Research Paper

The Challenges of Adopting a Learner-Centered Approach to On-Line English Teacher Education: A Teacher-Research Study on Jigsaw Reading and Peer Teaching in Cambodia

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Abstract

In Cambodia, the shift to on-line learning due to Covid-19 reinforced an already overly teacher-centric approach to education, leading to the risk of greater learner disengagement. To address this problem, I[3] embarked on a research project involving the redesign of the on-line delivery of a final year English teacher education course on 'School and Society', in which all lectures were replaced with jigsaw reading (JR) and peer teaching (PT) tasks. To track the impact of this innovation, I recorded class sessions, kept observation logs, and obtained data from students' reflective journaling, interviews, and a focus group. This paper reports on the design principles behind the innovation and its impact on student motivation and engagement. The research has implications for on-line teacher education and the introduction of learner-centered pedagogies in global south contexts.

Keywords: learner-centered approach; teacher education; Covid-19

Introduction

This teacher-research study explores the adoption of two learner-centered activities, jigsaw reading (JR) and peer teaching (PT), in on-line English teacher education in Cambodia. The study reports on the experience of teaching and learning these activities from the teacher and student perspectives. The purpose of the study was to explore the feasibility of introducing a stronger learner-centered approach in this context. We[4] begin by outlining how a teacher-centered approach is deeply ingrained in the Cambodian education system and creates a challenge for the much-needed transition to a more contemporary, learner-centered approach. We review relevant literature on learner-centered pedagogies and introduce the methodology for the current study, which involves exploratory teacher research. We then present and discuss the findings, which reveal the considerable challenges involved in transitioning to learner-centered teaching while also adapting to an on-line learning environment.

Statement of the problem

A 2007 report by the Cambodian Ministry of Education (MoEYS, 2007) concluded that teaching practices at that time were strongly teacher-centered and traditional, and that change was needed. Cambodia has subsequently invested heavily in English language education across all education sectors leading to an increase in English teacher training programs across the country. Accompanying this investment, the Ministry has also paid a lot of

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attention to implementing a learner-centered approach, which is a cornerstone of a new curriculum introduced in 2011 and which was accompanied by a teacher-training package supporting this new approach.

However, despite pressure for English language teachers to deliver communicative proficiency in English, a traditional lecture style remains deeply entrenched in these programs, reflecting a culture of teacher-centric education in Cambodia (Pich, 2017). A consequence is that student teachers (STs) are not accustomed to or socialized into the more active learning teaching roles typical of education systems in which constructionist learning approaches hold greater sway. Instead, STs tend to be passive in class, a problem that was exacerbated by the arrival of the Covid-19 pandemic. This situation brought into stark relief the need for pre-service English language teacher education to change if communicative language teaching is to find a foothold in the country.

My own experience of working in teacher education and visiting many schools, since 2017, in my role as a teacher educator at Cambodia's leading teacher education institute, has confirmed these concerns about how deeply engrained a teacher-centered approach still is. I have observed that STs tend to shy away from asking questions or seeking help because they do not feel comfortable doing so. This reluctance to speak up is culturally embedded and is the flip side of the teacher-centered approach in the Cambodian education system. STs are used to being passive participants in the classroom who sit and listen to lectures and are not provided with many opportunities to take more active roles. For example, in the first semester, prior to the data collection for the current study, students asked not to work in certain groups and mentioned that they wanted to work with those they felt comfortable with. Some were using their phones or other devices during class. Some did not do the assigned tasks and said they forgot to do so or said they were too busy with other tasks in another university or workplace as an excuse.

The transition to on-line teaching during the pandemic amplified the aforementioned issues. The STs dropped in and out of the on-line classes much more frequently than on-campus classes. Also, since the students were not required to turn on their cameras and it was difficult to monitor students in multiple break out rooms, it was difficult to gauge and foster student engagement. Although the STs often blamed connection and technical problems for not being present, it appeared to me that there was a tendency to drop out of the class when being asked difficult questions. In not making opportunities to seek clarification of content that they had not understood well, these STs often did not perform well in assessments. In sum, these problems led to poorer academic performance by these students compared to previous cohorts.

