

Facilitation of trialogic spaces: reflections from Irish and Scottish online lesson studies

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ABSTRACT

Digital innovations in teacher education have continued to evolve since the Coronavirus pandemic. As such, there has been recognition of the need to further examine the affordances and constraints of digitally mediated learning environments (Brown-Wilsher, 2021; White & Zimmerman, 2021). In response, this paper draws on the concept of triologue (Hakkarainen, 2009), i.e. technology-mediated dialogue, where digital tools are drawn on to make deliberate building and creation of knowledge accessible. Triologue involves iterative communication and exchange of ideas in order to develop shared objects (Paavola & Hakkarainen, 2014), which can consist of artefacts, for example, lesson plans; and practices, such as pedagogical techniques. The paper focuses on two different Online Lesson Study projects facilitated by the authors, which took place in Scotland and Ireland. Insights gleaned from each project illustrating triologue in action are shared, in order to illuminate the potential of trialogic space for enabling teachers' collaborative learning.

KEYWORDS

ONLINE LESSON STUDY

COLLABORATIVE LEARNING

TRIALOGUE

INTRODUCTION

Digital innovations in teacher education adopted during the Coronavirus pandemic have continued to evolve. Alongside this, there has been widespread recognition of the need to better illuminate the affordances and constraints of online learning models (la Velle *et al.*, 2020; Brown-Wilsher, 2021; Hrastinski, 2021; MacPhail, 2021; White & Zimmerman 2021). Brown-Wilsher (2021) highlights the need for further insights into the approaches educators use for utilising digitally-mediated learning environments such as Online Lesson Study (OLS). OLS represents a contemporary adaptation of the well-established Japanese Lesson Study (LS) model; a collaborative professional development approach where a group of teachers come together to collectively research, plan, teach and reflect on a research lesson with a group of learners. LS has been well acknowledged as a powerful means to developing teachers' learning and practice through enhancing teacher knowledge (Ní Shúilleabháin, 2016; Dudley & Vrikki, 2019; Vermunt *et al.*, 2019). It has been argued that OLS can effectively enrich opportunities for teacher learning in ways not possible through traditional LS, for example, through overcoming the barrier of geographical distance (Widjaja *et al.*, 2021); and through generating knowledge efficiently, in real time, using collaborative digital tools (Weaver *et al.*, 2021; Holden, 2022). Given its novelty, OLS scholars (Calleja & Camilleri, 2021; Huang *et al.*, 2021) have called for further empirical investigation into the features of OLS that facilitate teacher collaborative learning. In response, this paper draws on the concept of trialogue (Hakkarainen, 2009) to examine two different OLS projects, facilitated by the authors, which took place in Scotland and Ireland.

The question guiding the use of case study is: how do trialogic spaces impact facilitation in OLS? This paper will focus on sharing insights gleaned from critical reflections on each project, to

illuminate the affordances of trialogic space for teacher collaborative learning more broadly.

TRIALOGUE IN ONLINE LESSON STUDY

Triologue refers to technology-mediated dialogue where digital tools are drawn on to make deliberate building and creation of knowledge accessible (Hakkarainen, 2009). The concept of trialogue involves iterative communication and exchange of ideas through verbal and digital interaction, in order to develop shared objects (Paavola & Hakkarainen, 2014). These shared objects can consist of artefacts, for example, lesson plans; and practices, such as pedagogical techniques. During trialogue, co-constructed shared objects can be saved, revisited, modified and repurposed over time (Pifarré, 2019).

In OLS, trialogic space is generated when teachers are invited to make their tacit experiences, knowledge and perspectives explicit using digital mediational tools, for example, Zoom, Google drive or MS live documents. This space is mediated by the OLS facilitator, who draws upon a variety of facilitator actions in order to foster teacher collaborative learning (Holden, 2023; Mynott & O'Reilly, 2023). The aim of this learning is to enable teachers to engage in intrapersonal and interpersonal boundary crossing, where they are exposed to new knowledge, ideas and practices from their OLS team members (Holden, 2022). Furthermore, digital artefacts, such as meeting notes, reflective accounts and ideas for research lesson plans, which are generated over the course of OLS discussions, help to make learning trajectories more visible, supporting knowledge to develop over time.

METHODOLOGY

Despite there being examples of trialogic practice in LS, such as joint objects (Hrastinski, 2021) and Boardwork (Tan *et al.*, 2021), these are not defined as trialogic spaces. Instead, the artefacts,

or objects, are seen as facilitating objects (Engeström, 2015). To further explore trialogic practice, we utilised a multiple case study design (Yin, 2018) through which we sought to compare how trialogic spaces were used and facilitated in OLS in Ireland and Scotland.

