The Cycle of Enactment and Investigation: An Approach for Novice Teacher Educator Professional Development

Teacher educators (TEs) are tasked with supporting pre-service teachers’ (PSTs’) learning about teaching and thus play a critical role in the preparation of quality teachers (Boyd, Harris, & Murray, 2007; Cochran-Smith, 2003; Goodwin & Kosnik, 2013; Smith, 2003; Swennen & van der Klink, 2009). TEs have complex roles at education institutions beyond coursework, that often includes conducting academic research, facilitating school-institution partnerships, and designing curriculum and assessment for PSTs (Cochran-Smith, 2012). TEs can draw on knowledge and previous experiences, which typically includes K-12 classroom teaching (Dinkelman, Margolis, & Sikkenga, 2006; Lunenberg & Hamilton, 2008) and/or graduate degree(s) in education (van Velzen, van der Klink, Swennen, & Yaffe, 2010). Yet, research suggests that, regardless of their backgrounds, TEs often lack the necessary tools to adjust their pedagogies towards adults, rather than children and teenagers (Buchberger, Campos, Kallos, & Stephenson, 2000), and to teach pedagogy rather than subject matter (Ritter, 2007). Furthermore, in most jurisdictions, there are no formal training opportunities for TEs prior to starting this specialized role (Murray, 2005).

Much like how novice teachers face many challenges entering the teaching profession (Darling-Hammond & Barzttz-Snowden, 2007; Fantilli & McDougall, 2009), novice teacher educators (NTEs) similarly experience difficulties entering the field of teacher education (Koster & Korthagen, 2001; van Velzen et al., 2010). Though significant attention has been given to creating ways of supporting novice teachers and their induction to teaching (Chen, Lin, & Yan, 2018; Ingersoll & Smith, 2004; Martin, Buelow, & Hoffman, 2016), there is limited research for their NTE counterparts (Dinkelman et al., Jao, L., Sahmbi, G., & Bran Lopez, M-J. (2021). The Cycle of Enactment and Investigation: An approach for novice teacher educator professional development. *International Journal of Teacher Education and Professional Development, 4*(1), 30-48.)
2006; Murray, 2005). In spite of the increased calls for support and professional learning opportunities for NTEs, there continues to be a lack of clarity in how NTEs learn within their institutions (William & Ritter, 2010), and whether formalized supports exist. Indeed, the majority of studies on TE development have primarily focused on identity formation (e.g., Butler et al., 2014; McAnulty & Cuenca, 2014; Ritter, 2007; Williams & Ritter, 2010; Williams, Ritter, & Bullock, 2012), particularly through self-study (e.g., Casey, & Fletcher, 2012; McAnulty & Cuenca, 2014; Ritter, 2007; Williams & Ritter, 2010; Williams et al., 2012). Though these studies do provide crucial insight into TE development through the lens of identity change/formation as well as TEs’ own perspectives on their development, this literature does not indicate ways that their learning could have or has been supported outside of their own initiative. Currently, existing educational opportunities for TEs focus on self-initiated professional learning through mentorship with colleagues, attending conferences and workshops, and ad hoc communities within institutions (e.g., Smith, 2003; Swennen, Shagrir, & Cooper, 2009). Beyond these examples, there is still a dearth of formalized models of professional development that can serve as inspiration and/or guides for those seeking to support NTEs in their own institutions. Thus, the objective of our study is to explore the use of a guiding framework to support NTEs’ professional development.

(Novice) Teacher Educator Professional Development

Professional development initiatives for TEs exist in various formats and scopes. Professional organizations such as the Association for Teacher Educators, the Association of Teacher Education in Europe, and the Thematic Network on Teacher Education in Europe offer avenues for presenting and discussing research with fellow TEs (Buchberger et al., 2000; Smith, 2003). In Israel, the MOFET Institute provides coursework and

workshops specifically targeted towards supporting TEs in the development of their pedagogies in teacher education (Smith, 2005). Additionally, some institutions offer programs led by expert TEs that foster collaboration, improved professional skills, and community practices for TEs seeking to engage in professional development (Shagrir, 2010). Some institutions offer a combination of formal and informal supports (Hodkinson & Taylor, 2002; Livingston, McCall, & Morgado, 2009; Smith, 2003). For example, departments may organize meetings where TEs share and discuss case studies or video-recorded teaching sessions. Or, TEs may receive feedback on their teaching formally (through course evaluations) or informally (by asking a colleague to do an observation). In spite of the relative success of these varied programs and initiatives, they are not widespread, nor do not specifically target NTEs.

Although limited, research on professional development for NTEs exists (e.g., Amador, 2016; Brody & Hadar, 2015; Dennis, Gelfuso, & Sweeney, 2018). For example, Kosnik and colleagues (2011) facilitated the development of a Beginning Teacher Educators group for NTEs at a Canadian institution. The Beginning Teacher Educators group held frequent meetings that included discussion of teacher education-related research, shared experiences, career paths for TEs, and observation of other (N)TEs. The authors of this study found that participating in this specific initiative led to NTEs developing improved skills as researchers, influenced their identity formation as TEs, and impacted their practices in the classroom. Similarly, the development of a collaborative self-study group at an institution in the United Kingdom, which was borne out of the need for improved induction for NTEs led to improved self-efficacy and positive identity formation as TEs (Jarvis, Dickerson, Chivers, Collins, & Lee, 2012). Notably, the Jao, L., Sahmbi, G., & Bran Lopez, M-J. (2021). The Cycle of Enactment and Investigation: An approach for novice teacher educator professional development. *International Journal of Teacher Education and Professional Development, 4*(1), 30-48.
collaborative component between the NTEs, each of whom had varying degrees of prior teaching experience, was critical towards the learning of the group. Jacobs, Yendol-Hoppey, and Dana (2015) described a context in which NTEs in the United States engaged in practitioner inquiry (Cochran-Smith & Lytle, 2009). Through studying their own professional practice, these NTEs developed their understanding of their role as TEs and to innovate their own practices.