Literature Review

Learner-centered pedagogy

The shift from a teacher-centered to a learner-centered pedagogy in higher education involves teachers giving more voice and choice to learners (Harris & Cullen, 2008) and learners themselves projecting learning independence (Kiran, 2020). Learner-centeredness stems from a 'constructivist learning approach' (Baeten et al., 2012; Zhang & Lin, 2018) and is characterized by a supportive learning environment in which students are free to make mistakes and learn from each other (Cornelius-White, 2007), and have more control over the direction and pace of their learning (Killen & O'Toole, 2022). Instead of being a controller in the classroom, the learner-centered instructor chooses 'democratic and collaborative' techniques to push students to be active participants (Wright, 2011). These democratic roles teachers adopt also help them to develop positive identities as evidenced in the qualitative study conducted in two urban secondary schools in the U.S. by Keiler (2018).

Evidence for the effectiveness of learner-centered pedagogy comes largely from studies that adopt a subjective research methodology, focusing, for example on the perspectives of students and teachers. As Bremner, et al (2022) point out, large-scale experimental research has not been conducted on this topic, although as they also point out, this scarcity may be because such research is methodologically and logistically challenging to carry out. Nevertheless, small scale quasi-experimental studies suggest positive outcomes. For example, Steckol (2007) introduced student-generated quizzes and one-minute papers as formative assessment tools in a learner-centered class and measured the impact of these innovations on student learning. Students in this class scored significantly higher on the final exam compared to those in a control group. There is also evidence of the successful implementation of a leaner-centered pedagogy in developing countries such as Nigeria, Kenya, and China (Thompson, 2013; Latimer & Kelly, 2015; Dong et al., 2019). Learner-centered pedagogy has thus been recognized worldwide in education and is included in the Sustainable Development Goals promoted by UNESCO on the ground that it allows 'individuals to contribute to sustainable development' (UNESCO et al., 2015; UNESCO, 2017).

However, not all research findings have been positive. For example, as Deng and Gopinathan (2016) report, the Program for International Student Assessment (PISA) found that in Asian countries such as South Korea, Singapore, and China in which learner-centered pedagogy was introduced, learners' academic achievement declined compared to their Asian counterparts. A study in India (Annie, 2017) also found that learner-centeredness was initially challenging for learners and for teachers who got confused with what roles they should take in the classroom. However, over time, with careful planning and suitable training on how to adopt this learner-centered approach, the students became more active participants in class and the teachers developed personally and professionally. As is widely acknowledged, more research is needed on the question of the efficacy of student-centered learning. One way forward is to focus research on particular approaches and techniques for implementing learner-centered teaching rather than on the broad construct. To this end, we now shift our focus to research on the two techniques that are the focus of the current study, JR and PT. These two activities were chosen because they both have characteristics that match the learner-centered principles introduced by Harrington and Bruler (2011) as summarized in Table 1 below. Moreover, JR was appropriate because it fits with the extensive academic reading requirements of the teacher education course in which the study took place. PT was chosen because it gave the student teachers opportunities to practice their teaching skills while also providing opportunities for deep learning of course content.

JR is an activity in which students are assigned to read different parts of a text in home groups, share the information in expert groups, and compare the information when they return to their home groups. PT, derived from 'self-determination theory' (Nshimiyimana & Cartledge, 2020), is an activity in which one or more students teach other students in the subject area under the notion that 'to teach is to learn twice' (Whitman, 1998). Table 1 below introduces these two techniques by outlining how they instantiate four learner-centered principles: voice and choice in knowing, competency-based activity, autonomy and self-efficacy, and collaboration.

