Supporting classroom dialogue through developing the Talkwall microblogging tool: Considering emerging concepts that bridge theory, practice, and design

Ole Smørdal  
Researcher, Department of Education, University of Oslo  
ole.smordal@uv.uio.no

Ingvill Rasmussen  
Professor, Department of Education, University of Oslo

Louis Major  
Senior Research Associate, Faculty of Education, University of Cambridge

Abstract
Through reflecting on a 10-year design-based research process involving teachers as co-designers, this paper develops a concept-driven approach for designing technology support for classroom dialogue. Specifically, we focus on four ‘bridging’ concepts that emerged from the research-practitioner partnerships, and on how these guided the design of Talkwall, an educational microblogging tool similar to Twitter. The four bridging concepts – a contribution, a feed, a wall, and a space for the teacher – are defined and discussed in relation to design articulations for Talkwall, the design of similar educational microblogging tools, and the role of material-dialogic spaces for classroom dialogue. A concept-driven approach fosters intermediary forms of knowledge that may be significant for design-based research. This is because designers, teachers, and researchers can extend their repertoires through synergy and exchange between the researchers’ scholarly knowledge and the teachers’ craft knowledge. We exemplify this by examining how a concept-driven approach enabled the exploration of new designs for material-dialogic spaces relating to Talkwall.

Keywords
dialogic teaching, microblogging, Twitter, professional practice development, co-design, bridging concepts

Introduction
Design-based research (DBR) can be described as a collaborative partnership between researchers and practitioners (Roschelle & Penuel, 2006). In this study, we have adopted such a DBR approach that also includes technology developers (Lund & Rasmussen, 2008; Rasmussen & Hagen, 2015; Rasmussen et al., 2012). DBR can systematically inform the development of educational ‘products’ by employing theory and research findings in combination with iterative use in real settings, data collection, analysis and evaluation, and re-design and adaptation. However, the DBR literature tends to focus on the outcomes of design rather than explaining design as an emergent process and how design entails opportunities for learning and exchange among the participants (Svihla & Reeve, 2016).
This paper reflects on a design process involving researchers and teachers; in particular, we address how concepts emerged in the design of a co-located social media service for classrooms, named Talkwall, as a result of collaboration between researchers and practitioners. In this article, we reflect on a series of longitudinal and exploratory research-partnerships where the aim has been to incorporate and display ideas for future practice. As such, it contains the embryonic starting point of what ‘might be’ (Rasmussen et al., 2012).

During this endeavour, ideas regarding microblogging in education were developed by building upon previous research on the editable, manipulable, provisional, and temporal nature of screen objects – in this case texts – and the potentially transformative impact that their use may have on classroom dialogue and learning (Rasmussen & Hagen, 2015). This transformation concerns an ‘orientation toward participative, multimodal, distributed, and co-constructed texts rather than individualistic and author-centred creations’ (Greenhow & Gleason, 2012, p. 469).

**DBR on classroom dialogue**

Despite a growing body of research evidencing the value of dialogue for learning, high-quality dialogues are sparse in classrooms around the world. One reason for this may be due to the challenge of motivating more than the same few students to actively participate; digital technology, however, has the potential to increase the number of participants engaging in classroom dialogue in addition to the quality of such dialogues (Donnelly et al., 2014; Wegerif, 2007). Many schools are now introducing tablets and similar mobile devices to support teaching and learning (Haßler et al., 2016). It is recognised that teacher presence and participation in ‘online’ activities are vital for learners to progress (Darling-Hammond, 1999); however, it has been observed that teachers struggle to participate in activities that are enacted offline and online more or less simultaneously. Often, teachers resort to working offline, leaving the online activities to the learners alone (Lund & Smørdal, 2006; Rasmussen et al., 2012). Limited research has also focused on how the use of co-located social media in classrooms, such as microblogs, could improve class dialogues by motivating students to reason, elaborate, and question ideas (Howe & Abedin, 2013; Mercer, 2013; Sedlacek & Sedova, 2017).

In this paper, we use ‘intermediate theory building’ in collaboration with teachers to overcome these gaps, specifically, 1) how to co-design a space that fosters broad participation and increases the quality of talk and 2) includes the teacher in such spaces.

A key challenge in our work has been to anticipate future classroom dialogue whilst bridging knowledge and experiences from current teaching practices, relevant technologies, and educational theories. Our approach, realising that we need a common language, has been to engage teachers, technology developers, and researchers in a process of intermediate theory building, a process in which researchers and teachers act as ‘co-enquirers’ by facilitating synergy and exchange between the researchers’ scholarly knowledge and the teachers’ craft knowledge (Hennessy & Deaney, 2009).

