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Making the Classroom Inevitable

The Role of Dialogic Learning and Teaching in Problem-Based Learning Environments

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Abstract

This case study examines how dialogic learning and teaching (DLT) can strengthen problem-based learning (PBL). Conducted in a fifth-semester communication course at Aalborg University, Denmark, the intervention explored whether the physical classroom can function as a meaningful dialogic space that enhances group work, collaboration, and student responsibility in alignment with PBL. Drawing on theoretical accounts of dialogue, particularly Wegerif's framework, the study investigated class-level and group-level dialogue facilitated by the teacher rather than self-facilitated dialogue outsourced to isolated student groups. Empirical findings from surveys and classroom observations indicate that DLT fostered deeper engagement, strengthened mutual accountability, and improved students' willingness to contribute, while also revealing tensions such as reduced opportunities for digital note-taking and the significant time required for high-quality dialogue. The study concludes that DLT can substantively enrich PBL by supporting shared problem exploration and collaborative meaning-making when adequate time and flexibility are provided.

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Introduction

We live in an era of digitalization. Teaching previously reserved for the classroom can now be transported out of it and take place elsewhere: if the teacher uses slides, students can check them out later at home. If the teacher does not say more than what is in the text, students may simply read it at home. If the teacher records their lecture, then why not watch it when convenient? If the teacher is bad, watch a MOOC with a skilled teacher instead.

No matter what one thinks of these examples, one may didactically challenge them in all sorts of ways, it still remains true that the era of digital learning and teaching environments forces us to ask the question: what is the point of the classroom – is there still a point to it, not only as a social place, but as a didactically engaging place?

The group-work focus of problem-based learning (PBL) can be seen as extending the fragmentation of the traditional classroom. PBL emphasises supporting student groups, often through teacher-facilitated in-group reflection and engagement. But what happens when the teacher also facilitates dialogue in plenary with all groups together, and could this enhance learning and aid problem-solving in PBL? Can an explicit focus on dialogue in the classroom, not just in groups, strengthen PBL?

In this case study conducted at Aalborg University (AAU) with its AAU PBL principles in mind (see Askehave et al., 2015), I show how dialogic learning and teaching (DLT) can contribute to PBL.[1] I demonstrate that DLT can substantiate student responsibility (Principle 6) as well as collaboration (Principle 4) and group work (Principle 2), and how physical classroom courses support the PBL framework when facilitating dialogue. In sum, this case study explores how dialogue supports PBL and makes the case for a stronger integration of DLT in PBL.

[1] I made this case study in 2025, which means that I refer to the "old" AAU PBL Principles. The new ones can be found here: https://www.en.aau.dk/about-aau/profile/pbl#

Problem formulation

How can the physical course classroom meaningfully support Aalborg University's PBL Principles by functioning as a dialogic space, and in what ways might DLT strengthen group work, collaboration, and student responsibility within the PBL framework?

Theoretical foundations: dialogue within PBL

In this case study, I wanted to empirically test a theoretical hypothesis: whether DLT, as outlined by Rupert Wegerif, who is one of the leading scholars in this field, can be meaningfully envisioned as a form of PBL. That is, whether the goals of PBL could be fulfilled via DLT in the classroom.

In an influential article, Diana Dolmans et al. (2005) argue that although there is evidence that students and teachers are satisfied with PBL, most problems arise from its poor implementation; for example, when tutors are too directive and problems are too well structured. I wanted to investigate whether DLT could help guide teachers to be PBL facilitators rather than directive or monological instructors, and in this case study, students identified their own problems through observation, opening the problem space to interpretation and avoiding the over-structuring identified by Dolmans et al.

In the PBL literature, dialogue is not a foreign concept, but it is often understood as a group-internal classroom practice. This case study tests dialogue as a class-level practice, involving the teacher as a dialogue partner, not only as a distanced facilitator of dialogue within student groups. This places additional responsibility on the facilitator role envisioned in PBL.