Table 1. Learner-centered principles in JR and PT (adapted from Harrington & DeBruler, 2019)

Principles	Jigsaw Reading	Peer Teaching
1. Voice and Choice in knowing (How, why, when, and what)	– *How:* Through collaboratively building understanding of prescribed content and then taking responsibility for sharing this content with other students. – *Why:* To foster positive interdependence, collaboration and deep learning. – *What:* The content of the assigned texts or parts of a text.	– *How:* Through taking responsibility for designing and delivering a short lesson to peers. – *Why:* To foster agency and collaborative learning. – *What:* The assigned content and pedagogic strategies for teaching it to peers.
2. Competency-based activity	Learning involves each learner mastering the content of the assigned part and explaining it to peers, and peers learning content from each other.	Learning involves mastering the content of the assigned text, designing a lesson and to teach this content to the class, and the class learning this content.
3. Autonomy and self-efficacy	Students take charge of their own learning by first collaboratively learning the content of a text and then each learner having responsibility for sharing this content with other students.	Each student is responsible for taking charge (with teacher guidance) of identifying the key content to teach and how to teach it, and then delivering a lesson.
4. Collaboration	In the home groups, students work collaboratively to ensure the whole group understands the content of the text that they have been assigned. In the expert groups, students are responsible for teaching and learning from each other.	Students participate in each peer teaching session, supporting the peer teachers and learning from each other.

We will now review research that has investigated the effectiveness of JR and PT. As Hattie (2008) points out, JR has 'the potential to considerably accelerate student achievement'. In accordance with Hattie's claim, Law (2011) also found positive effects of JR on student learning. In Law's study, 279 Grade 5 students from nine classrooms in Hong Kong, were randomly assigned to three different experimental conditions: a drama group, a jigsaw group, and a control group (teacher-led approach). Perceptions of instructional practices, student autonomy, and student goal orientation were examined throughout the implementation. The data from a reading comprehension test and three questionnaires revealed that the jigsaw group outperformed the other two groups.

In addition to these positive findings, the author cautions that for JR to be effective, guidance must be well planned. Similar to Law (2022), Moreno (2009) also compared the experience and outcomes for 87 college students of either learning individually or cooperatively in jigsaw groups in a botany course. The results showed that students in the jigsaw group experienced a higher cognitive load, scored higher in a problem-solving transfer test, were more likely to produce elaborate explanations and co-construct knowledge with their peers. There is therefore compelling evidence for the efficacy of this technique. As Hattie (2012) shows in a comparison of the effect of various pedagogic interventions on an average year of learning for students, JR has an effective size of 1.2, which is much higher than the mean effect size for all studied interventions of 0.4. An effective size 1.2 of JR is equivalent to three years of learning in the space of one year.

PT has also been researched in a range of educational contexts. Lucas (2009) found that the combination of PT and I-clickers had positive effects on student participation and comprehension in high school Calculus classes. In higher education, Lasry, Mazur, and Watkins (2008) investigated the effectiveness of PT in a two-year college and two top-tier universities in the U.S., John Abbott College and Harvard University, and found that it strengthened student attendance in both contexts. Deslauriers et al. (2011) report similar results for Physics classes, namely an increase in student attendance and higher engagement. In a longitudinal study, Porter et al. (2013) compared PI to a traditional approach and found that PI led to superior student performance and to a decrease in fail rates (from 20% to 7% by a per-course average of 61%) in four different computer science courses. In addition to the evidence of its effectiveness in on-campus classrooms, there is evidence that PT can also be used effectively in on-line learning. Duncan (2005) investigated the perspectives of instructors and graduate students towards their first online teaching and learning experience. The students reported that PT improved their confidence, level of satisfaction, and gave them valuable practice with interaction and presentation skills. However, the instructors reported that the activity involved a substantial time commitment and that they lacked sufficient technological support and would have valued professional development related to the activity. Overall, studies have found more benefits than drawbacks from implementing peer teaching in the classroom, including improved student participation (Sansone et al., 2018), positive attitudes, higher levels of learning satisfaction (Ghalley et., 2019), and improved learning (Made et al., 2020).