While there is an element of mentoring between TEs and experts that is implied in many of the above studies, there is existing research that centres on mentoring as a way to support NTEs (e.g., Draves & Koops, 2011; Smith, 2003; Smith & Ingersoll, 2004). In some institutions, NTEs are paired with experienced colleagues with whom they can discuss emerging problems, and these experienced colleagues are also available for verbal reflections, questions, and observations. Effective mentorship requires consideration of personalities and frequency of contact, and the value of the mentoring is often dependent on the quality of the relationship between the mentor and NTE (Goodwin et al., 2014; van Velzen et al., 2010). If both parties view the mentoring as part of a professional development process, it provides multiple opportunities for mutual learning. These mentoring initiatives, however, are typically in place to support NTEs as new faculty members in an institution. Thus, support that mentors provide may not solely focus on the NTEs’ role as TEs but also to support their induction to a new context/institution and a position that involves other responsibilities including research and/or service work (e.g., Greene et al., 2008; Goodwin et al., 2014; Murray & Male, 2005).

In the above instances, though there are examples of formal and informal ways of supporting (N)TEs, there are barriers related to longevity, time, and the willingness of other
TEs to (enthusiastically) participate in the professional development of NTEs early in their careers (Smith, 2003; Smith & Tillema, 1998). Indeed, the transferability of the individual examples may be challenging for institutions aiming to develop robust, yet sustainable professional development for incoming TEs. Given the complex nature of professional development, research has shown that providing a framework can help provide structure and focus participants’ efforts (Guskey, 2000; McDougall, 2004). One such framework is the Cycle of Enactment and Investigation (Lampert et al., 2013).

**The Cycle of Enactment and Investigation**

The Cycle of Enactment and Investigation (CEI) is a framework originally intended to support PST professional development (e.g., Ghousseini, Beasley, & Lord, 2015; Kazemi, Franke, & Lampert, 2009; Kazemi & Waege, 2015; Lampert, Beasley, Ghousseini, Kazemi, & Franke, 2010; Lampert et al., 2013; Lampert, Ghousseini, & Beasley, 2015). Briefly, the CEI allows PSTs to plan for and then rehearse a lesson in a simulated classroom environment using an identified instructional activity. After collective analysis and planning, PSTs enact the instructional activity in front of a class of students (Kazemi et al., 2009; Lampert et al., 2013; McDonald, Kazemi, & Kavanagh, 2013). Lampert et al. (2013) present the six steps of the CEI as: 1) *observation*, 2) *collective analysis*, 3) *preparation*, 4) *rehearsal*, 5) *classroom enactment*, and 6) *collective analysis*. In *observation*, PSTs intentionally focus on watching educators teach, either in person or via video. Next, with the support of ‘facilitators’ (typically, TEs or consultants), educators *collectively analyse* the actions of experienced educators and the implications on students’ learning. Educators then *prepare* to enact the same instructional activity, first by developing a plan for delivery (e.g., creating a lesson plan or protocol), then by *rehearsing*.

the instructional activity with a group of peers who assume the role of ‘students’. Here, facilitators once again play a crucial role as they lead discussions that encourage the ‘teacher’ and ‘students’ to consider critical teaching moments from the rehearsal (Davis et al., 2017; Kazemi et al., 2009; Kazemi, Ghousseini, Cunard, & Turrou, 2016; Pfaff, 2013). Subsequently, educators enact the activity they have rehearsed in an authentic context (e.g., secondary school classroom). The enactments are video-recorded and re-watched in a final round of collective analysis (again, guided by the facilitator).

The CEI has been adapted to support PSTs in their own specific contexts by adding or removing aspects of each phase (e.g., Jao, Wiseman, Kobiela, Gonsalves, & Savard, 2018; Kazemi et al., 2016; Kazemi & Waege, 2015; McDonald et al., 2014; Savard, 2014). Others still have extended the use of the CEI to provide professional development to in-service teachers (e.g., Heineke, 2013; Lampert, 2010; van Es & Sherin, 2008; van Es, Tunney, Goldsmith, & Seago, 2014; Gibbons et al., 2017). Further still, the CEI has been used to guide teacher leaders whose role was to create and support in-service teacher professional development (Jackson et al., 2015). However, the framework has yet to be used with (N)TEs who support PST development. In this study, we apply the CEI to a new context, that of NTE development as they guide PSTs’ learning in a mathematics teaching methods course. Thus, we aim to explore the application of the CEI framework for NTEs as they engage in the act of facilitating rehearsals for PSTs. For this study, we asked: 1) How can the CEI be used to support NTE development in a mathematics teaching methods course?; and 2) What were the experiences of NTEs who engaged with this framework?

Research Context and Methods

This study took place in the context of a secondary teacher education program at a Canadian university. Magda and Zorra (pseudonyms) were teaching assistants (TAs) in a secondary mathematics teaching methods course (taught by Limin) and served as the participants for this study. This was the first time that either was placed in the role of TE. In fact, both TAs were PSTs, close to completing their teacher education program. The teacher education program is a four-year, undergraduate-level program. As PSTs, not only did Magda and Zorra lack experience as TEs, they had limited teaching experience in any capacity. Both had experience teaching from part-time tutoring (of secondary school-level mathematics) and, as part of the teacher education program, a four-month school-based practica (also of secondary school mathematics).

