Perhaps this wouldn't have been possible for someone*

	who was a first year who didn't really know any problems at the time… (GI3,Q27)
Jun:	*Yeah I agree with Beth's point about a level of experience as being a prerequisite, how much you could employ, get out of and contribute to the pop portion, because if you've never done it, then you're not really sure what the problems of practice are.* (GI3,Q28)
Chapter 4: Findings **Section: RQ2: What do participants and researcher reflections, along with existing scholarship, suggest about why some PLC design elements were more (or less) engaging than others?**	
Max:	*I think that the instructions* [for the shared vision] *were well laid out, but I just think as a group, we were kind of finding our... Trying to figure out,* ***"Okay, what are we doing with this?*** *How long should we talking about this?* ***What is this directly going to affect?"*** *If we had some of those things maybe, I think that it could have been a more rewarding process.* (GI1,Q29)
Kate:	*I couldn't see the big picture and then* ***how this is going to impact on my classroom directly or my instruction style*** *or* ***is it going to be helpful to my development as a instructor****? I didn't really know the impact.*(GI1,Q30)
Facilitator:	*…One of the goals for this semester is to try to create a more sustainable, professional learning community for instructors. So the last couple years, and then if you've been with us longer than that before I was in this position, a lot has been changing. We've been changing the curriculum, we have instructors who are with us for many, many semesters, we have some instructors who come and teach for one semester and then they go on to do other things.* *And it's been confusing I think, getting everyone on the same page of like, "What is this course?" Because we have all these instructors moving, the curriculum's changed every semester. We have now these* [different sections]*, so there's all of these moving parts. And so one of the goals is to create this professional learning community of instructors that is sustainable and useful for instructors with all levels of experience.* *So hopefully you can get something out of it if you've been teaching for a really long time or if you're a new instructor who's never taught before. And to get everyone on the same page about like, "What is the purpose of this class?" Now that we've landed on a more solid curriculum there, hopefully the course revisions are done now and we're might make some small changes but the bulk of the curriculum will stay the same, at least for the coming future.*

	And so we can start thinking about like, "What do we want to do with this course? What small changes do we want to make?" And all get on the same page about what we want our students to learn and leave this course with. *So with that said, one thing we're going to try to do this semester that I'm hoping you all will be involved in is creating a shared vision for* [this course]*, that goes beyond the standards that we're required to meet… that's what we're working with now but those standards aren't necessarily reflective of what we… want students to take away from our course… so this is our chance to think about what do we want students to leave with when they finish the semester in our course.* *So, what do we want them to know about Ed Psych? What are the important takeaways beyond just* [the standards]*... It could be skills, it could be knowledge, but what do we want them to take with them into their teaching or their future career? And hopefully we can come up with some shared vision for the course that we can all agree on… and then that shared vision can last beyond this semester. So as instructors come and go, we can refer to that shared vision as some guide for the course.* *So that's what I'm hoping that we can work on today and the next meeting. And then our goal this semester is to work on some of those and then try to enact that shared vision in the course or in our work this semester and in the following semesters, if we can nail that shared vision down…* *Cool. All right. So then we're going to start today, get right into it with talking about our shared vision and just do a brainstorming activity. So the question I want to pose to everyone is* ***what do our students need to know and be able to do with respect to Educational Psychology?****..and we can think like, "What do students need to know, skill-wise?" I don't know, disposition-wise, knowledge-wise…and we'll just start generating.* (MT1,Q31)
Jun:	***I felt like there was an answer that was already expected of us to generate****. I know this is going to sound contradictory that, oh, it's unstructured, but* ***I felt there was a certain response that was desired****. We just didn't know what it was,* ***it wasn't a creative exercis****e or whatever answer we gave was correct.* ***I think there was a set right answer, but it wasn't clear what that was supposed to be****. I also wasn't sure if it was fair for that burden to be placed on the instructors… I don't know.* ***I don't feel like that workload should have been put on them****… I still felt I was in a weird position going through the process.* (GI2,Q32)
Group 1: Sabrina:	*Okay, so any thoughts? What do our students need to know and be able to do*

