

Bridging individual, group, class, and outside world in online courses

Christian Dalsgaard, Danish School of Education, Aarhus University, Denmark, cdalsgaard@edu.au.dk
Francesco Caviglia, Danish School of Education, Aarhus University, Denmark, caviglia@edu.au.dk
Klaus Thestrup, Danish School of Education, Aarhus University, Denmark, kthestrup@edu.au.dk

Abstract

The paper explores how educational programmes can be designed to encompass and connect activities at multiple levels of student engagement — from individual work and group collaboration to class activities and interaction with external stakeholders. The study takes as its point of departure the framework of digital learning spaces, which distinguishes between four spaces for learning: the individual space, the working group, the community of interest, and open connections. Through an empirical case study, the paper investigates how student activities can bridge these learning spaces, and how students experience activities that move between them. The case study is based on the Master's programme in IT-based Educational Design at Aarhus University, Denmark. Data were collected through a survey (n=46) including six open questions about students' experiences with activities related to the different levels of learning spaces: group blogging, commenting on blog posts, social annotation, open feedback on assignments, collaboration between students, and dissemination to the outside world. The study examines how the programme succeeds in 1) strengthening of individual student agency of the student, 2) supporting collaborative group work, 3) mobilising and utilising the collective resources of a class, and 4) engaging students in interactions with society. The findings show that students are generally able to move between and participate meaningfully in all four learning spaces. Digital collaboration tools are perceived as highly supportive of close cooperation in distributed groups. Social annotation and open feedback practices are experienced as valuable mechanisms for connecting individual and class-level activities, although they may also challenge students' sense of personal boundaries and study habits. Activities that extend learning beyond the institutional framework, such as public webinars and workshops, are described as particularly rewarding, creating a sense of professional identity and relevance. The study concludes that designing for digital learning involves not only supporting distinct learning spaces but also creating bridges that enable transitions between them. Attention to the tensions and boundary-crossing between spaces is essential for fostering coherence, inclusion, and meaningful engagement in digital learning spaces.

Keywords

Digital learning spaces, educational design, collaborative learning, social learning

Introduction

The paper discusses how educational programmes can be designed with student activities spanning individual work, group work, class activities and communication to the outside world. Based on a case study of three student cohorts in the Masters' programme IT-based Educational Design (Danish School of Education, Aarhus University, Denmark), the paper examines the tensions that may arise when organising activities that aim at bridging the different levels of student activities: How does the individual connect to group work, how is individual and group work made relevant to the class, and how might students find it relevant to engage in dialogue with external stakeholders?

Designing for different learning spaces

In this paper, we analyse the educational activities and use of digital technologies from the theoretical framework of digital learning spaces (Dalsgaard, & Ryberg, 2023). This framework is developed from other frameworks, most notably Community of Inquiry (Garrison, Anderson, & Archer, 1999), Group, Set and Net (Dron & Anderson), Connected Curriculum (Fung, 2017) and Personal Learning Environments (Sclater, 2008). The framework makes a distinction between activities of students within 1) the individual space, 2) working groups, 3) community of interest, and 4) open connections. Common to all these frameworks is that they entail transitions

between different levels of student activities – i.e. from individual to or from group to community. Whereas these frameworks primarily describe activities within each of the levels, this paper studies the transitions and relations between the levels of students’ learning activities – and how to avoid tensions in transitioning between the levels.