The secondary mathematics teaching methods course in which Magda and Zorra served as TAs is typically taken by students in their second year of the four-year program. In addition to required coursework (e.g., general education courses and mathematics content courses), the only secondary mathematics classroom experience that these PSTs would have had was a two-week field observational practicum (ie. no teaching duties). Magda and Zorra’s role as TAs in the secondary mathematics teaching methods course was to facilitate the rehearsal portion of the CEI of which the students in the course (PSTs) engaged. In this capacity, the TAs were responsible for overseeing the logistics of the rehearsals (e.g., keeping time, organizing the video camera) and leading discussions during and following rehearsals. The rehearsals provided an opportunity for PSTs to practice using *high-leverage practices* (HLPs), a pedagogical framework for teaching (e.g., Grossman, Hammerness, & McDonald, 2009; Kazemi et al., 2016; McDonald et al., 2013). Briefly, Jao, L., Sahmbi, G., & Bran Lopez, M-J. (2021). The Cycle of Enactment and Investigation: An approach for novice teacher educator professional development. *International Journal of Teacher Education and Professional Development, 4*(1), 30-48.
HLPs are research-based practices that help teachers navigate through the complexity of teaching and have the potential to improve student learning (Grossman, Compton et al., 2009; Manz, 2012), and create an environment that provides students with meaningful learning experiences (Kazemi & Waege, 2015). Examples of HLPs include: orienting students to each other’s thinking, pressing on students’ thinking, and teaching towards an instructional goal. To help PSTs become familiar with HLPs, TEs have used rehearsals as a space for PSTs to experiment and understand when and how to use HLPs (e.g., Kazemi et al., 2009; Lampert et al., 2013). During rehearsals, the TAs and the ‘teacher’ had the option to ‘pause’ for in-the-moment feedback and reflection. Facilitators may choose to highlight moments where the ‘teacher’ used HLPs or missed opportunities to use HLPs and invite members of the group to contribute to the discussion as a means to provide feedback to the ‘teacher’ and improve their own understanding of HLPs.

Due to time and space constraints, the class was divided into two groups, and each TA was responsible for facilitating the rehearsals for the students in their group in different rooms. Members of the group took turns in the role of ‘teacher’ and ‘student’. The rehearsals occurred over three classes, weekly. In each of the first and second weeks of rehearsals, the TAs facilitated two rehearsals. In the final week of rehearsals, Magda facilitated five and Zorra facilitated six rehearsals.

There were three sources of data for this study: 1) team meetings, 2) reflections, and 3) interviews. Team meetings (n=7) were attended by both TAs and Limin (the course instructor). Early team meetings (prior to rehearsals), approximately 30 minutes in length, occurred once a week and provided an opportunity for the TAs to become familiar with their role as facilitators and discuss logistics of their role. During the three weeks of

rehearsals, team meetings were approximately two hours in length and occurred twice a week, once immediately before class and once during the week following class. Details about the foci of these meetings will be elaborated on in the Findings section. Magda and Zorra were asked to complete written reflections immediately after each class with a rehearsal. They were provided with writing prompts (e.g., What was successful/challenging about the rehearsal? What will you do the same/different?) and were asked to send their written reflections electronically to Limin prior to the subsequent team meeting. The TAs were individually interviewed twice during the study. The first of these semi-structured interviews took place prior to the start of the course and focused on the TAs previous teaching experiences, and expectations and goals for the semester. The second interview, during which Magda and Zorra were asked to reflect on their experience as TAs, occurred after the course was complete.

Team meetings and interviews were audio-recorded and transcribed verbatim. They, along with the TAs’ written reflections were coded in parallel through the constant comparison analysis method (Miles & Huberman, 1994) by Limin and Gurpreet. We engaged in separate analyses, and consolidated findings after several cycles of individual coding. This was crucial as Gurpreet was not involved in the context of the study the way Limin was, and could therefore provide a more objective perspective during the analysis phase. Both authors used a priori codes related to the CEI as a general analytical framework (i.e. the TAs experiencing the CEI, their impressions of it, etc.), but allowed for emerging themes to be included in the analysis (Saldaña, 2009). All coding was done virtually through word processing software and was an iterative process. Consensus of

themes was reached by sharing coding charts developed through the software, and engaging in discussion about how themes emerged.

Findings

Given the context of our study, we adapted Lampert et al.’s (2013) CEI framework in a variety of ways. Specifically, we followed (and propose) the cycle shown in Figure 1.

Figure 1 goes here

In the sections that follow, we outline our adapted CEI for NTEs. As seen in Figure 1, there are multiple phases of analysis and collective preparation. As our approach for this repeated phase was largely consistent, we have chosen to describe the analysis and collective preparation phases together (but elaborating on some subtle variations depending on when it occurred in the CEI). We then describe the TAs’ impressions of their experience engaging in this process, specifically noting the value they identified in their experiences. Recall that the TAs are NTEs in the context of a secondary mathematics teaching methods course who facilitate rehearsals.

A Cycle of Enactment and Investigation for Novice Teacher Educators

In this section, we describe our adaptations to the CEI and the reasons for these changes. We also provide some examples of these processes in order to provide a richer picture of our adaptations and the experiences of the TAs.

1 As the enactment portion of the CEI for the NTEs involved a rehearsal, for clarity, italics are used for phases of the CEI (i.e. ‘rehearsal’ – phase of the CEI, and ‘rehearsal’ – what occurred in the enactment).