The following questions guide a reflection on our experiences from DBR over many years:

- Working in collaboration with teachers, how can a microblogging tool be designed to support classroom dialogue?
- How may intermediate theory building be useful for a productive exchange between classroom practices, classroom dialogue theory, and technology design?
Co-located social media for classrooms
In the research on the educational use of microblogging, Twitter is perhaps the most well-known technology (Gao et al., 2012). Regarding Twitter, Luo and Gao (2012) point to specific strategies for instructors to develop successful activities, such as pre-setting a code of conduct for tweeting, providing scaffolding for each tweeting activity, and setting a limited time frame. In a related study, guided environments led to students achieving higher levels of learning, especially related to focusing on the task and depth of thinking (Luo, 2015). Key factors identified in this study were that instructional guidance can help eliminate distractions and reduce extraneous cognitive load and that the very presence of instructional guidance helps students to remain focused on tasks.

Research indicates how microblogging has the potential to promote learning because resources can be shared instantly among learners and because instructors can exchange ideas with students in a timely manner using a collaborative virtual learning environment (Gao et al., 2012). In a systematic review of the educational uses of Twitter from 2006 to 2015, the only example of in-class use was categorised as an assessment, that is, using Twitter to conduct in-class formative assessment activities to monitor students’ understanding of the subject matter (Tang & Hew, 2017). In an exploration of the use of Twitter in an undergraduate course to provide insight for instructors and students regarding the discussion activities of groups during class (Mercier et al., 2015), a central finding was that instructors could observe students’ discussions, providing important insights into their understanding of the content. Furthermore, longer and more complex discussions in the classroom were observed. Students used their own laptops, tablets, or smart phones to access Twitter, and this enabled movement between small-group and whole-class discussions. Second, in a graduate course, the quantity and quality of student participation in a face-to-face class were improved due to active engagement with a microblogging tool (Luo & Gao, 2012). These authors argue that the success could be a result of providing structure related to microblogging activities but that this could be a challenge for the instructor. Instructional support in the form of specific questions also helped students to remain on task.

Regarding microblogging technology beyond Twitter, several studies address co-located social media in classrooms and have either developed or adopted microblogging tools for educational use. These tools are now briefly described as they are later used as exemplars for discussing design articulations.

- **Twiducate** (Luo & Gao, 2012) is a Twitter-like medium designed for educational use that provides a secure space for interaction and collaboration.
- **Talk Factory** (Kerawalla et al., 2013) is designed to support pupils’ engagement in exploratory discourse during whole-class discussions by displaying ground rules for exchange with suggested sentence openers on an interactive whiteboard (IWB).
- **Collboard** (Alvarez et al., 2013) engages students in solving open-ended tasks generated by the teacher, which are displayed on an IWB.
- **GroupScribbles** (Chen & Looi, 2011) enables the collaborative generation, collection, and aggregation of ideas through a shared space based on individual effort and the social sharing of notes in graphical and textual form.

Concept-driven approach to educational design research
Stolterman and Wiberg have explored a concept-driven approach to interaction design research with a specific focus on theoretical advancements (Stolterman & Wiberg, 2010).
Concept-driven design research is explorative in nature and aims to manifest visionary theoretical ideas in concrete designs. The idea is to bridge the gap between generalised theories and design instances with intermediary forms of knowledge in the form of conceptual constructs. Höök and Löwgren (2012) extended these ‘conceptual constructs’ in their work on ‘strong concepts’. Strong concepts are proposed as design elements abstracted beyond particular instances that have the potential to be appropriated by designers and researchers to extend their repertoires, and to enable new particular instantiations (Höök & Löwgren, 2012). This idea was developed in an educational context by Prieto et al. (2017), who suggested ‘strong TEL concepts’ as a way to bridge the gap between theory and practice in DBR. This is because insights into pedagogically appropriate uses of educational technology for representative teachers in school settings can be limited. Furthermore, there is often a problematic gap between what could be effective technology-enhanced learning (TEL) in theory and what can be effective TEL in practice (McKenney, 2013).

The notion of ‘bridging concepts’ was proposed by research on human-computer interaction by Dalsgaard and Dindler (2014), who argued that ‘conceptual constructs’ and ‘strong concepts’ are two forms of knowledge that represent opposite positions. Strong concepts are primarily developed bottom-up or inductively with the main purpose of generating knowledge that can be employed in design practice, whereas conceptual constructs are primarily developed top-down with the main purpose of enriching the theoretical foundations of HCI (Dalsgaard & Dindler, 2014, p. 1636). Furthermore, they proposed that bridging concepts are distinguished by their ability to facilitate exchange both ways between overarching theory and practice rather than by being developed from theory or practice or with the specific aim of informing either theory or practice. Bridging concepts, therefore, inhabit a ‘middle ground’ between theory and practice. In so doing, they can help to unveil and articulate untried design opportunities and potential theoretical advancements.