The case studies were constructed to respond to Yin's (2018) proposition that a question is key to the structure of case study. To facilitate this, the OLS cycles needed to meet comparative criteria. These criteria were selected to ensure the cases could be compared:

- The Lesson Study needed to be undertaken online
- Facilitators were involved throughout the OLS cycle
- Trialogic spaces were generated as part of the OLS.
- Transcription of Lesson Study meeting discussion was undertaken to provide researchers with opportunities to explore participant interactions with the trialogic artefacts.

The two case studies would provide contextualised information about the OLSs and their use of trialogic space. To do this, illustrative vignettes were constructed to describe the trialogic spaces used in each OLS. These vignettes were then considered and compared, to triangulate emerging themes (Stake, 1995). A grounded approach (Strauss and Corbin, 1998) was then used for theming and pattern identification. Initially, project data from OLS meeting transcripts were reviewed by the authors individually and codes established. Following this, authors drew on the 'constant comparative' method (Strauss & Corbin, 1998) where they convened to agree, consolidate, refute and determine the final set of codes. This was followed by further engagement with the data, resulting in the collective development and identification of themes. This enabled internal validity (Yin, 2018) to take place and enabled reflections on the case studies (Stake, 1995) to take place. These themes were

then compared, to explore similarities and differences in the interaction of trialogic spaces within OLS facilitation.

Before both OLS cycles took place, ethical approval processes were undertaken at the respective authors' universities, and all participants gave informed consent.

VIGNETTE 1: GRANITE HILL PRIMARY SCHOOL OLS (SCOTLAND)

An eight-part OLS cycle focused on supporting participant staff to develop knowledge and practice in supporting primary children who had experienced trauma. Eight participants (three support staff and five teachers) worked with two facilitators via Microsoft Teams. Each collaborative session was recorded, and the transcripts from these sessions were used to capture participants' professional learning.

After the second collaborative learning session, the facilitators noticed that participants were not communicating with each other directly and were, instead, simply responding to facilitator prompts and questions. Therefore, the facilitators chose to introduce trialogic learning principles to the third group session, with the hope that creating and managing an interactive artefact (Mercer *et al.*, 2017) might lead to enhanced collaborative, 'co-constructive talk' (Pifarré, 2019: 2).

The artefact in question was a shared MS document which was edited live in front of participants. The participants discussed a fictional 'case study' child and thought about the strategies they might implement to support the child. Using the live MS document meant that participants could add to the document in real time, review and organise their answers/thoughts and reflect on group points more easily.

The use of the shared artefact created a 'synchronic shared space' (Pifarré, 2018: 4) which meant that facilitators were then able to move from a leading and instructing role to a more facilitating role,

by allowing participants to communicate through 'mediated means' (Pifarré, 2019: 3). Participants were then enabled to improve their 'cumulative talk' (Littleton & Mercer, 2013) and thinking through the use of the joint object. A section of dialogue from professional learning session 3, where participants were discussing strategies that can be used to re-engage the fictional child after break time, can be seen below.

John: So, would you say that [using] now/then is a second strategy?

Jordan: Yes, so they know... what is going to happen and it might just avoid the kick-off in the first place because they know 'right that's the bell, I'm going to be going to the play-based learning first'.

Morgan: Can I add as well that I guess with that sort of thing, we've got children that we, and as much as I don't have to use sticker charts, I will avoid them by all costs, but I've got children that struggle to come in after a break time and if they follow the instruction to come in and whether it's to my room or another day... giving them like a little reward like a sticker does seem to work. I know it's bribery, but it does seem to work sometimes.

Ashley: I've seen as well some of the PSAs [pupil support assistants] almost make a game, so like a race to the classroom or a race to the door, that they're coming in so that they're in the line and they make a game more coming in as well. So not just shouting at them to come in or, you know, talk of them... turning into a game. So, it's almost distracted from the fact that they're actually going back into the classroom. They almost forget about it. And then that way they could go to the play-based game where it's more of a reward, like you said, because they're through the door it's a bit of excitement. After that, you get the reward, and you get the time to play before going back.

John: So we've got so far a soft start,

a 'now and then' board, knowing the next steps, occasional reward structures and also a race to the classroom, we're making something playful. Any other strategies or ideas we can add?

The above extract demonstrates participants talking to each other without the need for John (facilitator) to intervene between each participant talking. Runs of linked conversation between participants had not been seen in the first two professional learning sessions but happened frequently throughout session 3 because of the use of a trialogic, shared object, which provided a visual prompt and reduced participation anxiety. The use of the trialogic object led to joint endeavour and provided a scaffold to support and prompt discussion, allowing participants to go on to use the document to inform their practice using co-created knowledge (Pifarré, 2019). This led to a more visible and accessible learning trajectory, where participants could reflect on, and review, their previous learning, before continuing to develop their thinking further.