	with respect to educational psychology?
Wes:	*I like starting with cognitive biases. I think it's a good way to introduce that topic and the idea of our own fallibility.*
Sabrina:	*I like that…*
Wes:	*Yeah. I like starting the course with cognitive biases because it gets the learners to consider ways that they, I guess, the fallibility of their own mind as they start on that course.* (MT1,Q33)
Group 2:	
Andrea:	*All right. So, shared vision. Yeah, I really don't even know where to start.*
Sophie:	*Okay. The idea I had was if we look at each unit and then, talk about each unit for a couple minutes, and try and outline what's the big one or two takeaways from each thing.*
Andrea:	*Yeah. That seems like a good approach…*
Sophie:	*Yeah. Sorry, hold on. I need to pull up my syllabus or something.* (MT1,Q34)
Beth:	*…we know that we have sometimes **little control** over the content we're teaching…* (GI2,Q35)
Andrea	*I think maybe was a bit of feeling like it was **outside of my control**. So even though we were working on this group document of the Vision, I think I didn't feel like invested in it because I felt like **how much of this is like anything I could have any sway over as an instructor**…* (GI3,Q36)
Max:	*Yeah and the shared vision, I think that was helpful for everybody to be able to kind of see where this course is going. **So, it's not just like, "Kimberly's our captain and we will follow Kimberly." But to feel like we're kind of a part of it is nice.*** (GI1,Q37)
Max:	*It was nice to be able to kind of talk with everybody, but again, that's probably more COVID shit just being like, "**It's just nice just to see people and talk to people**."* (GI1,Q38)
Wes:	***For me the just in time box was most useful**. I made use of it and I got good advice based on that…* (GI2,Q39)

Max:	*I actually had a just in time box submission.* ***I thought that was incredibly helpful to*** *be able to have a kind of comment box to slide that into* [because of]*my lack of experience in teaching…* (GI1,Q40)
Kate:	*…the just in time box, for me,* ***it was very helpful****. It was an outlet where I can ask some questions, because the last time when I* [taught this course]*, I didn't know where to ask.* (GI1,Q41)
Andrea: Sophie: Max:	*Max and Sophie, what do you guys think of that first theme?* *Yeah. I'm just reading the rest of the bullet points on that again, to make sure I'm not seeing anything that I think is missing, but I agree. I think that's solid.* *…Yeah, it looks good. I got foolishly distracted. I was actually sending an email to that student that y'all helped with. Again, I appreciate that…* (MT2,Q42)
Kate:	*It was just* ***interesting just hearing what's going on in other instructors' classes****.* (GI1,Q43)
Beth:	***I think it was a great way to bounce ideas off of other people****. Also in a sense* ***build community within the teaching cohort*** *because people were allowed to be vulnerable and present other solutions.* (GI2,Q44)
Wes:	*Just in time was also* ***interesting because you got to hear of the struggles of the other instructors****, things that they came across, which maybe you shared that issue or things that you're like, what I don't have to deal with that. Ah, that's so interesting. So then it became, even though it wasn't maybe useful for me* [referring to a given submission, not the JIT box as a whole]*,* ***it became a very interesting conversation to listen to****.* (GI2,Q45)
Max:	***I enjoyed the thing about the just in time box****, because I don't know,* ***it's kind of nice to get that little fly on the wall experience of being in someone else's classroom****, just how they bring up a problem that's happening in their class and then how they seek resources to try and solve, quote unquote solve the problem.* (GI1,Q46)
Sophie:	*I didn't end up putting any items in the box, but* ***I liked hearing about what was going on in other people's classrooms and being helpful and part of the conversation****.* (GI1,Q47)
Kate:	*It was really helpful for me to think whenever I have some problem…What would other instructors do?" Because when I had a student who almost*