Seminal overviews define or unpack PBL as "facilitated problem-solving" through "self-directed learning" (Hmelo-Silver, 2004), as a "cognitive endeavour whereby the learner constructs mental models relevant to problems" (Schmidt et al., 2011), or by emphasising that PBL is not only problem-focused but also problem-structured in curricular design (Jonassen & Hung, 2012). None of these studies mention dialogue. Moreover, one study assessed the prevalence of dialogue in problem-based teaching with discouraging results, examining the presence of dialogue in collaborative problem-solving groups and finding "a low incidence of high-quality dialogue" (Innes, 2007).

This, however, does not mean that dialogue is absent from PBL. Some emphasise Socratic dialogue as a value of PBL (Savin-Baden, 2020). Another

study repositions the facilitator role in PBL, specifically within a design-based research context, as that of a coach, accentuating the dialogue between teachers and students and underscoring the need for facilitators (or coaches) to be "skilled improvisers" (van Diggelen et al., 2021). One may also look to Mark Newman's (2005) listing of "capabilities" developed through PBL, such as "active listening," "reasoning critically and creatively," and "interpersonal skills," which are neighbouring concepts to 'dialogue' and, if realised in the classroom, would also naturally embed dialogic elements.

What is currently missing, however, is how, or if, DLT can work as a *structuring framework* for, and not just a product of, PBL. That is, can DLT help enhance PBL's own core values or principles through a compatible conception of dialogue? How would that look, and would it work? What parts of DLT can, if any, be integrated into PBL fruitfully?

What dialogic learning and teaching is

Wegerif (2006) describes dialogic learning as situated in Mikhail Bakhtin's concept of dialogue in which "meaning is always a response to a question", alluding to pragmatist educational philosophy (e.g., John Dewey) where inquiry in a vacuum is a chimera and must be based on experience within the context of a problem/intervention. One may allude to dialogue as having an intention towards others (Dysthe, 2003) or as a matter of shared responsibility for moving forward (Høegh, 2018, p. 78). But often dialogue in education is so ill-defined that either all teaching is by definition dialogic (reducing dialogue to all types of talk) or an ideal hard to realise at any level. Certainly, dialogue is not just verbal engagement, and we may here define DLT broadly as an educational approach that makes students learn by being taught through dialogue, that is, a *harnessed* form of talkative engagement. Below, I outline the specific form of such engagement mobilised in this PBL case.

Dialogic learning and teaching, which, as a caveat, may take several different shapes (e.g., Dialogic teaching (Alexander, 2020), Philosophy for Children (Lipman, 2003), or Thinking together (Dawes et al., 2004)), is a robust phenomenon that has proven to be successful in making students solve the specific problem they are working on faster, meaning that they learn the subject matter faster, and it has proven that what they learn is stored longer term in their memory and/or understanding (see, e.g., Wegerif, 2006, 2019).

How successful and failed dialogues look

Dialogue has both outward and inward aspects. Outwardly, what Wegerif terms identity-in-dialogue involves orienting toward the shared dialogic space rather than one's utterances as personal expressions. Contributions are treated

as tentative steps toward solving a problem together, allowing even one's own position to be evaluated and criticised (Wegerif, 2006). In this mindset, "wrong" contributions invite clarification and shared reasoning, while correct ones (or the *reasons* for them) function as scaffolding for others, deepening understanding for all involved.

Inwardly, dialogue requires reflexivity: the ability to change one's mind, question one's position, and ask for help (Wegerif, 2006). These qualities contrast with failed group talk characterised by domination (asymmetrical influence) or uncritical agreement (premature consensus). Integrating these dialogic orientations into PBL shaped the intervention in this case study.

Pedagogical intervention

I taught Designing Communication 2: Learning, Network and Organisation, a design-based fifth-semester bachelor's course in Communication and Digital Media at Aalborg University, Copenhagen Campus, in autumn 2025. According to the curriculum regulations, students are expected to develop and implement communication and information-science solutions related to learning, networks, and organisation, translating theoretical and methodological knowledge into practice. The course is structured around a case – in this instance, a second-year high school (gymnasium) class – for which students design a learning intervention aligned with the class's learning goals.