**Methods – An overview of the iterative design and development approach**

Long-term commitments are key to research-practitioner partnerships, which are necessary to base the approaches on teaching practices (Penuel et al., 2015). Talkwall is a result of longitudinal DBR involving collaboration with a total of nine schools. Iterations imply a cyclic movement between design, intermediate theory building, and classroom practices and produce a setting in which both shared goals for the partnership and the bridging concepts for design emerge. During this research, all interventions (both dialogic and technology-based) are situated in real educational contexts with collaborating teachers taking part as co-researchers. This methodological approach bridges theoretical research and educational practice by 1) recognising the lived experiences of teachers and students and 2) integrating their perspectives into the design of Talkwall.

Teachers have worked as co-researchers to tailor pedagogic approaches to subject discourses by trying, exploring, and developing new classroom practices, forming new tasks and activities, and adapting Talkwall and resources to their own needs. Theorising thus strongly relates to real-life classroom contexts, and design principles and models ‘reflect the conditions in which they operate’ (Cviko et al., 2015). The teachers took part in the design work, such as asking for and discussing the functionalities of the tool, prototyping the tool in authentic situations and providing input for interaction design, and taking part in evaluations by rehearsing future practices that integrate microblogging in their dialogic teaching approaches (Rasmussen & Hagen, 2015).
Data sources
The following outline provides details of projects that have informed the collaborative design of Talkwall to provide an overview of the current research and the material and experiential realities that have informed this work. The primary data reported in this paper are based on design and redesign of sketches/mock-ups and recorded interviews and conversations with teachers throughout this longitudinal work to illustrate their contributions to the design work. Secondary data are used to explain design choices and are included in the findings and discussion.

2008–2013
Exploratory design was conducted in two senior high schools in Norway in the subject of modern history (teachers N=4, students N=90 aged mostly 19) (Lund & Rasmussen, 2008; Rasmussen et al., 2012), which aimed 1) to match collectively oriented tools, such as wikis, with tasks that require collaborative efforts and 2) to create a space for teachers’ participation in the wikis so that they can support online learning activities. The secondary data were collected from an ethnographic perspective and consisted of field notes being entered into the research lab’s wiki, where they were commented on by colleagues and developed into a field diary with rich material from observed classes as well as audiotaped and videotaped team meetings between researchers and teachers. Beginning with the concept of wikis, the way a chat function could be incorporated to enable teachers to take a more active role in supporting students’ work through dialogue was explored. Figure 1 shows a chat window integrated into a wiki environment, enabling the teacher to take part in online dialogues.

A key insight was framed by a teacher during one of the interviews: ‘... eh, it was difficult to trace, for me as a teacher, who had contributed with what, and I felt that I lost the learners. I did not know where to go in order to guide them ... because in general, there is no extensive space for a teacher in ICT [applications] in class; it is difficult to know the function of the teacher because everything is automatically moving. It becomes a separate world; it becomes so expansive ...’ (Lund et al., 2010, pp. 217–8). The researchers involved became more aware of the problems related to embedded intentions and affordances in collaborative and social software such as wikis and chats and that a mere adoption to classroom use may entail some barriers for teachers, as we note above. From this iteration, the first ideas about
a bridging concept that addressed the teachers’ role and possibilities to take part in and give shape to dialogue emerged. As a consequence, we refined our methodological approach to include the design and development of technology specifically intended for teachers as well as for educational use.

2013–2014
This exploration continued in a study with one teacher and his history class (N=25). The secondary data comprised student essays and notes from the intervention tool, video recordings of the whole project unit, field notes, and students’ history grades from the previous year (Rasmussen & Hagen, 2015). The design shifted from chat to microblogging technology to experiment with and to enhance the quality of whole-class dialogues. The ‘Socius’ microblogging tool, available on iPads, was developed for and with teachers to produce and to display microblogs in their classroom (see Figure 2).

From this iteration, the first insights were formed regarding a bridging concept that addressed the need to design means of contributing both digitally and orally, in a blended and coherent manner, whilst being able to build on each other’s thinking, as this is crucial for a dialogue that is characterised by elaboration and reasoning. Further, the teachers and researchers became increasingly interested in the improvement of dialogic teaching practices, in particular how experiences from an enthusiastic teacher involved in the DBR could be extended to fellow teachers at the school. As a consequence, we refined our approach to regard dialogic tools as an intrinsic part of the schools’ digital ecology.