In summary, the research literature offers compelling evidence for the effectiveness of these two techniques, and this led us to believe that they could provide valuable steps in the move away from a teacher-centric approach and towards a learner-centered approach in English language teacher education in Cambodia. However, in planning the study, we had not anticipated the shift to fully on-line study required in response to the Covid-19 pandemic. For this reason, our study addresses the experience of adopting JR and PT while at the same time adjusting to fully on-line teaching and learning.

Research Design and Method

The study adopted an exploratory, qualitative research methodology, which involved a narrative explanatory approach to analyzing and reporting the data.

Research questions

The study sought to answer three research questions:

1. What was the teacher's experience of implementing jigsaw reading (JR) and peer teaching (PT) in an on-line environment?
2. What did the student teachers (STs) say about their experience of the two activities in an on-line environment?
3. What lessons can we draw from the findings about transitioning to learner-centered instruction in an on-line environment?

Context and participants

The participants were a class of 29 Year 4 STs (19 females and 10 males) who were in the second semester of their Bachelor degree of Education, Department of English, Institute of Foreign Languages, Royal University of Phnom Penh. The STs had a range of socioeconomic and ethnic backgrounds and levels of English proficiency ranging from B1 to B2 on the CEFR.

The context for the study was the course 'School and Society 402' in the Teacher Education Program at the university for these students. As the primary researcher, I (first author) was the lecturer who was in charge of

and taught this course. Classes ran for three hours every Tuesday throughout the 15-week semester. Weeks 1-7 were on-line and weeks 8-15 were on-campus. Weeks 10 to 15 were a schools-based teaching practicum.

Data collection

Data were collected from weeks 1 to 9. The first seven weeks were on-line instruction (delivered via Microsoft Teams), and the final two weeks were on-campus instruction. JR was scheduled for weeks 2-6 and PT for weeks 7-9. Appendix 1 summarizes the implementation scheduling of the JR and PT sessions and the topics addressed.

Data collection involved the following five data sources.

1. Recordings of class sessions for weeks 1-7 (using Microsoft Teams)[5]: All lessons were audio and video recorded using Microsoft Teams.

2. Observation logs: I (first author) kept written lesson observation logs for each lesson in which I noted patterns of student engagement and other points of interest.

3. Reflective journaling: I also wrote five reflective journal entries at two weekly intervals over the nine weeks of data collection in which I documented my overall experience with implementing the two activities. All STs in the class (n=29) were also required to write three reflective 150-word journals, one after the implementation of JR, another after PT and a third at the end of the semester in which they reflected on their experience throughout the semester, especially concerning JR and PT and learning on-line. Prompts were given for each journal. The data set consisted of 83 student reflections.

4. Interviews: STs were invited to take part in an on-line, semi-structured interview after the intervention about the experience of participating in the JR and PT classes. Three agreed and were interviewed in the week immediately after the end of the implementation. During the interviews, the participants could view the recorded class sessions to recall what happened. Only one ST viewed the recorded class sessions before the interview but made no comments on the recording. Each interview took between 5-10 minutes.

5. Student focus group: All STs in the class were invited to join an on-line Zoom-based focus group in which they shared their perceptions on the implementation of JR and PT. Four accepted the invitation. Everyone turned on their camera to talk. The discussion focused on their motivation and engagement during the classes, their overall impression of the two activities, the challenges they faced, and their suggestions for further improvements. The discussion lasted for around 50 minutes.

The interviews and the focus group were audio and video recorded, and transcription was captured using www.rev.com.

Data analysis

Data analysis began with collating, transcribing, and tidying up the data in the five data sets. For transcription, an online tool (www.rev.com) was used. The transcribed data was reviewed to correct transcription errors. Once all the data had been collated, corrected, and formatted appropriately, I began the process of thematic analysis, which involved the following four stages:

Stage 1 (Iterative reading of the data sets): I first familiarized myself with all the five data sets through repeated reading, viewing, and listening during which I took notes on notable points which would later form the basis for themes. I started with viewing the recordings of class sessions and making notes of relevant actions and comments from STs. I then analyzed my observation logs and reflective journal entries, to identify content related to the topic of the study. Next, I analyzed STs' written reflections and the transcriptions (transcribed by www.rev.com) from the interviews and the focus group discussion.