**Observation.** In our context, there were two instances of observation: 1) when Magda and Zorra were students themselves in the secondary mathematics teaching methods course, and 2) in an early team meeting. A year prior, as students in the teaching methods courses, Magda and Zorra participated in a CEI as ‘teachers’ and ‘students’. Here, the TAs observed those serving as facilitators for the course (Limin and the previous year’s TAs) and were able to glean some insights about the role of the facilitator from their experiences. Zorra recounted her experience as the ‘teacher’ in a rehearsal saying, ‘I remember when I was the teacher I got questions about complex numbers and I just looked at the student and I’m like, “No 15-year-old knows what a complex number is.”’ From this experience, Zorra made the following conclusions about the role of the facilitator:

> [A]s a facilitator, you’re focusing on the overall environment of what is happening. So, as a facilitator as I said I would probably try to see whether or not the teacher is incorporating the material in class and whether or not the students are trying to ask questions that are more related to their age group as well.

Both TAs also recounted how nerve-wracking the rehearsal experience was as ‘teachers’ indicating that it was one of the first instances that they had a chance to ‘teach’. Thus, both believed that the role of the facilitator was to be supportive and encouraging. As Magda said, ‘I guess as a job for the facilitator is... not critique completely...like, “This is great. This is good.” You’re positioning them properly.’ Similarly, Zorra stated that although facilitators are meant to provide feedback to the teachers, her goal would be to ‘make sure that whatever I tell them, it doesn’t come off as overly harsh’.

Yet, we acknowledge that as students in the course, Magda and Zorra were not specifically observing their facilitators knowing that they would be stepping into that role the following year. Additionally, Magda and Zorra were undoubtedly more focused on their roles as ‘teacher’ and ‘student’ in the CEI rather than observing their facilitator to specifically understand the role and practices of the facilitator. As Zorra said, ‘In the rehearsals, I feel like at first as a teacher you’re focusing more on the students, as a student you’re focusing on the teacher.’ Magda offered the following reflection, ‘I feel like I should have sat there last year, and been like, you know, what are you (the facilitator) doing?’ To attend to this, we asked the TAs to re-watch their rehearsals videos prior to a team meeting, this time specifically asking them to focus on their facilitator. In the team meeting itself, excerpts from each of the rehearsal videos were replayed thus providing the TAs with an additional example of a facilitator (i.e. their co-TA’s facilitator).

Rehearsal. Each TA had the chance to complete a rehearsal as a facilitator. In our context, rehearsals took place during a team meeting as creating a ‘rehearsal’ context was not feasible (i.e. finding mock ‘teachers’ and ‘students’). Instead, Limin was video recorded teaching one of the classes of the secondary mathematics course. As they watched the class in person, the TAs took notes or tried to think of places to pause and examples of when Limin used/could have used HLPs. This provided a chance for the TAs to consider possible moments to pause and issues to raise in discussions prior to the rehearsal itself. Yet, for the TAs, who had no experience as facilitators, this was challenging. As Magda said, ‘We did watch [you teach], but...we
couldn’t see [any moments to pause].’ We also acknowledge that this might not be possible in other contexts.

In the subsequent team meeting, each TA completed a rehearsal by taking turns to ‘facilitate’ a 10-15 minute portion of Limin’s teaching/video. The rehearsing TA would pause (the video) when they wanted and then say what they would have said as a facilitator. Limin would then respond as the ‘teacher’ as if the events in the video and the pause were happening in real time, and the other TA and Limin (playing a dual role) would contribute to the discussion as Limin’s peers. The rehearsing TA then led a mini-discussion (as would occur in a real rehearsal). Each TA completed their rehearsal on a different but randomly selected segment of Limin’s video recorded teaching.

**Analysis and collective preparation.** As indicated in Figure 1, analysis and collective preparation occurred multiple times in our adapted CEI, specifically after almost each of the other phases (observation, rehearsal, and between enactments).

**Analysis.** In each instance, analysis was done individually and collectively (with both TAs and Limin). Individual analyses were written as personal reflections (except for after rehearsals as the analysis started immediately after rehearsals were completed in the team meeting), and verbal in team meetings (also serving as a venue for collective analysis). In all instances, TAs’ analysis was based on the re-watching of rehearsal videos.

Limin provided the TAs with questions to guide their individual analysis. Analysis focused on the facilitators’ actions as well as asking the TAs to consider other possibilities for facilitation practice. For example, when asked to analyse the practices of the TAs who served as facilitators a year prior, Magda and Zorra responded to questions including: ‘Do you agree/disagree with where the former TA paused and why?’ And, ‘Regarding the

To analyse their own practices in their enactments, the TAs responded to questions including: ‘(As a facilitator,) [w]ere you successful? How do you know?’ And, ‘What was challenging and why?’