	plagiarized, I was like, oh, I want to punish her because this is not acceptable. But then I was like, "Okay, let's calm down and let's think about what another instructor would do." Because I'm a newbie here. [Another instructor might] think about why the students would copy and paste the websites in the first place. (GI1,Q48)
Kate:	*Because English is my second language, sometimes when I emailed students* [before]*, I would say rather directly, "You can't do this!" But rather* [now] *I can say, "I understand you're having this problem but…* (GI1,Q49)
Andrea:	*I loved it. Yeah, I hope the Just In Time Box stays. I think it was really helpful. Yeah, and I thought that we had really rich discussions off of some of those questions and I thought* ***it was really cool too to see all the instructors invested in helping one another succeed and problem-solve****.* ***There was a sense of just like cooperation and like we're in it together. We have a shared goal of helping you figure this out. And that felt like a cool belonging thing,*** *I guess, in a way for the instructor group.* (GI3,Q50)
Kate:	*I mean, I think the structure, there is an outlet for the instructor is also helpful, but at the same time, the instructor,* ***everyone is very, I don't know, nonjudgmental*** *and they do know, they just want to give a, share the resource.* ***They're not competitive****.* ***This is not a competition anyway****…* (GI1,Q51)
Sophie:	*I agree with that, too,* ***encouraging us to recognize that practice is something that we're constantly growing in*** *and* ***we're not supposed to not have problems****.* ***We're supposed to have things that we want to work on and then share them****.* (GI1,Q52)
Max:	*Yeah and I think you* [the facilitator] *provided a* ***low stakes environmen****t to be able to do that. That was very helpful.* [I was] ***not feeling like if I opened my mouth, you would be like, "You're an idiot, learn how to teach."*** (GI1,Q53)
Max:	***I knew that everyone wasn't going to be judgmental****, that was really nice.* (GI1,Q54)
Lilly:	*And I think, especially because I was teaching alone for the first time, I just felt like there were lots of things that were coming up and I feel very fortunate that I could always ask out questions. I could ask Sabrina,* ***I feel like I could ask anybody really*** *who was* [an instructor] ***and they would have encouragement or advice****.* (GI3,Q55)
Sophie:	*…****we got to choose our topic****. It was something that we were all interested in.* (GI1,Q56)
Sabrina	*The thing that I kind of wanted to think more about and put more effort into was the Pop Team, like everyone else said.* ***Because we have the choice of what issues are relevant?*** *What are things that we really want to think about to*

	address some problems. So I think for me in that sense, yeah the Pop Team kind of appeal to my interest a bit more and something that I wanted to think about more. (GI3,Q57)
Beth:	*...I think at least with our group,* ***what I had identified was not something we could necessarily readily employ****...I think* ***if we had been able to identify this early on and had a little bit more time to put it into practice, I think that would've been maybe a little bit more meaningful****.* (GI2,Q58)
Max:	*Oh, I think it's just because it goes beyond just teaching the material and I think that really, that's being part of a university course, we have to hit, practically, right. We have to hit X, Y, and Z for the class to be legitimate, right…We have to hit all these notes so that they know the material, but being able to then take it that step further to be like, "This isn't just about the material. It's about the underlying pieces that undergrad education in general." So, being able to have that conversation was one of the reasons that I decided to join the team.* (GI1,Q59)
Kate:	*My inspiration* [for choosing this problem of practice] *was my students because…I noticed that a lot of my students are white students and then, they don't really mention about their race, even though I understand that it's because they're a majority and they rarely have a chance to think about their racial identity….Anyway, yeah anyway, the inspiration from my student and also my identity and I think we are, what we are teaching is very closely tied to race and political issues…* (GI1,Q60)
Sophie:	*I would just add that, yeah that the student driven part and as* [Kate] *was talking about how the content is so close to a lot of political and social issues, it kind of seemed weird if we don't say anything. I get that it's not a core standard or a core part of what we're teaching them, but if you don't at least acknowledge all of this content in actual political and social context, then that just makes it seem less relevant…* (GI1,Q61)
Lilly:	*I feel like engagement this semester has been a little tricky. I feel like there have been times where it's been difficult to encourage student discussions and encourage collaboration, even attendance has been spotty…So one thing that I really liked about our pop was just like brainstorming ways of dealing with that, because it's such a present issue that I'm honestly still kind of dealing with and still trying to use strategies that we've brainstormed. Yeah, just like, I don't know, I think just the fact that it was such like an urgent and present issue that I was in and still dealing with.*(GI3,Q62)
Andrea:	*And then the, why did we do engagement? Yeah, similarly to what [Lilly] was saying, this semester has just been super hard. And I think partially it could be because we started online and then moved into the classroom. That's my hypothesis. That's a little bit of the problem this semester, is that students just got used to doing norms in Zoom land and then moving into the classroom,*