Stage 2 (Generate codes): Furthermore, I generated initial codes based on the data set from stage 1. These codes were data-driven since they derived from extracts in the data set.

Stage 3 (Organize codes): I reviewed the list of initial codes collated in stage 2 and sorted them under the same two themes (positive impacts and challenges) for both activities: I then organized the initial codes into subthemes from each main theme.

Stage 4 (Refine codes): Once the themes and subthemes had been identified, we reviewed and refined them, checking for consistency in the thematic sets and combining or reorganizing overlapping themes or subthemes.

[5] Sessions in weeks 8 and 9 were not recorded because they were conducted on-campus.

Findings

In what follows, we first provide a descriptive account of the experience of implementing the JR and PT classes by the first author drawing on recordings of the classes and her observation log and reflective notes. We follow this with reflective analysis on the experience, drawing on the full data set, and, in particular, from focus group and interview data.

A descriptive account of the implementation

Background

The arrival of the pandemic forced the teacher training institution to abruptly shift to online classes, which were unfamiliar to both teachers and students. This was especially challenging in my class (first author) because it coincided with my introduction of the new learner-centered approach reported on in this study. The JR activity in particular required careful planning and technical capabilities to manage on-line because STs needed to be moved back and forth from different breakout room groups. This section describes these processes in more detail.

Week 1: Introduction

In week 1, I (first author) introduced STs to the course and to JR and PT. For all of us, this was the first experience of on-line teaching and learning, and for me, it was my first time teaching this course. Because none of us had had technical training for this modality, and the internet was unstable for some STs, the session was frustrating for all of us at times. This undermined my initial excitement about teaching this course. However, in these first sessions, the STs were animated and interested to know more about JR and PT as seen in their questions and comments in the chat box.

Week 2–6: Jigsaw Reading

JR started in week 2 and continued until week 6. The six JR activities typically took place in the first hour of each three-hour lesson. For each JR class, I allocated sections of the set reading in the textbook to various JR groups one week before it was to be used in class. I began each JR class by introducing the title of the reading and asking the STs what they know and what interests them about this topic. After wrapping up this discussion, I put the class into six 'home group' breakout rooms, with five members in each group, where they had approximately 15 minutes to read and discuss the section they were responsible for. In these groups, they primarily just read their section, with some discussion. I then moved them into expert group breakout rooms and gave them approximately 20 minutes to tell other group members about the key points in the section they had each read. In the final wrap-up phase of the class, we came back together and STs were asked to summarize the content they had discussed, after which I provided a recap and answered questions. This final wrap-up phase session lasted approximately 20 minutes. The next four JR classes followed the same pattern.

Weeks 7–9: Peer Teaching

After learning through JR in weeks 2-6, in week 7 we moved to learning through PT, and this continued for three weeks. The PT activities took the whole three hours of each of the three lessons. In week 1, each ST had been allocated an article to read that they would be responsible for teaching the class about. Each ST prepared a 15-minute lesson about their text and consulted with me about the practicality of their designed lesson before their session started. The STs each taught their lesson at a scheduled class time in the designated PT lessons. The following two PT weeks followed the same pattern but in different class environment. Week 7 continued as an on-line class, but from week 8, all STs returned to campus as a result of the lifting of pandemic restrictions, and so the final two weeks of PT were taught on-campus. Naturally, then, the story of the PT classes is also a story of a sudden transition in teaching mode.

A reflective discussion of the implementation

We will now reflect on the experience of adopting these two techniques, drawing on all five data sets, but especially on the focus group (n=4) and interviews (n=3) with STs.