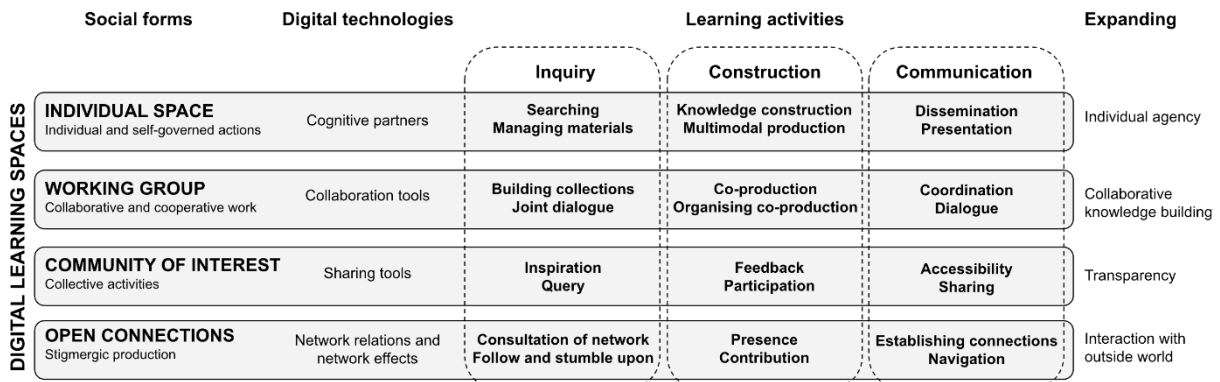


Figure 1: Levels of digital learning spaces (from Dalsgaard, & Ryberg, 2023)

The individual space is intended to support individual and self-governed activities of the student. This means that digital tools within the individual space are personal tools that students manage and organise themselves. The individual space thus reflects autonomous agency and intentional action as central dimensions of digital learning practices. We consider the ideal for digital tools within the individual space to be *cognitive partners* and a *personal learning environment* for students self-governed activities (Salomon, Perkins, & Globerson, 1991; Sclater, 2008). Digital tools in the individual space should, in other words, strengthen the individual student's agency and abilities to act, produce and solve problems. As personal learning environment and cognitive partners, digital tools must take student preferences, goals, questions, working methods, etc. as the point of departure. This means that they are difficult for institutions or teachers to design *for* the students.

Working groups should be designed to support collaborative and cooperative forms of interaction between students. A working group is a space where students engage in shared work on common products and joint inquiry. This level of learning space connects to collaborative learning (O'Malley, 2012) which emphasises the importance of joint construction of knowledge and collaborative knowledge building (Scardamalia, & Bereiter, 2014). As Garrison (2016) argues from his framework of Community of Inquiry, group-based inquiry enables the co-creation of understanding that transcends the capacities of the individual learner. Thus, digital tools within the working group should be in the form of collaboration tools for students’ coordination, negotiation and co-construction. In other words, digital tools should support common activities and help create a joint working space for the working group. Collaboration tools should be jointly managed by the working group and should support the working methods of the students within the specific group.

A community of interest is defined by the collective activities of a larger group, sharing an interest or field of study. In this paper, we view the class as a potential for creating a community of interest within and educational programme. A prerequisite for a community of interest is that the participants are connected through a shared topic or interest, but they do not share responsibility of a joint goal (as in the working group). Baym (2015) characterises a community as the collective creation of resources that are not the result of purposeful collaboration. Dron and Anderson (2014) similarly define the concept of ‘set’ as a social form organised around a shared interest. Digital tools within a community of interest takes on the form of sharing tools that make available the activities and resources of the participants. The purpose of sharing tools for a community of interest is support mobilising the collective resource of a community, making them available to all participants. Sharing tools should support a kind of transparency that makes activities and resources available. This also includes support sharing, interactions, support, and exchange, but in a less binding manner than in a working group. In essence, enabling students to “look over each other’s shoulders”. Fung (2017) expands the network to connect students with researchers, peers, staff, external practitioners, and their future professional selves through research-based education that bridges academic inquiry with real-world application.

Open connections include more loosely bound activities where students utilise networks to get access to information and engage in networked interactions. As Boyd and Ellison (2007) describe networked connections, networks differ from both collaborative and collective activities (as in working groups and communities of

interest) because they revolve around the individual's connections rather than shared goals or common interests. Digital tools supporting open connections include networking services that can connect students to people and resources outside the institutional boundaries (Dron, & Anderson, 2014). The main potential of networking services is to engage students in interactions with the outside world. Interactions in open connections are even less binding and a more loosely bound form of interaction than communities of interest. The objective is to bring in knowledge from outside, from companies, organisations, associations, interest groups, etc., and to engage students in interactions with such groupings.