	there was like a few weeks where it just felt awkward between the students. Like, you could sense it where they're just like, "Where do I sit?" And, "These are my group and I saw them on zoom, but like, I don't really know them." And it just, so overcoming, that was a really big hurdle this semester.(GI3,Q63)
Sabrina:	*…It's my first time teaching a hybrid section where I just meet students once a month. But some of them, I was surprised that they enjoy at least meeting once a month, just kind of meet with each other and kind of engage with the content. So something I tried* [from the POP discussions] *was doing check-ins… I think something that I like about the pop teams is how we're like following up on, we used this strategy, like how did it go? Like what worked, what didn't work…* (GI3,Q64)
Facilitator: *Beth:* *Facilitator:* *Beth:* *Facilitator:*	*So can you talk a little bit about what inspired your team's problem of practice and why you thought that was an important problem to investigate?* *…would you mind just repeating the question one more time?* *Yep. Hold on. Let me, I'll put this [POP Team 2's note sheet] in the chat too in case anyone wants to look…So that's the link to your pop team notes if you need a reminder. The question was what inspired your team's problem of practice and why did you think that was an important problem to investigate? Or we can do one at a time.* *Sure. I think I suggested this problem of practice so I can speak to what led me to offer this as a potential problem of practice. I enjoy the journal entries and I do think when the students take the time the questions are reflective. I do think the assignment can become repetitive and I do know that sometimes at the end of a unit, students are really just trying to finish. So they aren't necessarily taking the time to make these responses very meaningful.* *As we discussed in our group, there is a lot of variety in the types of responses you get. I have some students who meet the requirement by being very succinct and to the point and then some who are writing pages and pages. Sometimes those pages are really great. Sometimes there's a little bit of fluff in them, but I think we were just wondering different ways for students to interact because in an asynchronous class or at least online, it is very much you need to produce something in writing. So what were some other ways to engage students in that way and have them be more reflective through other means or just exploring different mediums in which they could use.* *Yeah. Does anyone else want to add why you are interested in examining this problem of practice or being on this team? You can also say no. I just want to make sure that I'm giving you enough wait time, but I can't tell.*

Jun:	*I don't think I got to contribute to the pop group as much about the idea of assessment beyond the reflections, but as I'm thinking it over I think the main reason was I feel [this course] still has an identity crisis. Even though it's a foundational conceptual class, since we're talking openly, I do feel the class sometimes may feel useless to students. I think it's that you learn this theory first, but you're not going to use until year five potentially when you're in your internship...* *I'm like, oh crud. But what do they get? Compared to [other teacher education courses] that I know of, there's no capstone, I think the interview project is an improvement, but the unit reflections, they still feel kind of do it for the sake of doing it because it's an assessment. But for the students, it's not as useful, right?* *So all of it accumulates to this thing, but for [this course], it's not really that right. You kind of do this unit and then you're done, you do know the unit then you're prompted to recall back, but beyond just the philosophical thoughts and because not everyone is a teacher, it still feels the assignments are kind of once they leave this class and they're finished, they can put it away and never think about it again. So I think that was the underlying reason why because I was like, yeah, what could we do to give some more tangible value for the people in the class?*
Facilitator:	*Yeah. Okay. Okay. [Wes], did you want to add anything or are you good? I just want to check in case you're still thinking. All right.*
Wes:	*...No, I have no additional things to say.* (GI3,Q65)
Lilly:	*And also just like* ***knowing that other folks were trying new stuff out too*** *was* ***really cool to just hear how it was going for Sabrina and Andrea****, and just getting to reflect on that together.* (GI3,Q66)
Sabrina:	*...****We could jump off from each other's ideas****. And I think I* ***found that part most helpful and enjoyable****.*(GI3,Q67)
Andrea:	***I think one thing I liked a little bit better about the Pop Team was just the size of the group****. So I think like having the whole group versus the smaller group, I feel like in the smaller group, we're able to share ideas a little bit quicker maybe and like hear all of our like small groups voices, whereas the Just In Time Box with the full team, maybe the full team not everybody would necessarily be heard in that space.* (GI3,Q68)
Jun:	*I guess I'll just say it. I feel like the odd one out. So talking to people about my thoughts on ... I feel I'm not close enough with any of the other instructors to*