Even though STs were excited with the new activity in the first JR session, challenges emerged in the following JR sessions. In these subsequent sessions, I (first author) observed off-topic behaviors, apparent boredom, lack of understanding, and reluctance to participate. As I recorded in my reflective journal, the STs became increasingly silent towards the end of each JR session and engagement waned from one week to the next. For example, I made the following comments in my reflective journal,

"Four STs didn't say anything or even text during the discussions in both home group and expert group. I asked them if there was anything wrong, but they didn't respond back to me. One of them did respond in texts saying Okay" (Week 4)

"So,me STs were in the groups but the screen showed On hold under their name" (Week 5 & 6)

In the first week of JR (week 2), STs were reluctant to turn on their cameras citing problems such as a weak internet connection, inappropriate background, and unreadiness. I did not want to force them, so they did JR without turning on the camera from week 3 onwards, which worsened their engagement. They became more silent in the expert groups, especially when they were supposed to discuss the content of their reading. With the camera off, it was hard to see if they were actually doing the assigned work. In my observation notes and reflective journal, I recorded evidence of lack of engagement. For instance, I noted that in most JR sessions from weeks 3 to 6, at least half of the class kept silent and preferred to text their responses instead when encouraged to participate. Also, when I moved around the breakout rooms to listen to STs' discussions, I often found myself intruding on discussions about hang-out plans and shopping. Similarly, in the chat box in each group, STs sometimes discussed off-task topics until I sent a message to get them back on track.

Incomprehension of set texts and of peer input was another challenge. In JR, in the expert groups, STs were expected to share about the different parts of the text that they had read and discussed in their home groups. However, not all the STs followed the instructions. In the expert groups, some did not share anything and just read from the text because they did not understand it well. Also, in these groups, STs often did not pay much attention when other members explained what they had read. Consequently, when the STs returned to their home groups, they could only superficially retell their section rather than comparing the information they got from the discussions in the expert groups (reflection paper, week 5). This undermined one of the JR objectives, which was to build comprehension through elaborated explanations and negotiation of understanding. This is different from Moreno's (2009) finding that students produced more elaborated explanation in JR sessions than in individual learning sessions. In the current study, there was a lack of elaborated explanation from STs since, due to their reluctance to unmute themselves, they typically just typed into the chat box a few phrases from the text they had read rather than explain their text orally. The difference between the on-campus classes in Moreno's study and the on-line classes in the current study is one factor that explains these different outcomes. At the end of most JR sessions, STs then approached me with a frown on their face and asked for more explanation from me about the texts that they worked on during the sessions. As two focus group STs said,

"I found it kind of hard too, cuz it's like the part that I was reading was different from the part that the other group was reading. So, I didn't get much understanding from other group just based on their summary……. there are so many difficult terms in the textbook" (S2, focus group)

"sometimes because of the instructions from the, the teacher will not clear, or the students might get confused by themselves, so it causes misunderstanding" (S3, focus group)

This is evidence that students had not learnt as intended through JR. STs complained that free rider(s) in the group impacted their comprehension and learning (observational notes, week 6). One ST complained that JR was not beneficial and suggested that the activity should be extended with a writing activity in which they could write summaries of what they had discussed. This ST also suggested that this writing could be used for review before quizzes or exams.

Despite these negative experiences, primarily drawn from observation data, the STs also offered more positive perspectives on their experience, especially with respect to JR, which they reported to be engaging and motivating. As two STs said,

"So, at first my motivation was low. Like I told you that because of the course name. I would already feel. What can I say? I would already feel not that good at all. But later I feel better" (S1, focus group)

"Instead of the traditional teaching setting, I get to think and discuss more with my classmates. I feel like I have the stance in class to exercise my explanation skills. This makes me motivated to be in class" (S10, interview)

Comments in the focus group about how JR improved STs' understanding of the text followed a similar theme. As S6 and S1 commented,

"So I could just listen to my peers to my friends and then I could understand" (S6, focus group)

"It can help students learn cooperatively which improves their comprehension and communication skills. We learn faster since it's easy to understand" (S1, focus group)

S5 also talked about motivation and responsibility:

"I am knowledgeable enough on the content through jigsaw reading. And we get to be independent and take the responsibility" (S5, focus group)