Having taught the course the previous year without this intervention, I knew that encouraging students to speak in class was a challenge. My aim was not merely talk, but effective dialogue that would support learning outcomes. I co-taught the course with a PhD student, who covered the practice-oriented components, while I taught the theoretical elements.

The intervention spanned ten lectures (45 minutes each), divided over three slots (1×2 and 2×4 lectures) within a relatively short period of eight days (Tuesday, Thursday, and the subsequent Wednesday), with c. 20-25 students attending each class slot. The evaluation was conducted immediately after the classes.

Four times dialogue

Notably, the students' teaching designs were themselves encouraged to be based on DLT, making DLT part of the theoretical content I was responsible for teaching. This meant a quadruple relation to dialogue in the course: the students were 1) taught through dialogue, 2) they were taught about dialogic

teaching and learning, and were expected 3) to embed dialogue in their teaching design, and 4) to execute this in practice.

As stated, my intervention focused only on the theoretical parts of the course I taught, which meant excluding elements such as feedback seminars. I chose these lectures because I had full control over them and because they allowed me to explore how abstract concepts, such as pragmatism and interpretivism, affordance and multimodality, could be taught dialogically and applied by students in their own high school interventions.

Prompting the students

In the first lecture, I wanted to address upfront the extent to which higher education learning has become digitalised (as noted in the Introduction) and to invite the students to reflect on what the physical classroom should be for if learning can so easily take place elsewhere: why meet at all, beyond convention? I also wanted to prepare this particular cohort – one I knew from experience tended to be quiet – for a pedagogical experiment that would require substantial participation. This, I felt, called for a framed introduction that acknowledged their experience of being "quiet" in the classroom. I presented the robust results of DLT supporting deeper, more durable learning, and since the students were themselves expected to design dialogic interventions for high schoolers, it seemed appropriate that they learn what dialogue entails through their own experience.

I therefore asked, "What's not to like?" – and answered myself: "Ugh… the *talking* part." I then explained that our first activity would be to talk about what makes it difficult to speak in class. The students immediately began talking. I had three aims. First, to understand what they found challenging so I could adjust my teaching. Second, to have them talk about something they cared about, breaking the ice through low-threshold contributions in a shared classroom space, and thereby preparing the ground for subsequent theoretical dialogue. Third, and this was the only aim I made explicit, to make them aware of their own reasons for not speaking and their bodily experiences of speaking aloud. These insights could then be projected onto their high school students and used as a starting point for their own teaching designs.

Intiatives to "produce" dialogue

I want to highlight the most important initiatives of the intervention. First, I used no slides and relied exclusively on the whiteboard, as I wanted us to "think together" through the gradual drawing of diagrams and figures. Second, I asked students to leave their computers in their backpacks; but recognising their strong attachment to digital note-taking, I planned 3–5-minute note-taking

breaks every 15–20 minutes. Third, to ensure that dialogue fed directly into the students' ongoing coursework, I arranged the tables in group formations rather than traditional rows, encouraging not only discussion within the groups that would later design their own interventions but also class-level discussion (more on the ground rules for discussion shortly). Fourth, I sought to "break up the room" by minimising my presence in authoritative positions such as in front of a table or the whiteboard. Instead, I deliberately moved around, sat to the side, and at times joined the student tables during class dialogue.

Finally, I introduced explicit ground rules, beginning with two and adding a third later: "Say what you mean" ("Sig, hvad du mener"), "Ask for help" ("Spørg om hjælp"), and the third, "Why do you think that?" ("Hvorfor mener du det?"). These rules were semi-gamified through the use of tokens: each student received two tokens (and three when the third rule was introduced), and students were instructed to take a token whenever they enacted one of the rules, with the aim that everyone would collect their full set.