In preparation for the analysis to take place in team meetings, the TAs were asked to send their written reflections to Limin and select vignettes from the videos to be re-watched in team meetings. From their student rehearsal videos from the previous year, the TAs selected two moments: 1) an instance where the facilitator paused the rehearsal and/or started a discussion, and 2) a missed opportunity where the facilitator could have paused the rehearsal and started a discussion. From their enactment videos, the TAs selected one enactment (as each TA facilitated multiple enactments in each class) to re-watch, but more specifically, segments that they thought went well or they were unsure about their facilitation practice. Not only did this make team meetings more efficient (watching vignettes rather than entire rehearsals), discussions in team meetings remained focused as Limin could use the TAs’ written reflections to guide discussions and in general, the TAs were already prepared to discuss facilitation practices based on their individual analyses. For example, in her written analysis, Magda wrote: ‘Sometimes I found it challenging during the discussion portion to insert myself back into the conversation when I saw it getting off topic.’ In the subsequent team meeting, Magda further analysed her practice in this regard saying:

[The students] were in a circle. [...] They would get lost in that conversation, so for me to kinda guide it or facilitate it [...] it was hard to get back into the conversation because it was like, “Oh, this outsider person in the background is back.” So, maybe in

that sense...yeah, I got up and I moved closer so that I was part of the circle, so they saw me a bit better which helped. So, I guess in that sense, maybe my position for that rehearsal was a bit too out of the way for them.

Team meetings started with additional *individual analysis*. The selected vignettes were played, and the TA associated with the video (as either the ‘teacher’ or facilitator) was asked to start the conversation by elaborating on her written reflections or additional thoughts that arose from the re-watching. After re-watching her student rehearsal video, Zorra said:

[My facilitator] did a great job. [N]ot many people were talking but she got the ball rolling. She started by saying, “So I really liked that...” She was mentioning a strong suit in order to get people to follow up with a bit more. [She] positioned you properly but it was like...it was trying to get people to participate at the same time.

Oftentimes, Limin would need to guide the discussion and specifically ask the TAs to analyse their facilitation practice. For example, after re-watching one of Zorra’s enactments, Limin posed the question: ‘Why did you decide to pause here?’ Or, to Magda after re-watching one of her enactments: ‘Is there anything that you would have done differently in this rehearsal?’

The other TA was then invited to give her perspective about the vignettes and the conversation naturally evolved to a *collective analysis* where all three discussed the facilitators’ practices. At times during these discussions, the TAs spoke specifically about an individual facilitator’s practice. The TAs would also make comments based on recurring patterns across facilitators. For example, Magda offered this analysis of the two TAs from the previous year:

I found [the facilitators] were using their teaching practices in a different way compared to…like we (as “teachers”) were practicing them on a group of students. They were doing it on us as well. They would ask us probing questions to think about something (about our teaching) and get the class working with us too.

In other instances, after analysing their own facilitation practice, the TAs would ask for feedback to address moments in which they felt that they could have been more effective. For example, after Zorra critiqued her facilitation practice, a discussion ensued with different suggestions from Limin and Magda:

Zorra: I’m honestly not sure how to do it differently. So I’m hoping any advice or feedback would be greatly appreciated because I wasn’t successful in getting it back (to the teacher’s use of the HLPs).

Limin: It’s an interesting observation. “Which practice does that relate to?” Or something like that. Magda, do you have ideas?

Magda: Umm. [In one of my enactments], I kind of pointed (to the poster on the classroom wall with the HLPs listed on them)...I really don’t remember how I phrased it. Something along the lines of, “Can you guys tell me which practice did you see written up here that [the teacher] used and how?”

Through their individual and collective analysis, the TAs could refine their understanding of the role of the facilitator. This phase also provided the TAs with specific examples (from the previous TAs or their co-TA) and ideas (generated through group discussion) of actions and phrases that they could use themselves in the future.

Collective preparation. Also occurring in the same team meeting during which analysis took place, collective preparation was largely discussion-based, although at times the TAs took notes for their personal use. The purpose of this phase was to have the TAs

consider and develop possible facilitation practices to be used in their *enactments*. Limin often guided the discussions, encouraging the TAs to consider decisions and actions that they may take as a facilitator. Often in this phase, Limin would describe possible scenarios as a means to have the TAs brainstorm facilitation practices. In some instances, Limin would describe scenarios based on situations that occurred in the TAs’ own rehearsals. For example, after watching her rehearsal video, Zorra was reminded of a moment when her ‘students’ began to talk about imaginary numbers, a topic unrelated to the lesson and more advanced than the targeted grade level. Using this context, Limin asked the TAs to consider how they might address a similar scenario in their own enactments:

Zorra: I know [my rehearsal] at the end kind of went off-track...

Limin: So, the teacher had a plan, and then it gets side-tracked completely because there’s a student in the class who takes it in a completely different direction. What would you do as a facilitator?

Zorra: You could say, “I’m going to pause here. We’re a bit off-track...How about we bring this back [to the intended topic].”

Magda: You could mention, “So you have a student who’s saying that [...] but considering it’s a topic that’s more advanced...” I don’t know how to phrase it properly... [...] “How would you...how would you not let them lose interest, but at the same time bring it back?”

Other times, Limin would present scenarios based on her previous personal experiences as a facilitator to start a discussion about facilitation practices:

Limin: In the moments where you’re pausing and discussing different ways to do something, would you... say, “Okay, just continue on” or...would you [ask the teacher to] rewind and try these suggestions and continue on from there?

Magda: I really liked...you could tell me your opinion too but I really like the idea of being able to try my suggestions. I mean, it was a challenge on the spot because I really had to think about them but it gave me a chance to try them out.

Zorra: I agree. It gives them a chance to...I’m thinking about the worst-case scenario. Let’s say they’re not doing any of the practices. You give them these suggestions and then they try it out. At that moment, at least they’re at least trying one of the practices and it’s something.

As evidenced here in Magda’s response to Limin’s presented scenario, the TAs often referred back to personal experiences as ‘teachers’ and ‘students’ to brainstorm possible facilitator actions.