A challenge that we aim to address in this paper is how to combine these four levels of learning spaces. How can educational activities and digital technologies support all four levels and facilitate students in navigating all spaces? How do we combine these different levels and thus also different objectives of student activities and technology use? To explore the challenges and potentials of combining learning spaces, the paper analyses activities that traverse these contexts. How does the individual space relate to working groups, how do working groups connect to a community of interest, and how does group work move to open connections?

The research questions is: *How can educational activities bridge learning spaces and digital technologies of the individual, groups, classes, and open connections?*

Case: Masters' programme in IT-based Educational Design

The masters' programme in IT-based Educational Design is a mostly online programme, and the programme is itself an educational design used as a testbed for experimenting with educational use of digital technologies. The students are situated in different areas of the country, and some also abroad. Most students are not able to meet at the same location, meaning that group work in the programme is almost entirely done online. The learning spaces described above align with key objectives of the programme. The programme design has the main objectives of:

- 1 strengthening individual agency of the student
- 2 supporting and developing collaborative group work
- 3 utilising and mobilising the resources of a class
- 4 engaging students in interactions with educational practices in society

The programme has developed educational activities and a digital infrastructure designed to achieve these objectives.

A pedagogical and technological setup for digital learning spaces

To reach the objectives stated above, the programme aims at 1) organising learning activities on all four levels of learning spaces, and 2) setting up digital tools to support all learning activities across learning spaces. Examples of learning activities within each of the spaces is illustrated in figure 2.

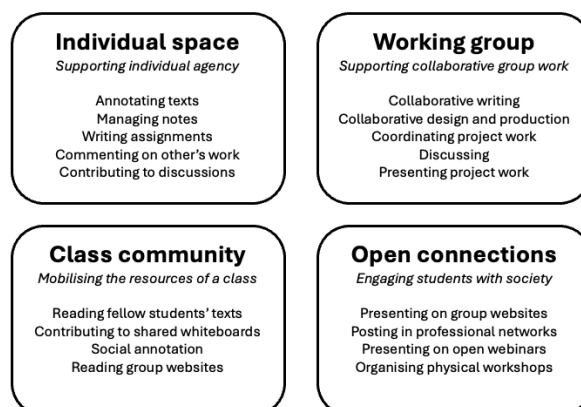


Figure 2: Learning activities supporting the four levels of learning spaces.

1. Strengthening individual agency of the student

Supporting individual work of the student primarily takes on the form of introducing relevant tools to the students, leaving it mostly up to them which to use and how. Students are introduced to annotation tools (hypothes.is), note management (Notion, Obsidian, Outline), writing and presentation tools (Office 365, chatbots). While most of the tools are personal and private, teachers also ask to get access to parts of the students' individual spaces. In some courses, students hand in (draft) assignments where they receive written inline feedback from teachers. Students receive feedback on drafts that are then revised and handed in again. To bridge the individual work of students with the class level, these assignments are made available to the entire class. All the drafts and final assignments are openly available to all students, including teacher feedback.

2. Supporting and developing collaborative group work

Students are placed in groups in most of the programme's courses and work together on joint assignments and projects. Students work together on data collection and analysis, producing videos, writing text, making prototypes, building models, and designing products. To support close and collaborative work, groups are equipped with collaboration tools of shared folders (OneDrive), video conferencing (Zoom), project and workspaces (Miro), production and design tools (Figma), and a presentation and dissemination website (WordPress). The group's website is a focal point of the group work. This is where students collect and disseminate the final results of the processes and assignments they complete throughout the course.

Groups are asked to write post on their group website to show their work-in-progress. The website is public which also means that it is available to the rest of the class. The websites are also intended to make a bridge to the objective next objective:

3. Utilising and mobilising the resources of a class

The programme aims to facilitate exchange and interactions on a class level. To support this, the programme employs sharing tools of shared folders and documents with commenting (OneDrive), whiteboard platforms (Padlet), social annotation tools (hypothes.is), and websites with commenting (WordPress).