The use of the joint object also allowed for an important change in the role of the facilitators, from one of previously instructing and asking questions, to that of facilitators who were able to use clarification, prompting and recap-and-add to improve communication between participants. The use of clarification can be seen in the extract above, with John checking that the use of 'now/next boards' was considered by participants as an appropriate strategy for supporting children. This clarification, along with the use of the joint object (an interactive shared document) meant that participants talked through the use of a now/next board and added further strategies that they thought also might help children (recap-and-add strategies). Lastly, John (the facilitator) can be seen recapping the summaries mentioned by the group before asking a prompting question (recap-and-add strategies). Therefore, the use of a trialogic, shared object in this

vignette demonstrates what Mynott & O'Reilly (2022) deem to be a key feature of learning within Lesson Study cycles; that participants are provided with 'an open forum, allowing for divergent theory negotiation' and that 'group members are keen to collaborate with clear autonomy'.

VIGNETTE 2: OLS IN AN INTER-SCHOOL PARTNERSHIP: TRANSCENDING TRIALOGIC SPACE AND APPLYING LEARNING TO REAL-WORLD PRACTICE (IRELAND)

The OLS conducted as part of this project was focused on developing Irish primary teachers' STEM Knowledge for Teaching. One OLS cycle was facilitated by the author, who worked with a government-funded professional development support service. The cycle was conducted over six weeks, with two parallel OLS groups, each comprising three teachers from three different schools. Some of these teachers knew each other from previous projects they had been involved in, but for most, the OLS was their first-time meeting. OLS meetings were facilitated via Zoom, with Google Drive used to enable sharing and co-generation of research lesson materials including lesson plans, teaching resources and reference materials such as academic articles. Each meeting lasted 60–90 minutes and was fully attended by all OLS team members. An OLS guide booklet (Holden, 2020) containing prompt questions aligned with each phase of the OLS was utilised to guide the process. While the OLS meetings took place online, the teachers chose to teach their research lessons face-to-face with their own classes. Lessons were videoed and self-reviewed by each teacher, using co-developed observation schedules to aid review. Student work samples were gathered and uploaded to each OLS group's project-specific Google Drive folder to inform teachers' collective post-lesson reflection discussions, which took place online.

As part of the research-and-plan phase of the OLS process, teachers engaged in an online 'journal club' (Tallman & Feldman, 2016) meeting with their facilitator. During this journal club, teachers were each assigned a different research article linked to the broad, overarching goal they had agreed on in their previous meetings. For the first part of the meeting, teachers were invited to switch off their cameras to read and reflect on their assigned article using the 'connect, extend, challenge' thinking routine (Ritchhart *et al.*, 2011). Teachers then switched their cameras back on and reconvened to share their reflections with their OLS team members. Teachers' typed reflections on each article were, subsequently, uploaded to their shared Google Drive folder for access afterwards.

The articles were chosen by the facilitator to provide a springboard for bridging theory and practice (Posch, 2019), by prompting teachers to consider pedagogical approaches that maximised learning for all students. For example, in an article by Schoenfeld (2016), teachers explored the 'Teaching for Robust Understanding (TRU) framework'. During their conversations in the journal club, teachers shared significant ideas and noteworthy quotes from their articles, which they felt aligned with their OLS overarching goal. For example, one of the teachers remarked: 'At times, we need to take a step back from instruction and allow students to learn through experimentation and investigation. Our role changes from instructor to facilitator and scaffolder' (Group 1, journal club meeting).

In line with Pifarré (2019), content deriving from journal club meetings was revisited by the teachers when making decisions on what tasks to include in their research lessons. In this way, teachers operated in a trialogic space (Paavola and Hakkarainen, 2014) by moving back and forth between the online and real-world environments, where they applied ideas from OLS meetings to their practice, and *vice versa*.

For example, one of the teachers brought an idea from an article on 'Talk Moves' (Keeley, 2016) to life when they spoke with their OLS group about how they used a technique (sentence stems) for fostering student dialogue: 'I find that the sentence stems are a great way to teach the children how to do that [engage in dialogue]. Things like 'I disagree or agree because' or 'I still have questions about such a thing' or 'I'm confused by...' (Group 2, journal club meeting).

In addition to testing out ideas from their journal club during their research lessons, the teachers also expressed intentions to apply new learning to future practice. For example, one teacher noted that, in future, they would 'start lessons with their [the students'] voices being heard, rather than always filling in the blanks for them, because I think they get kind of used to that, don't they?' (Group 2, post-lesson reflection meeting).

Project findings revealed that teachers' knowledge of effective science, technology, engineering and mathematics (STEM) teaching approaches developed through triologue comprising online conversations and sharing of ideas within each of the OLS groups (Holden, 2022). The focus of these conversations was on co-generation of knowledge that was closely aligned with practice. During the journal club meetings, the facilitator played an important role in supporting triologue in two main ways. Firstly, by providing relevant and stimulating research articles that connected with the groups' overarching goals. Secondly, through the use of the 'connect, extend, challenge' thinking routine, which enabled teachers to critically reflect through the lens of their previous practice (Brookfield, 2017). This reflection supported teachers to bring new ways of thinking to familiar practices.