To further support the TAs’ preparation, a resource document that the TAs could use during enactments was developed. The primary purpose of the document was to aid the TAs in supporting the rehearsing teacher’s development and application of HLPs. The document was developed in team meetings with the input of both TAs and evolved over the three weeks of enactments based on the TAs’ needs. For example, prior to their first round of enactments, the TAs simply wanted the document to serve as a reminder of the different HLPs and to provide space to write examples of when rehearsing teachers used the practices. However, based on areas for improvement highlighted during their individual and collective analyses, the TAs revised the document to include examples of questions and prompts that could be used by the TAs during pauses/discussions. For example, in relation to the practice of ‘orienting students’ to each other’s ideas’, TAs developed the following prompt: ‘We were just given a lot of information from [student]. How might you get other students to participate based on what [student] said?’

Repetitions of the Cycle of Enactment and Investigation. Given the context of our study, the TAs completed a series of enactments rather than going through the CEI once per enactment or completing the process after one enactment. More specifically, the TAs completed a full CEI, but instead of going back to the beginning and repeating each phase once again, TAs re-entered the CEI in a later phase (see Figure 1), that of the analysis and collective preparation prior to completing another enactment. The context of the secondary mathematics teaching methods course was such that students enrolled in the course engaged in rehearsals in three subsequent weeks. Given that the class met weekly, there was not enough time between each class for the TAs to complete a reflection, rehearsal, and collective analysis.

Additionally, the context of the enactments was such that they did not lend themselves to require a rehearsal for each iteration. As facilitators of rehearsals, the TAs were responsible for leading discussions, looking for moments to pause, and modelling HLPs themselves. Rather than being responsible for ‘teaching’ specific content related to their field (e.g., secondary mathematics PSTs rehearse teaching mathematics topics such as trigonometry or algebra), the TAs have the common context of broadly acting as facilitators. However, given that the TAs have multiple enactments each week and the contents of these enactments varies (e.g., one ‘teacher’ may be teaching trigonometry while another may be teaching ‘algebra’) it would be logistically difficult to create a rehearsal for each enactment.

TAs’ Impressions of and Engaging with the Cycle of Enactment and Investigation

Though the TAs did not specifically refer to the CEI as it happened, they did speak to their experience of engaging in different phases, and their impression of the value of said phases, as it pertained to their ability to facilitate rehearsals. In this section, we will discuss the TAs’ impressions of and their engagement with the CEI, focusing on their experiences of observation, doing a modified rehearsal, and collective planning and analysis as it pertained to their roles as facilitators aiming to use and support PSTs development, understanding, and application of HLPs (i.e. the purpose of the rehearsals).

Observations. As described in the previous section, the TAs had the opportunity to observe facilitation in several ways: through their own experiences participating in rehearsals the previous year, observing Limin teach, and watching the former TAs facilitate their rehearsals. Zorra described these varied opportunities to observe, saying that she ‘saw so many different ways [of facilitating] by watching rehearsals and watching others in the classroom. Even watching [Limin] again, just this time focusing on observing and seeing how you apply the practices in your classroom.’ She indicated that these observations could help ‘alleviate [her] concerns’, particularly the opportunity to focus on the teaching practices of the facilitator, prior to her becoming the facilitator herself. She said:

Maybe, I don’t know if it helped, or maybe it will help, if I see it being done firsthand.

This time, instead of as a student, last year was just me watching the student present.

This time focusing more on, I don’t know if it was [Limin] or Magda, seeing on of you two try it out first. And then maybe asking questions of how were you able to pick on

that or how were you able to see whether or not they were following the practices or if they were following it all the way through or such. I guess, that’s a way to maybe alleviate the concern.

Zorra reflected that the re-watching of the students’ rehearsal videos allowed her to ‘see how the practices were being done’ and realized that ‘all of this kind of came together to help benefit me [and] help benefit the students.’ In re-watching these videos, the TAs were able to see how other facilitators were able to use HLPs. As Magda shared, it was through this re-watching that she ‘actually noticed [the TAs] doing [HLPs]’, suggesting that targeted observation of the TAs’ actions was crucial towards noticing the use of HLPs at all. For example, by focusing on observing the facilitator, Magda was able to see how they used HLPs to elicit student thinking and in turn, promote greater understanding and use of the HLPs by the students.

**Rehearsals.** Though the TAs had technically engaged in a rehearsal as PSTs, this was in the role of a ‘teacher’ or ‘student’ rather than as a facilitator. Both TAs shared their trepidation of being a first-time facilitator. Thus, it is unsurprising that the TAs seemed to be grateful for the opportunity to first conduct a rehearsal. Magda emphasized the importance this opportunity, explaining that, ‘If [Zorra and I] didn’t have [this opportunity], then I would not have been ready.’ Indeed, Magda found the initial prospect of facilitating rehearsals to be ‘nerve-wracking’, but be engaging in a rehearsal, she could ‘at least feel more secure’ in her ability to effectively act as a facilitator. Zorra agreed doing a rehearsal, ‘gives you…a taste of facilitating, without actually facilitating yet. And in the long run, I think it helped us a lot.’ More specifically, the TAs shared that the rehearsals were an opportunity to experience

some of the challenges of being a facilitator and thus, be able to anticipate these issues during an enactment. For example, Zorra found that ‘just finding a place to pause and feel comfortable technically interrupting the student [is challenging]...and that’s why I loved the [rehearsal]. I had the opportunity to do it there, so when it came to the [enactment], I felt a little less uncomfortable.’ Zorra concluded by saying:

The idea that Magda saw [my rehearsal] and I saw hers, I also liked that a lot, because it was interesting to practice again in a different rehearsal. I really liked that idea. It was such an interesting way to go about it, such that you’re actually rehearsing and facilitating, but you’re not in front of the classroom yet, and also in an environment where you can get some feedback from either a TA, or from [Limin], or just in general. Here, Zorra indicates that completing a rehearsal was helpful in terms of approximating practice and adds that receiving feedback from fellow facilitators on how to improve or adjust their practices also contributed to her development. We further elaborate on the latter point in the next section.