The individual (draft) assignments handed in by students for teacher feedback are made available to the entire class, meaning that students can read fellow students' assignments and feedback from the teachers. There are no obligations to read or comment the work of fellow students, but it is made available for voluntary access. Similarly, group websites are made available to the other groups. Here, students are asked to read and comment on the posts of the other groups. These are examples of attempts to connect individual and group work to the class community level. As a final example of class activities, students are also asked to do 'collaborative reading'. Students use the social annotation tool Hypothesis to collaboratively annotate shared texts, highlighting passages and commenting on specific sections. All annotations are visible to all students within the same document, enabling them to respond to each other's comments (Kalir & Garcia, 2021).

4. Engaging students in interactions with educational practices in society

The programme facilitates activities that connect students to the outside world beyond the institution. To support this, the programme uses group websites (WordPress), professional social networks (LinkedIn), webinar platforms (Zoom) – and a physical public culture house (Dokk1).

Students are asked to communicate to and engage in interaction with stakeholders and practitioners outside the institution. This is done by encouraging students to also share their website posts on networking sites (such as LinkedIn), by planning physical workshops involving the public (at Dokk1), and by arranging open webinars with project presentations for external participants. These activities attempt to connect group work to open connections. In the study described below, we examine how a pedagogy can facilitate the transitions between individual work, group work, collective class work and connections to practices outside the university (see figure 3).

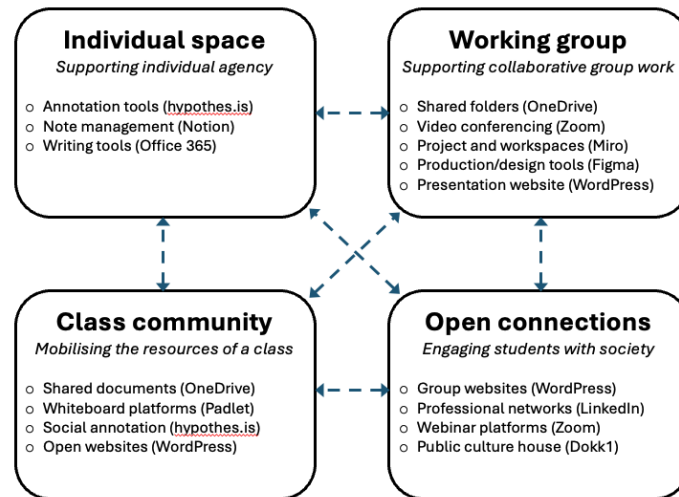


Figure 3: Transitions or bridges between learning spaces.

Methods

The case study is based on a survey with questions concerning students' outcome of use of different digital technologies and with six open questions where students were asked to expand on their experiences and opinions about activities involving digital technologies. This study is only based on the answers to the open questions. These concerned students' experiences with the following activities: 1) group blogging, 2) commenting on blog posts, 3) social annotation, 4) open feedback on assignments, 5) collaboration between students, and 6) dissemination to the outside world. Thus, the questions cover activities and technologies related to all four levels of digital learning spaces. The survey was conducted in 2024 and 2025 and received a total of 46 student responses, in 2024 and 2025 (from a total of three classes). The answers to the open questions are used to build a case study. From the research question, the answers were analysed to identify student experiences with transitions between learning spaces.

Findings

In the findings, we present students' experiences with bridging the levels of learning spaces.

Bridging individual space and working group

Student's experiences with working in groups while not being able to meet in the same physical location are primarily positive. The students explain how collaborative tools support and even enhance their group work:

They [collaboration tools] are very flexible tools and have contributed greatly to making the group work function at least as well, and perhaps even better, than when we met face to face. (2024)

We have used Google Drive, Zoom, Figma, Notion, and Canva to work together at a distance. It has worked really well. (2024)

Apparently, students' collaboration at a distance has not meant that they have divided the work between them or resolved to individual work being pieced together to a final assignment. Rather, students emphasise how digital technologies allow all students to be engaged in close collaboration.