I should clarify that I initiated both group-level and class-level dialogue, meaning that when they discussed in groups, they used the tokens as a structured form of initiating (by harnessing) their own dialogue. I would give them specific tasks in the groups that they should solve through dialogue. For example, in the case of the difference between interpretivism and pragmatism, I read aloud a text passage and asked them in groups to highlight as many different points as they could. In this way, I was sure that everyone had something to "bring" to the class-level dialogue, and that we would indeed have an object of discussion *for* our class-level dialogue. While group-level dialogues went on, I was active, trying to get around to each group to help them if they were stuck. The group-level dialogues were held in the classroom, since I wanted to be able to see the students work in groups, which I would not have been able to do had they left the classroom to conduct their group dialogue. To concretely initiate a dialogic space, I moved around the classroom a lot, sometimes sitting in the back or around the middle, trying to create a sense of "let's talk together" in a meaningful way about this or that theoretical concept. I tried to ask them questions that were more responses to their reflections than blank questions, since then it feels, I think, more like a dialogue and less like pressure to answer correctly. If dialogue is a meaningful response to a question, it is my job as a facilitator to offer that contextualization, setting my students up for success rather than failure.

Evaluation and analysis of intervention

The anonymous survey (n = 21) provided useful insight into what students felt worked, and did not work, in the intervention. The most frequently mentioned challenge concerned limited opportunities for computer-based note-taking (n = 10), identified as something that should be changed "next time." In retrospect, I underestimated the importance of the note-taking breaks I had explicitly promised and planned. Due to poor time management, these breaks were often cut when discussions became lively, when in fact they should have been treated as a core rather than expendable component of the teaching design.

Relatedly, when asked whether the dialogic format made learning or engagement more difficult, several students again pointed to the lack of note-taking opportunities as a barrier (n = 7), while one student described the same absence as liberating (n = 1). At the same time, a number of respondents (n = 6) explicitly reported experiencing "no barriers."

Overall, student preferences leaned toward a blended format: most students expressed a preference for a mix of dialogic teaching and standard lectures (n = 11), while nearly as many preferred exclusively dialogic teaching (n = 9). Only one student expressed a clear preference for traditional lecturing alone (n = 1) (see Figure 1).

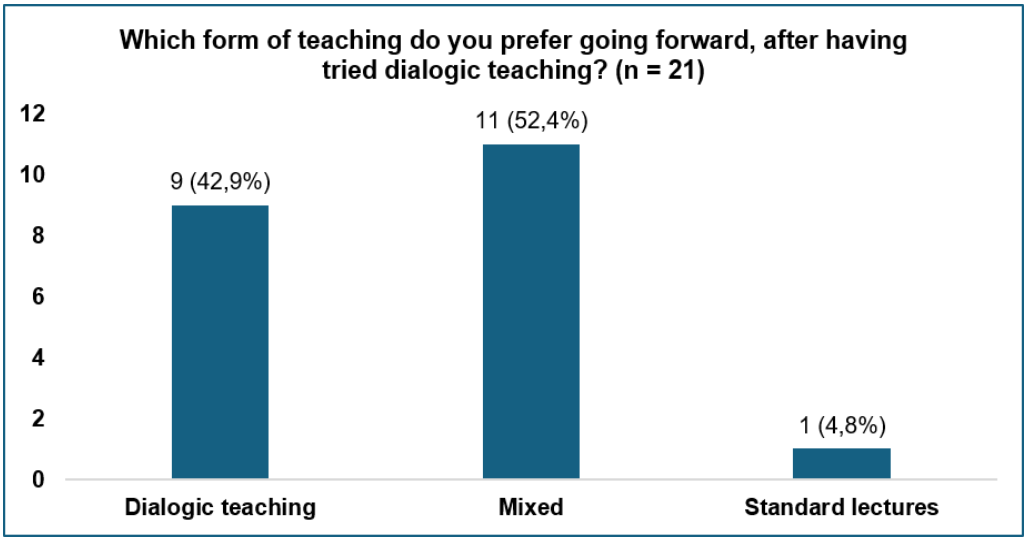


Figure 1.