STs also mentioned how JR helped improve other aspects of learning, including, reading, critical thinking, and time management skills:

"I think I've improved my reading skill a lot" (S14, reflective journal #1)

"It also helps boost the students' critical thinking skill" (S2, focus group)

"I think that saves so much time for both students and teachers in overall class time" (S8, comment in MS Teams' chat box at the end of the session, Week 5)

From my perspective as the teacher, JR still required a lot of class time for the process itself and for answering questions and reexplaining at the end of each JR session. However, as I recorded in my observation log, unlike semester 1 in which STs dropped in and out of classes, the attendance improved in JR sessions despite some connection issues. These different perceptions of the JR activities show diverse perspectives on a shared experience. For the teacher, JR was challenging due to the effort required for careful planning, implementing, monitoring, and facilitating, and having to deal with the frustrations of on-line teaching. However, for STs, the activity appears to have provided a welcome relief from lectures. As the data showed, the opportunities that JR provided to be collaborative and discuss ideas were viewed as largely positive by them.

The introduction of PT in week 7 benefited from the previous six weeks of JR through which the students had become familiar with a learner-centered approach and with needing to be collaborative and autonomous. Consequently, the STs appeared to be lively and engaged at the beginning of the first PT lesson, as noted in my reflective journal. STs also found they were more engaged in PT sessions and commented positively about their improved engagement. This aligns with the findings in Lucas (2009) that PT increased student engagement. As evidenced at the end of a PT session in week 7, S19 commented:

"The course could be difficult and complicated, but it turned out to be not so boring during PT sessions." (S19, comment in MS Teams' chat box at the end of the session, Week 7)

Similarly, S12, in their reflective journal #2, wrote:

"As a student, I feel motivated every time I am asked to teach and explain to my peers what I have figured out on my own with more or less support from the teacher." (S12, reflective journal #2)

Despite this lift in motivation, technical problems often interrupted the flow of learning in Week 7, which was conducted online. For example, the ST who was teaching the class sometimes lost their connection and needed 3-5 minutes to get reconnected. Since each ST was given only 15 minutes to do PT, this compromised their ability to teach the required content. Also, after each technical error, I observed that the other STs became less engaged and interactive. However, the classes in weeks 8 and 9 were livelier than week 7, which was not surprising since this was their first chance to be back together on-campus after around one and a half years of on-line learning. STs appeared more ready to ask questions, voice their opinions, seek clarification, and discuss the content with their peers without me as the teacher having to ask them to do so. Even STs who had been reluctant to talk in class in JR, appeared to make more effort to engage in discussion in these PT sessions. However, while there was this general increase in interactivity, the three-hour classes were taxing on STs'

attention, and they became less engaged towards the end of each class. They also appeared to struggle with learning the prescribed content through PT and so they often sought me out after class for more explanation (observational notes, after the implementation). This aligns with what STs encountered in JR. As S20 commented,

> *"We can't understand much from PT sessions, so I hope you get to explain it to us, which helps us to understand things better." (S20, interview)*

Even if the STs struggled with grasping the content of the lessons, they could see the practicality of PT, especially when PT occurred right before the teaching practicum period. S13, in an interview, noted that PT was helpful in a way that it could help prepare them for their teaching practicum which is a part of teacher education program and could also help them further for their teaching profession. S1, in a focus group, also agreed with how PT was very practical in preparing them for the future career.

> *"I get to see the importance of the activity as a future teacher. As a teacher now, it really helped me to see some students' behaviors, and just to see how their upbringing really affects their performances in school" (S13, interview)*

> *"It physically and mentally prepare myself, I gotta do the lesson plan prepare the lesson in order to deliver it to my peers with insightful meanings. It helps with how we should do it as a future career" (S1, focus group)*

The STs did not see such practicality in JR, perhaps because they did not teach in JR and it was not so close to the teaching practicum.