You can easily solve everything through digital collaboration — there's no need to meet physically. (2024)

Since we all live in different parts of the country, the ability to have meetings on Zoom has been extremely effective — both for conversations and for co-creation. (2025)

Students use a combination of synchronous and asynchronous tools to support and coordinate their collaborative work:

We have met almost daily and worked together in all the documents, Miro, Whiteboard on Zoom, and Canva —but we've also had days where we could work asynchronously. It works really well. (2025)

We also used Miro quite a lot, especially for flowcharts and planning. (2025)

In general, the examples show that students do not raise issues concerning challenges of moving into a joint working space. There are no conflicts with the individual activities of students, and the collaboration tools support a balance between individual work/contributions and the joint space of the group. Utilising digital tools such as shared products (Google Docs, Word365, Canva), canvas whiteboard tools (Miro, Zoom whiteboard, Figma), and information management or note-taking tools (Notion), students seem capable of organising and managing a form of collaborative work that does not conflict with their individual work. Students seem to have established joint working spaces where they can naturally work together.

Whereas most students signal that they have developed working groups that collaborate on a joint task, there are also a few examples of students who find it challenging to be part of collaborative work:

I am, and probably always will be, critical of writing together with others. My energy gets scattered, the writing style has to be adapted, and it also becomes a question of level. Not that I consider myself particularly skilled, but if I want to develop myself, I need to do the work on my own. (2025)

Although not widespread among the students in the study, there is a potential tension between students' preferences for individual work and moving into a joint working space. Students must, to some extent, give up the optics of themselves as individual students when engaging in a working group with a joint task. If they consider group work as “coordinated individual work”, tensions can arise.

Bridging the individual space and class community

Several students in the survey explain how social annotation, particularly reading the comments from fellow students, helps them to understand and “decipher” a text. Some students explain how social annotation helps them identify key points in texts, to understand and interpret, to get inspiration, and that it can initiate reflection:

Shared note-taking is simply invaluable — important points from the texts that you might have missed or not given much weight to come into a new light. (2024)

Annotation was something new for me. It became an important tool for broadening my own reflections. Reading others' contributions and reflections through annotation initiated an inner process of reflection. I consider the annotation component to be central to the study [...]. (2024)

A great way to share and be inspired by each other. (2025)

Some students highlight the social annotation as an example of a safe and supportive study environment. The social annotation became a place where students can find help and support by getting insight into how fellow students read, interpret and write questions to a text. It could be interpreted as a sense of being part of something shared by making transparent the reading processes of the class. This could be an indication that social annotation strengthens students' sense of being in and belonging to a community within the class. The annotations have shown how fellow students interpret the texts and, in some cases, relate them to their own disciplinary background.

I have experienced the annotation exercises as the safest and most supportive study environment. (2024)

Other students are more sceptical towards social annotations shared by the entire class. Some students found it more relevant and awarding to annotate within their working groups:

I think annotating the texts made a lot of sense. I didn't read all the annotations, and I didn't always get much out of what others had written. We also annotated within our study group on our own texts, and that worked really well! (2024)

We have annotated a lot, but on the few texts we did as a group, it was helpful for understanding the texts and for developing a shared language in the assignment. (2025)

And finally, some students did not find social annotation relevant or useful. Such activities did not fit with their ways of studying, they might find it too overwhelming having to relate to all the comments from their fellow students, or they prefer to annotate privately.

I can see the point of annotating together, but it's not the way I learn best. (2024)

I'm personally not a fan of shared annotation — it becomes too much visual noise for me. (2025)

It is clear that social annotation can give rise to tensions or imbalance between learning spaces. Social annotation is not necessarily meaningful for the students, and it might conflict with their habits or preferences within their individual space of note-taking. How to combine individual note-taking with social annotation without compromising either one?

One thing is to receive feedback from teachers which all students in the survey agree is very useful and supports their learning. Another thing is that the feedback to their individual space is made available to the class community. As some students state, it pushes their personal boundaries being asked to share their individual assignments:

You need to get used to putting your drafts out for “public” viewing, but I've found it to be worthwhile because of the detailed teacher comments received. (2024)

Open feedback can feel uncomfortable but provides enormous learning benefits. (2024)

Again, it's a bit of a boundary-crossing experience to suddenly have to share drafts and submissions with the entire class, but it has definitely been rewarding. (2025)

Most students state that they not only read the feedback given to themselves from the teacher, but that they also read other students' assignments as well as the teacher comments to those. They explain how it is useful and helpful for them to see how other students approach an assignment, and that they find inspiration or “steal” from each other.