DISCUSSION

Within both vignettes, trialogic space was generated and held in different ways, but in both cases, with the purpose of

facilitating learning. Through the grounded analysis and pattern identification, different themes of use of the trialogic space were identified. These included boundary spanning, increasing visibility of participant learning trajectories and interleaving between independent and collaborative thinking. Each of these has an impact on the facilitation of OLS.

COLLABORATIVE SPACES AS BOUNDARY SPANNERS

In Vignettes 1 and 2, there is clear evidence of institutional, physical and geographical boundary crossing (Akkerman & Bakker, 2011), where participants from different physical institutions work together to develop their professional learning through the use of a shared trialogic space. Vignette 2 demonstrates how participants in different education settings were enabled to share and collaborate across institutional and interpersonal boundaries of physically being in different buildings. This shared space benefits participation within OLS by allowing others to create collaborative third spaces (Engeström, 2015). This allowed for sharing ideas, through a joint artefact, online, in real time. This would not be possible using traditional LS methods. In this way, sharing a joint object allows for the crossing of multi-level boundaries (Akkerman & Bruining, 2016) and encourages teachers to work outside their traditional communities of practice. This aligns with Wenger *et al.*'s (2002) seven principles of communities of practice, which encourage the continued evolution of the community through increased networks.

FROM 'BLACK BOX' TO 'GLASS BOX'

Within both projects, trialogic space not only enabled teachers to reveal their knowledge but also served as a dynamic, transparent and democratic environment. In this way, the trialogic space could be considered a 'glass box' rather than a 'black box', i.e., tacit learning processes are made explicit (Dudley, 2013). This was achieved where digital artefacts, such as meeting notes and shared reflective

accounts, generated over the course of OLS discussions, made teachers' learning trajectories more visible than in traditional LS (Pifarré, 2019). For example, within the Scottish vignette, this trajectory involved participants posting ideas and using the online environment to contribute and extend ideas. Similarly, in the Irish vignette, teachers used theory from academic literature to reflect, individually and collectively, on their practice. This actualises Wenger *et al.*'s (2002) principle of the importance of using public and private spaces to build communities of practice. In the Irish vignette, the literature was read independently (private), and then shared and reflections recorded in real time (public), using the OLS group's digital shared document.

INTERLEAVING

Turn-taking is a feature of both vignettes. In the Irish vignette, there is movement between spaces of independent thinking, action and reflection, to collaborative thinking. In Scotland, there is a linking of the ideas through the trialogic object. In both case studies, the impact of this interleaving of independent and collaborative thinking around the trialogic space enables the participants to build cumulative talk (Littleton & Mercer, 2013). In the transcript extract of the Scottish vignette, the power of the trialogic space can be seen, as the facilitator moves to a position of invisible facilitation (Mynott & Michel, 2022) where the facilitator is able to respond through summary, repetition or clarification (Mynott, 2018). This means that the talk between participants can build on their collaborative contributions. In Vignette 2, the power of this within cumulative talk is further exemplified. There are moves between participants where they extend each other's learning and use the trialogic artefacts to share their thinking to further build their shared understanding. In more traditional LS models, this might be identified as joint endeavour (Dudley, 2015), but in OLS, the trialogic space means that it is not solely endeavour but a shared building of collaborative knowledge. Within

this collaborative building, we can see different conversation interchanges developing due to the trialogic artefacts and space, and this could suggest a way to a further understanding of how to facilitate, not just OLS, but more traditional, in-person cycles.

CONCLUSION

The authors propose that mediated trialogic space can serve to generate and guide collaborative learning. This claim is supported through the OLS examples provided in each vignette, where teachers transcended the digital interactive environment, and ideas from triologue were applied to their practices with students in a real-world context. Teachers then reconvened online to share with the OLS team members their learning from the research lessons conducted in their classrooms.

Within both projects, authors drew on triologue, mediated and managed by the OLS facilitators, as a mechanism to support teachers to move from peripheral to active participation (Wenger *et al.*, 2002). Having a trialogic space, enhanced interactions by reducing anxiety associated with discussion and supporting teacher participants to progress from monologue to organic conversations.

In this way, for collaborative learning activities where teachers are based in different sites, the authors propose that triologue in OLS can offer rich opportunities for institutional boundary crossing, where teachers contribute knowledge, ideas and practices from their site, in order to co-construct new shared practices with teachers based in other sites. Digital artefacts generated during OLS also support capacity building, as these artefacts can be easily shared with teacher colleagues in their wider school community. ■

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