Similar to JR, the STs' attendance also improved in the PT sessions compared to the previous semester, which confirms what Deslauriers et al. (2011) found in their study that PT helped improve student attendance. Grades also appeared to improve compared to the previous semester. This suggests that despite all the challenges, JR and PT had some positive effects on students' attendance and learning.

These findings are somewhat complicated in that they show some indications of a positive impact, while revealing considerable challenges, which were exacerbated by the dual demands of adapting to a pedagogic innovation and to the sudden shift to on-line learning. Another complexity is that while both JR and PT draw from learner-centered pedagogy, they each require quite different levels of teacher preparation and classroom management skills. In PT, STs did not need to be moved around for group work. In contrast, JR required the following progression of participation patterns: Whole class –> Home group breakout rooms –> Expert group breakout rooms –> Home group breakout rooms –> Whole class wrap up. Since these JR sessions were conducted on-line, the flow of the aforementioned progression was occasionally interrupted due to bad internet connection, technical errors in MS Teams, and the unfamiliarity with both JR process and on-line environment. This interrupted flow of learning in the complex progress of JR perhaps explains why it received more negative comments than PT. Despite the challenges, I recorded in my reflective journal at the conclusion of the semester that, overall, the experience had been a positive one. The implementation issues, especially with JR, provided useful information for planning of future delivery of learner-centered instruction.

Conclusions

In conclusion, this small teacher-research study, highlighted the many challenges a teacher faces in seeking to innovate in the classroom, especially in the context of a disruptive event such as the Covid-19 pandemic. While previous research has lauded the benefits of JR and PT, our study suggests that this research perhaps underplays the huge challenge that teachers who are new to such modes of teaching face in seeking to transition into them. All of this speaks to the crucial role of adequate training and support if teachers are to be appropriately equipped to engage with classroom innovations. Equally, learners need training and support as they learn to adapt to new learning methods, especially those who are new to a learner-centered approach and an on-line learning environment. In the context of a teacher education program, these points are even more crucial since STs are likely to carry their experience of innovations in their teacher training years with them into their teaching careers.

From a research perspective, the study drew on multiple data sources to allow for thick description of the complexities and tensions that are inherent in pedagogic change and innovation. Such data does not provide

easy answers, but it does provide insights into the dynamic ecology of the classroom. Two limitations are to be noted in this study. The first concerns the unanticipated problem of introducing an innovation at the same time as transferring to on-line teaching. This made it difficult to tease out the effects of the innovation from the conditions and mode in which it was delivered. In particular, technical problems such as internet instability had a marked impact on the success of the innovation. To address this issue, future research might usefully compare the effectiveness of JR and PT in on-campus and on-line classes, and in a context where the teacher and learners are familiar with on-line learning. The second limitation concerns my dual role of teacher-researcher. This required me, as a researcher, to seek the STs' views of their experience of activities that I taught. Although the STs were encouraged to speak freely, and there is plenty of evidence that they did so, it is possible that they were constrained from fully expressing their opinions to me as their teacher. One way to address this in the future would be to obtain data via an anonymous survey. Another option would be for a different person to conduct the interviews.

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Appendix 1

Implementation schedule

Table 2. Timeframe and coverage of the implementation

Weeks 1–9 (15/2/22 to 22/3/22)	**Topic/title**
Jigsaw reading	
1	Introduction to the module/course
2	Sociology of Education
3	Getting Started: Understanding Education Through Sociological Theory
4	Moral Education
5	Conflict Theory of Educational Stratification
6 (all on-line)	Social Reproduction
Peer Teaching	
7 (on-line)	– On understanding the process of schooling – The structure of educational organizations – A broader and bolder approach uses education to break the cycle of poverty – School principal: Complications and complexities – The status of teaching as a profession
8 (on-campus)	– Make students part of the solution, not the problem – Gender and education – Organizing for success: From inequality to quality – Beyond the one-size-fits-all college degree – The not-so-pink ivory tower
9 (on-campus)	– Taking action on education in developing countries – Deschooling society – Can schooling contribute to a more just society?