2014–2016
Continuing the above work with a new teacher in a lower secondary school, experiences from Socius were used in the development and initial piloting of a new web app, called ‘Talkwall’, to make microblogging available on any mobile device as well as to make it easier for teachers to initiate microblogging activity (Ludvigsen et. al, 2019). Figure 3 shows the initial prototypes of Talkwall.
From this iteration, the bridging concepts were further developed to address how broad participation in the classroom may be promoted and the importance of shifts between individual, group, and whole-class interactions in the classroom in this respect.

This pilot demonstrated a potential value for a larger DBR effort. We expanded our methodological approach to address, in authentic, large-scale, and diverse settings, the conditions for using digital tools to enhance existing and promote new forms of classroom dialogue. A central element of this methodological approach was to collect teachers’ lived experiences from connecting dialogic tools and dialogic pedagogy.

2016–2020

A larger iteration involved teachers and their students across several subjects (ages 11–13) from four schools in Norway (teachers N=15, students N= 250) and two in the UK (teachers N= 6, students N= 123) as part of the Digitalised Dialogues Across the Curriculum project. Four workshops and three lessons were recorded for each teacher. This paper draws on audio recordings of interviews and video recordings of the teacher–researcher workshops as well as notes from meetings between teachers and researchers to discuss their experiences between the recorded lessons and to reflect on Talkwall and its alignment with their teaching practices.

Findings: Four bridging concepts for designing technology for productive dialogues in the classroom

Drawing on the notion of bridging concepts, four concepts were derived from the co-design iterations described above. We describe their design articulations in terms of interaction design and the way dialogic theory informed the design process, and present a potential of the bridging concepts to bring theory and practices together in the interest of fostering productive dialogues in the classroom.

Bridging concept #1: A contribution is a microblog, or a digital representation of an idea. In Talkwall, a contribution is short and is currently limited to 140 characters (see Figure 4).
This short format was chosen to enhance oral interaction, not to replace it. To allow the users more interactional control than what is often the case with other microblogging environments (e.g. Twitter), contributions are implemented by a card design. A contribution can be expanded by someone else (e.g. extended or made more precise).

One teacher reflected on the written contributions: ‘The fact that they can write a bit beforehand and think and talk a bit promotes the dialogue in the whole classroom.’

Another teacher described it in this way: ‘It [Talkwall] causes an idea to appear by the student that also is to be written down and potentially elaborated. So, I think principally that writing something and then sending it to someone else compels them to think through what is written.’

This bridging concept may seem trivial. However, as part of our intermediate theory building, it conveyed an emerging understanding of how students may contribute both digitally and verbally whilst being able to build on each other’s contributions. This hybrid context differs from how a message, tweet, or post is understood in most other microblogging tools, where the exchange of ideas is considered to be merely online.

**Bridging concept #2: A feed of contributions provides a mutual awareness of ideas.** The design draws from omnipresent discussion threads online, similar to comments beneath news articles and blog posts, Twitter and Facebook feeds, and discussion forums, for example. The blend of oral and digital contributions is central to Talkwall, and the feed provides an awareness of participants’ thinking process rather than a thread or sequence of ideas. The feed in Talkwall is shared on all participants’ devices as well as the teachers’ screen and offers a means for students to effectively share their contributions with their peers. The feed is an awareness mechanism that can be used by students to acquire ideas from others and for the teacher to acquire detailed information about how students are formulating their ideas, the sequence and emergence of ideas, and an overall evaluation of the dialogue in the classroom as a whole.

A participating teacher reflected on this design: ‘The great idea about this is the combination visually in front of the classroom that supports the students because if you merely say something orally, it is easy to forget. Talkwall provides support for the student who argues in favour of something they have written, and even those who sit and listen can see what is to be argued.’

One teacher discussed the role of the feed in providing model texts for students: ‘Students can use other students’ contributions as model texts. It is displayed there on the Talkwall. Select one of them, and see if you can make a change so that you think it sounds better […]’

Another teacher mentioned students who are less talkative in class: ‘We get nice dialogues from this, and we may prompt some more students who are not so used to talking. So, in the whole class in particular, they merely open both their mouths and their minds and not opt out so much.’