Students highlighted several qualities (not mutually exclusive) as particularly effective in the dialogic intervention, including dialogic engagement (n = 15), table arrangement in groups rather than rows (n = 10), and extensive use of the whiteboard and no PowerPoint (n = 6). When asked to characterise the classes

in which they felt most active, students most frequently pointed to dialogue (n = 11), the close integration of theory and practice (n = 7), and, somewhat notably, the "put your computers away" policy (n = 4) (not mutually exclusive).

Overall, the results indicate that there is good reason to interpret the intervention as a general success from the students' perspective, with average ratings of 4.2 (Figure 2) and 4.0 (Figure 3) on a five-point Likert scale. Here, success is simply defined as above neutral (point three on the Likert scale).

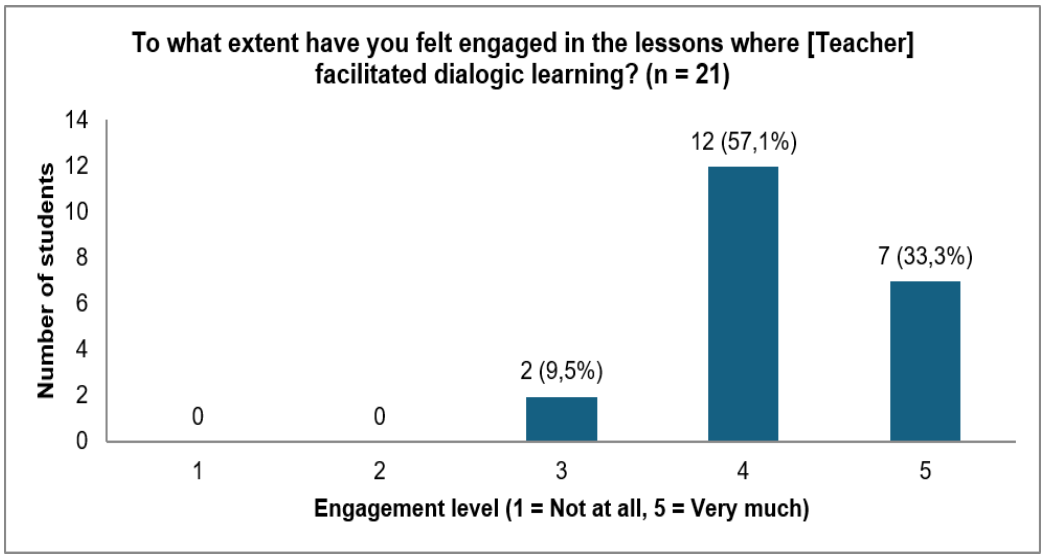


Figure 2.