	really talk about what I'm going through. And I don't think other people are going to talk to me because we're not that close. So all the people that I'm close with are no longer here or weren't teaching [this course this semester]. *So that relationship aspect, I think made it difficult for me…That's also on me too because you don't just make friends automatically. You got to put in the work, but just discussing what kind of contextual factors, I think the not feeling that close with people impacted how much I could engage with others.* (GI3,Q69)
Beth:	*I would agree with that, Jun….I felt a little disconnected…* (GI3,Q70)
Kate:	*I actually want to know how the privilege walk went and how does that work?*
Max:	*It didn't go well, only in the terms of, that was the last thing I did and I thought I was going to have more time to have a talk about it, but I ended up just sprinting through because I had these slides and it was basically like mark a tally if this happened to you and it was a form of oppression. So, the more tallies, the more oppressed. So, I wanted to have a conversation or maybe break into groups, and talk about how this felt. Just a way of starting to have this conversation and being like, "It's okay to start the conversation. I'm not asking for perfect breakout room conversations." To be perfect about this. I think one of the biggest things about this is you have to start talking. You can't just be like, "Well, unless I'm perfectly educated in how I speak about different race, gender, whatever form of oppression. Unless I'm perfect, I can't talk about it."* *So I wanted them to at least start, right? To be like, even if you're going to fuck up, the idea is that act, right? Apologize, correct, and try again. Because that's such a big thing when having these conversations. I wanted them to be able to do that, but ran out of time.*
Kate:	*I was talking about each slide too long. I repeated the questions too much and we just ran out of time. I'm like, "Okay, think about it. Okay, bye. I don't want to keep you after, bye.". But I don't know. I like to think it went well. Try to talk about many different forms of privilege and oppression to try and get that in there. So hopefully, it got them thinking. It would've been nice to have a conversation with breakout groups. But, such is life.* *That kind of makes me feel good, like I'm not the only person who feels rushed at the end of the class.*
Max:	*Oh man. I swear that's part of the art. I still remember in class I'd be like, "All right, I'm going to be fine." When we're in person is what I mean. "Oh, we're going to be fine." Ends 20 minutes early. I'm like, "Shit I had nothing else for today. Bye!". And then other things I'm like halfway through, because we got into a cool conversation and I look at the clock and I'm like, "I don't know how*

Sophie:	*to tell you guys. I messed up. I know that I'm an instructor. We'll try and get through this next time." That's an art.* *So, props to teachers who can actually budget that time well or know how to stop a conversation. Be like, "All right, we've talked about this for 15 minutes. We got a good conversation going, but everyone shut up. We're moving on.". Like to be able to do that well.* *Well it matters what the conversation's about, though. Sometimes breaking your schedule to allow more space for students to talk about something that they really want to talk about is more beneficial to their learning than sticking to your lesson plan. You've got to be able to make that judgment call.* (MT7,Q71)
Andrea:	*...I was going to say **it was creative**. And that **we could just be like brainstorming**. **There was no bad idea**, right. **We could just totally be creative** and see what we all came up with. And I think we came up with some really cool stuff that we want to try next semester, even, with the affinity groups and so that was just like really neat process. Yeah, **and then underlying that is just a sense of like safety**, right….* *So it worked really well at the time that we were generating those ideas and like trying them and being accountable. And I'm really thankful for that. And **I think it was a great energy boost**, like at that point in the semester that they needed.* (GI3,Q72)
Lilly:	***And I enjoy just spending time with* [Andrea and Sabrina]**, *as a whole. Which I know isn't really going to help necessarily, but because **I felt comfortable with both of them**, if like t**here was no aspect of uncertainty or of like one of this idea sounds dumb**. It was just kind of like it's* [Andrea and Sabrina] *and we're working to solve a problem. **And that felt like very fun**. Just kind of like brainstorming with friends in a sense.* (GI3,Q73)
Chapter 5: Discussion **Affordances & Challenges of PLCs As An Approach To GSI Teaching Development**	
GSI 1: GSI 2:	*I wasn't sure whether… is there an expectation? I guess I would have liked to know, how much of the material are we supposed to be expecting them to know when they come into class? How much are we supposed to do a lecture about? If there was maybe some standardization about that, that would have clarified some things.* *Maybe even just a conversation about what this course is, just to piggyback off of what [others] were saying here. What is this course? What is the point of this course?*

Interviewer:	*Would it be fair to say maybe that you feel like there's a little bit of an identity crisis, and you would like some support on how to, once the identity of the course is clear, how to carry out that purpose?*
GSI 2:	*Yes. Thank you for finding the thought again.* (FG1,Q74)