**Analysis and collective planning.** The TAs had frequent opportunities to analyse their experiences, both at an individual level through their written reflections and interviews with Limin, and together during team meetings. When the TAs were specifically analysing themselves or each other, they often were able to dissect the decisions they made when facilitating, particularly with decisions they were unsure of. For example, Magda explained why she called on a specific student during a rehearsal:

I was like, maybe he had the same thought process as me and he could phrase it better, so I’ll give him the chance to say it. And also, it gave me a chance to…it’s really weird
to say, it gave me that second to be like, “Okay, the pressure’s not on me”, relieve myself and be like, “Okay, this is what I need to focus on.” I don’t know if it was the right call or not, but it gave me a second to compose myself, I guess, and get back in the game.

In this instance, Magda was able to dissect her decision-making process, and understand the reason why she did what she did, even if she was not certain that it was the appropriate decision to make. Being able to engage in this type of analysis was something that both she and Zorra appreciated. Indeed, Zorra found that consistently engaging in analysis made her feel ‘more prepared…for the next [enactments]’. Specifically speaking to individual analysis, Magda shared that she appreciated the structure of the written reflections:

It made me think about certain things before the meetings…what I liked, is that [Limin] had us reflecting as a facilitator, as like, what our personal goals were. It zoomed in to different aspects…whereas otherwise, I think if it was just us reflecting on our own, we would have zoomed in on one and not the other.

Magda continued by speaking of the collective analysis, saying,

It was really great working with [Zorra], like running ideas with her, too. Oftentimes, like, she would say something and I would be like, “Oh, what about this?” And then I would throw it back to her and she would throw it back to me.

Zorra similarly found both the collective and individual parts of analysis to be crucial for her learning. She said,

It’s very easy to say, after [each enactment], I’m done, and go home and never think about it again…but, I like the idea that we got the opportunity to, you know, think about, okay, what I think went well, and what I would like to improve on or what I

would like to change…it also helped me realize to think of other strategies I could use
to help me for the next time.

Zorra’s statement highlights the importance of intentional and consistent opportunities to
analyse her practice, and how this helped her enhance her abilities as a facilitator. Indeed,
Zorra found that she developed ‘a better understanding of what each [HLP] meant’ as a
consequence of ‘discuss[ing] them quite frequently’ during collective analysis.

As described in an earlier section, the TAs also engaged in collective planning,
often concurrently with collective analysis, which resulted in a resource document that they
could refer to throughout their enactments. While the contents of the resource document
were certainly valuable, the TAs noted that it was specifically the collaborative process of
creating the document together that was useful. Zorra stated:

It was useful…maybe not necessarily at that moment, but the fact that we were able to
discuss it…you write all the information down, it helps you understand it…so, having
it done and having the opportunity to talk with both [Limin] and Magda about it and
just coming up with these prompts, these ideas, these questions that we could use, was
also almost like having a safety net, too, as well, which I found great. It helped me.

As the TAs engaged in enactments, they would discuss how to adapt the resource document
each week in accordance with new and unexpected situations. Though Magda found it
sometimes challenging to do this, she believed that it was beneficial to create the resource
document as it forced an intentional reflective process to take place. The collective analysis
that led to the creation of the resource document was critical, Zorra explained, as ‘having us
come up with our own prompts and discussing them helped me better understand how to

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facilitate these practices’, indicating that this collaborative exploration deepened her learning as a facilitator.

Magda summarized the value of engaging in a CEI as a way of scaffolding their learning, leading towards a final *enactment*:

> Re-watching [my rehearsal] – it gave me a chance to revisit something familiar. Then, with Zorra’s, I got to see and try to practice pausing there, but at the same time, having feedback from past facilitators. And then, with the new [rehearsal] that we recorded on Monday that was Limin’s, no one was pausing, so we had an opportunity to practice pausing at certain points, so it was as if it was a mock, live trial. The next one is…trying it out with a live person.

While Magda did not explain her learning process through the framework of the CEI, she does appear to have found that *observation*, and doing a *rehearsal* was being an effective way to prepare for engaging, as she says, ‘with a live person.’ Zorra adds to this point, stating that ‘the discussions we had prior to the rehearsals’, in addition to everything Magda listed, ‘eventually all add up to facilitating the rehearsals, which was the main task.’ Thus, while the TAs did not name the CEI as a guiding framework for their work as facilitators, it is evident that the various tasks and opportunities the CEI afforded to them were an integral part of their process of learning.