It has been interesting to see how differently students approach assignments, and the teachers' comments on others' work (regardless of content) have often felt like supervision or guidance directed at myself. (2025)

It's really valuable to see how other groups work and handle the process — I often “steal” references and good ideas that I wouldn't have thought of myself. (2025)

Although initially being anxious about sharing your individual work with all other students, the students also explain how they experience the shared space as a study environment. They explain how it was an inclusive and safe space. This can be interpreted as supportive of students' sense of a class community engaged in academic work:

It was a great help for my own writing and development of written assignments to be able to reflect myself in my fellow students' work. From the very beginning, a safe atmosphere was established, making it “normal” that everyone's assignments were visible, so that no one felt judged or in competition with others. (2024)

It has simply been excellent and inclusive. (2024)

This semester, I have especially made use of this approach, since due to absence I wasn't able to receive feedback regularly myself. By working with others' feedback, however, I was able to stay engaged and actively translate it into my own learning — a very rewarding and effective method. You must never change this setup. (2025)

There is a clear potential for tensions concerning students' sharing of their individual work to the entire class. It is a matter of granting access to the individual space; a space that is normally managed by the individual student, a safe, private and individual space. There is a risk in opening this space, because students might come up with diversions to avoid exposing themselves. One student puts into words how the tension between the individual space and the community can be experienced:

I have noticed — and caught myself doing it too — that you tend to quickly leave a peer's document if you see that they are in it at the same time. Maybe it's a bit like the feeling of rummaging through someone's closets when visiting them :) I don't know if it's something that should be addressed or discussed, but I thought it might be an interesting observation. (2025)

However, students in the study primarily highlight the learning opportunities of getting access to the (draft) work of fellow students – especially, when they experience it as being part of an open, safe, and inclusive space.

Bridging working groups and class communities

Although the activities of posting and commenting are primarily targeted at supporting the class community, some students find it relevant for their groups to make the posts. They find it relevant to communicate their “inside knowledge” to another target group beyond themselves, and they explain how the posts make them reflect on their academic work in a different way than when focused on handing in assignments.

In addition, it has supported my learning to communicate knowledge and findings in a short format, as the blog posts encourage. (2024)

I think it can be a good way to reflect continuously — not just for my own sake, but also to create something that other students and teachers can learn from. (2025)

In those cases, there are no tensions in the transitions from group work to class activities. However, some students provide examples of tensions where the posts are disruptive and disturb the group work that the students are primarily engaged in. It feels to them as a side track, not well aligned with their group work. Hence, they experience it as artificial activity.

I often experienced the blog posts as a somewhat disruptive element in the process, since the content of the posts was predetermined and didn't always match where we were in our project work. Our posts lacked satisfactory quality and often felt like something that just needed to be done. (2024)

These are examples where the bridge from the working group to the class community is not solid. However, when reading other group blogs, many students state that they also get inspiration from the writings of other groups.

The blog posts provided insight into other students' projects and offered inspiration. They also contributed to reflections on one's own project. (2024)

When I read my fellow students' blog posts, I gain insight into different approaches to design, theory, and technology that I wouldn't necessarily have thought of myself. (2025)

Reading and following fellow students' blog posts across groups has been an important source of disciplinary inspiration, conceptual clarification, and practical insight. (2025)

The quotes can be interpreted as examples of students getting insight into the academic community of the class. The posts and the comments are to some extent the place where the community is visible and accessible. It is indeed community-like in the sense that there is no direct collaboration, but “silent inspiration”. Some students also get inspiration from the comments that they receive from other groups:

It was a good way to both get inspired and continue developing my own project based on feedback from peers and teachers. It often provided new perspectives. (2025)

I often found that other students noticed aspects that our own group hadn't focused on. This also required us to reflect on other groups' work, which was sometimes useful for reflecting on our own group project. (2024)

However, the experiences with written comments on the posts are more mixed. Many students find it difficult to write relevant comments and do not gain much from reading comments from fellow students.