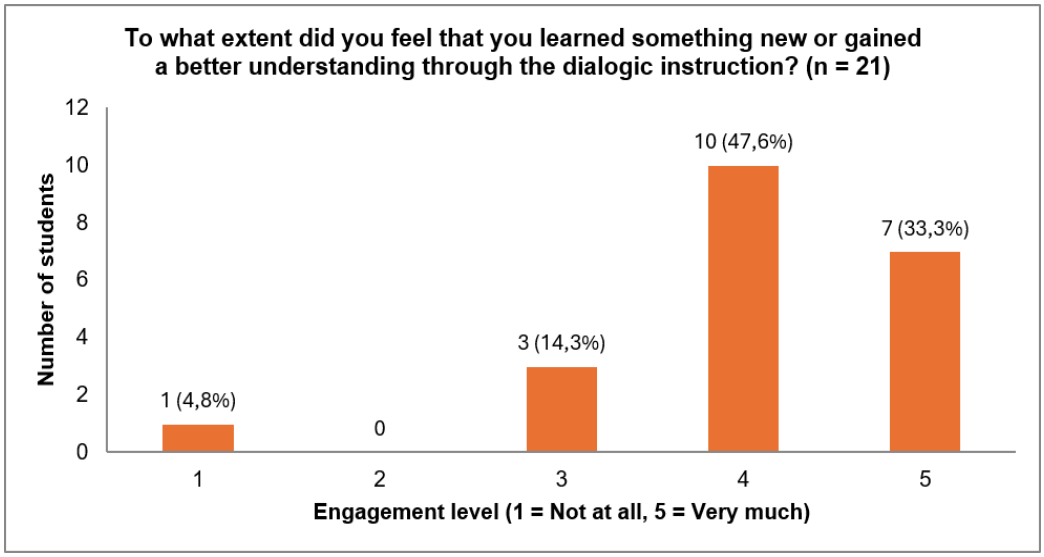


Figure 3.

I shall here highlight some student quotes that I will address in the discussion below:

Student #7:

> "I've found that the more hours we've had with [Teacher], the better people have become at speaking up and contributing. We were good at it in the first semester, but since then it has got worse and worse. It's as if people have regained the confidence to contribute again after these sessions, and I hope the effect lasts. So the best element is probably that we continually follow up together, and that people feel a shared responsibility to take part in the follow-up."

Student #11:

> "I feel that I've learnt far more in these sessions than in others – also because it was more text-focused; we worked specifically with the texts we had read for that session and got to 'know' the author/theorist better than if it had just been classic PowerPoint, sitting-in-rows teaching. Really great teaching! I've never learnt this much before."
>
> And adds:
>
> "Compared with other sessions, I haven't experienced myself or other fellow students contributing as much in class as we do now."

Discussion: Enriched mutual accountability, lack of note-taking and a crucial trade-off

As evident from the quotes, the dialogic intervention created an optimistic stance for many of the students and also a positive side effect: mutual normative accountability. I noticed this when one student, after three hours, decided to go home during the break because he "was tired," but decided to come back after five to seven minutes because he "could not leave his friend behind," implying that if he left, his friend would lose his dialogue partner. This is a fragment of what will hopefully extend to a positive spillover effect in other courses, as also mentioned above by Student #7.

The largest problem of the intervention was the recurrent lack of meeting the students' needs for computer note-taking. However, this may also have provided them with a new experience that may help them see the qualities of paper notes, but that is uncertain and would need further evaluation several months after the intervention, which is beyond the scope of this case study.

Another main takeaway point is that dialogue needs a lot of preparation to work, and when it works, time should be allowed to flow. Especially as a form of PBL, DLT encourages fruitful group work, and in this case it is a positive sign – but also something to be aware of – that some students felt they were interrupted in good dialogue when I wanted to move on through the curriculum (Student #8). To fully integrate PBL and DLT means giving much time to allow dialogue for the sake of problem-solving, and not simply dialogue for the sake of dialogue itself, nor for the sake of learning the curriculum. In PBL, curriculum suits the needs of the problem, and dialogue should be tailored to this end as well.

In this sense, DLT as a form of PBL involves a trade-off: dialogue requires time and may necessitate deprioritising parts of the curriculum. What is gained is collaborative investigation and problem-solving through dialogic competence, which is, arguably, more valuable than covering content back-to-back. As such, DLT strengthens PBL at its core.

Conclusion

In response to Aalborg University's six PBL Principles, this case study has investigated how or if dialogic learning can support group work (Principle 2), collaboration (Principle 4), and student responsibility (Principle 6) by taking the problem as a point of departure (Principle 1) with the support of courses (Principle 3).

I find that where dialogue specifically can contribute to PBL pedagogy is in the heightening of student responsibility, Principle 6. While sharing collaborative approaches to group work with PBL, DLT can strengthen mutual accountability by offering a shared space in which students together directly form a shared understanding of the problem as well as generate solutions to the problem. Not least, DLT can enhance student responsibility throughout the collaborative setting, spilling over into other parts of study life and future work life.

Going forward, the dialogic addendum to, or interpretation of, PBL requires, however, integrating enough time in the pedagogical model to make dialogue flourish in order to be truly beneficial for solving the problem at hand.

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