**Discussion**

As TAs responsible for facilitating teaching rehearsals in a mathematics teaching methods course for PSTs, Magda and Zorra were put into the role of TE for the first time. We aimed to use the framework of the CEI to help the NTEs understand their role as a facilitator, and develop their facilitation practices. Using Lampert et al.’s (2013) model as a
starting point, we adjusted the CEI to suit our particular context, and suggest that these modifications are likely to be useful for other TEs seeking to engage in a CEI for TE development over a relatively short period of time. Specifically, we found the need to supplement collective analysis with an individual component to encourage TAs to pause and consider not only what they did in their enactments, but what motivated their actions (Larrivee, 2000). The feedback given by the TAs on their written reflections indicate the process, similar to that of journaling, must be facilitated with guidelines (Walker, 2006), or prompts, to encourage critical analysis, rather than simply providing a summary or description of events as they occurred (Bain, Ballantyne, Mills, & Lester, 2002). Given the potential logistical challenges of collective analysis (e.g., organizing and sustaining team meetings), we wonder whether an alternative (if not addition) to this phase of the CEI could be individual analysis. In addition to the benefits of self-reflection described earlier, TEs have the capability of engaging in individual analysis at their convenience, further streamlining the process. Engaging in deliberate analysis of their teaching speaks to calls for professional development that emphasizes the complexity of teaching (Loughran, 2006) and reflection as an iterative, individual, as well as collaborative process (van Velzen et al., 2010).

An additional modification to the framework was that of repeating a portion of the CEI while bypassing earlier phases. Specifically, after doing an enactment, the TAs would go back to the analysis and collective planning phase again before doing another enactment. Thus, unlike Lampert et al.’s (2013) model, Magda and Zorra did not do a final analysis until they completed all of their enactments, and the observation, rehearsal, and analysis and collective planning phases related to their rehearsal, did not occur again. In Jao, L., Sahmbi, G., & Bran Lopez, M-J. (2021). The Cycle of Enactment and Investigation: An approach for novice teacher educator professional development. International Journal of Teacher Education and Professional Development, 4(1), 30-48.
typical CEIs, those engaging in the process (PSTs or in-service teachers) are building towards an enactment in which they teach content in their domain (e.g., secondary teachers preparing to teach trigonometry) and focus on developing HLPs to support their students’ learning of this material. Thus, the educators are developing their skills in teaching content and process. In our context, the NTEs are developing their facilitation practices more broadly regardless of the content of the enactments themselves. Thus, we question the purpose of numerous rehearsals for NTEs and how it can be applied in a context where multiple enactments happen in a short time span and when there is variation with regards to the content of these enactments.

Team meetings served as the setting for most phases of our CEI. Here, group discussions were significant in the TAs’ experiences and Limin and the two TAs became a collaborative and supportive structure for these NTEs. The TAs relied on the group to get feedback and encouragement about their facilitation practice. For example, in our adapted CEI, the TAs produced a living resource document that could be (and was) used by Magda and Zorra during their enactments and adjusted to suit their needs. Similar to the benefits of classroom teachers developing a lesson plan, the TAs valued both the collaborative planning process and the resulting product (Skowron, 2015). In team meetings, the TAs also shared successful strategies that they had used in their own enactments and found reassurance and kinship in mutual challenges. Researchers have described the power of collaboration in professional development (e.g., Devlin-Scherer & Sardone, 2013; Hunzicker, 2012) including developing a community amongst novices in different educational groups including PSTs (e.g., Hammerness et al., 2005), novice in-service teachers (e.g., Meyer, 2002), novice teacher leaders (e.g., Borko, Koellner, & Jacobs, 2014) Jao, L., Sahmbi, G., & Bran Lopez, M-J. (2021). The Cycle of Enactment and Investigation: An approach for novice teacher educator professional development. International Journal of Teacher Education and Professional Development, 4(1), 30-48.
and NTEs (e.g., Brody & Hadar, 2015; Swennen et al., 2009). Magda and Zorra had been thrust into unfamiliar territory, and understandably lacked confidence in their abilities. Further supporting existing research advocating for the value of collaboration for novices, the TAs indicated that having one another to go through the process with as NTEs was invaluable.

We would be remiss if we did not acknowledge the role that Limin played in the TAs’ experiences and the CEI itself. In addition to serving as another sounding board and supporter, Limin took a leadership role in guiding the NTEs’ journey by developing prompts and questions for the TAs to consider. As evidenced in team meeting transcripts, Limin led discussions by, for example, pressing the TAs to be more explicit in their analyses and creating scenarios for the TAs to think through their role as a facilitator and facilitation practices. Indeed, as the literature notes, mentorship and community building led by experienced TEs (e.g., van Velzen et al., 2010), can positively impact NTEs’ classroom practice and comfort in their new roles. Yet, we naturally wonder how the process would have unfolded without Limin. How would the TAs have approached and prepared for this experience as NTEs? Was Limin yet another member of the learning community co-developing her own practices as a TE herself, albeit less of a novice as compared to Magda and Zorra? Or, perhaps her role was specifically that of a TE educator tasked with developing the NTEs’ practices. Was it important that Limin had more experience as a TE and facilitator than the TAs and as such could enrich the TAs’ learning? These questions suggest the many avenues for further research related to NTE professional learning.

At a time when research focused on NTE professional development is still growing, this study provides insights into how a framework for professional development (i.e. the CEI) can be used to guide NTE growth. While our context led to some adaptations of the CEI, additional research is needed to further investigate NTE development and this application of the CEI for professional development. Indeed, as we did not collect data from the enactments that the NTEs engaged in, future studies that examine this phase of the CEI (in addition to the earlier phases) and long-term use of the CEI will provide a crucial perspective on the efficacy of such a framework for TEs (novice or otherwise).

Nevertheless, the findings from this study showcasing the flexibility of this framework are promising given the diverse contexts, needs, and goals of teacher education programs. Indeed, as the challenge of preparing PSTs for an increasingly complex world increases, the need for effective TEs only grows. It is thus incumbent upon institutions to develop and/or adopt ways of supporting and nurturing (N)TEs so that they, too, can do the work of supporting and nurturing future teachers.

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Figure 1: A CEI for NTEs (adapted from Lampert et al., 2013)