Feedback — especially at the beginning of the program — often felt more performative than genuinely useful. Many students didn't put much time or energy into their blog posts, and that could be felt in the quality of the feedback given and received. (2024)

These post activities show tensions in the transitions between the working group and class community. Some students are occupied with their group work and find it disruptive to write posts to fellow students. On the other hand, most students find it relevant to get inspiration from reading posts of other groups. It is evident that students view reading posts as more useful and supportive of their own activities than leaving and reading comments.

Whereas the sharing of posts seems to support a sense of class community, the written feedback in comments does not succeed in creating fruitful interactions among students on the community level. The exchange within the class community primarily remains “silent” through inspiration from posts.

Bridging working groups and open connections

The activities bridging working groups and open connections are all examples of outlets of or presentations of group work. Although it can be seen as extra work, all students find these activities very relevant and rewarding. Some students highlight the importance of practicing communication skills in an authentic setting:

It's very important to have the opportunity to communicate beyond the university. That had great value. Practicing how to communicate knowledge — orally, in writing, and through multimedia — is important. (2024)

Students also experience that interacting with the outside world makes them reflect on the competences that they gain from the programme. By engaging their knowledge and competence with real-world practices, they experience how their knowledge becomes applicable beyond the academic context.

The webinar was a great success for me because I had worked intensively on a design project that I was incredibly proud to present to the world. It felt wonderfully practice-oriented to have to communicate something to “the real world.” (2024)

This is where it truly comes to life — engaging with people who aren't immersed in academic jargon but who live in the real world and bring real-world constraints that challenge you. That's where it gets exciting! (2024)

It gives direction and relevance, because we're not just working for ourselves but also for a real audience. It was great to participate at Dokk1 and at the same time learn the technical aspects, such as setting up in WordPress. It makes the academic work concrete and applicable in practice. (2025)

However, some students did not manage to put enough effort into communicating to the outside world. To some, this activity is demanding and may not seem important to the final exam.

I like the idea of communicating to the outside world, but I'm really not good at it. It has definitely been easiest through the blog posts, but I had hoped that I — and my group — had taken ourselves more seriously during the webinar. I think it may be because our projects haven't

been something I could envision being carried out in the long run, and therefore I found it difficult to communicate them. (2024)

Conclusion

The case study shows that students do at times experience tensions in transitioning between the levels of learning spaces. Sometimes students do not make the shift from one space to another. For instance, when writing comments to fellow students' website posts, some students do not make the move to the level of class community but remain within a focus on their group work. Similarly, some students remain within their individual space when annotating texts, being unable to move within the class community and their collective reading. The study shows that it can be a challenge for students to be stretched between and possibly be pulled in different directions of the different learning spaces (see Figure 4).

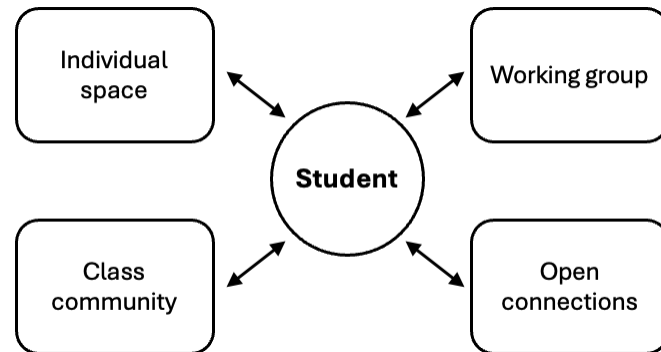


Figure 4: Potential tensions of students stretched between the different learning spaces.

However, the case study shows that students are mostly able to make the transitions between the different learning spaces, and that they engage in activities on all levels. Many of the activities of the programme have succeeded in making students realise and experience the learning benefits from each of the learning spaces.

The pedagogical challenge is to simultaneously accommodate development of the individual student's agency, supporting collaborative group work, mobilising the collective resources of a class community, and extending student activities into the outside world – without tearing the student apart. The case study findings suggest that teachers need not enforce clear distinctions or transitions between learning spaces. Instead, they should aim to organise learning situations in which all learning spaces are seamlessly integrated. For instance, when a group space is made available to the entire class, or when inline comments in individual documents is open to the whole class.

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