On other occasions, the feed seemed to be overwhelming and difficult for students to grasp, and for some, it did not stimulate reflection and thinking together. Moreover, teachers
found the feed to be overwhelming. Many reported that the feed was challenging to relate to, and to be responsive towards, in a timely manner in the classroom. The keys here seemed to be how the teacher organised the session and how the task was formulated.

The effectiveness of the combination of the bridging concepts of contributions and the feed is well-established and pertinent to the design of other microblogging tools used for education, such as Twiducate and SpeakUp. Figure 5 shows a feed with contributions in Talkwall and Twiducate.

Figure 5
The feed with contributions in Talkwall (to the left) and in Twiducate (to the right)

Bridging concept 3: A wall allows for contributions to be promoted from the feed and to be represented in a spatially organised surface. The feed and the wall are two different lenses of the contributions. The feed focuses on the temporal and emergent nature of ideas, while the wall is a means for selecting relevant contributions and allowing for spatial arrangement by the direct manipulation of contributions to make connections, to aggregate and classify contributions, and to amplify means for synthesising.

A key defining feature of Talkwall is the wall and the ability for participants to select and to move contributions from the feed to the wall and then to organise them spatially (see Figure 6).

One teacher described the wall’s spatial interaction as follows: ‘It was good that they could share those – that they could first write. We had [a lesson] about the Industrial Revolution and pros and cons, so it can be used for anything […]. And then they wrote down everything they could, and they could sort it from their own judgement. […] It was sufficiently concrete to make them work very intensely with it, and they had a lot to say about it in terms of reasoning, so it was actually quite good. I’m quite satisfied with that feature, and a sorting function like that forces them to think and to make some decisions. This is very important throughout the learning process regardless of the level.’

The wall represents a selection process that is different from the writing process. One teacher expressed concern regarding the lack of broad participation: ‘The speed of it – that they [students] quickly, everyone is on, writing. They are all heard, but so in the selection process [when moving contributions to the wall], what we should […] take further then it is
really dominated by the same students. […] I haven’t really seen the democratisation from my point of view.’

A teacher expressed: ‘To point at something that is displayed visually is nice. I believe students have a hard time saying that they agree or disagree about what was said five minutes ago, but they can say that they agree with what is currently there. So, I regard this as an advantage.’

Ongoing co-design work with teachers explores challenging aspects of the wall concept as teachers and students often get confused when they think they are interacting on a shared wall when in fact they are interacting on their own wall or notice that their wall is different from the teachers’ wall that is displayed on a large screen in the classroom. We believe the confusion stems from expectations from using, for example, IWBs and similar tools. The wall is a bridging concept that emerged from discussions about teaching practices that integrated group work and whole-class discussions; hence, the wall was designed to convey the result of a group discussion, typically by the teacher sharing group walls on the large screen as part of a lesson.

Walls are also included in other tools, such as Collboard and GroupScribbles (see Figure 7).

Figure 6
Talkwall with the feed (to the left) and the wall. The task is displayed at the top. Contributions appear in the feed, and students can move selected contributions on to the wall and are then able to organise them spatially.

Figure 7
Design articulations for contributions and the wall for Collboard (to the left) and GroupScribbles (to the right)
Microblogging tools with walls take advantage of IWBs’ ‘technical interactivity’ in terms of being a shared display in the classroom, allowing for direct manipulation (Mercer et al., 2010).

As bridging concepts, the feed and the wall are indivisible. In our intermediate theory building, they contributed to an understanding of how a tool could provide awareness of the emergent ideas of others and, concurrently, a space to interact with ideas and organise one’s own thinking.

**Bridging concept #4: A space for the teacher** has emerged from collaborations with teachers and their own formulations of how they cope with new digital tools and materials in the classroom (Lund et al., 2010). For Talkwall, the role of the teacher has been a key point in the design and has promoted some privileges in the tool for teachers, such as access to all the participants’ walls and the ability to show any contribution on the shared screen to the class (see Figure 8, left-hand side). Furthermore, there are features that support the teacher as a leader of the dialogue, such as a means to formulate tasks and to manage Talkwall sessions (see Figure 8, right-hand side).

![Figure 8](image)

Figure 8
Teacher’s access to participants’ walls (to the left) and the task editor (to the right)

A defining feature of the space for the teacher in Talkwall is the support for rapid shifts between individual, group, and whole-class interactions through the selection of group walls and the use of the feed in whole-class dialogue settings.

Other tools, including Twiducate, Talk Factory, SpeakUp, and Collboard, also allow the teacher to enrol students, to monitor and to optionally delete contributions, and to have control over the shared display. Talkwall was designed to support the teacher in facilitating dialogue in the classroom. The four bridging concepts emerged from our co-design and exploration processes with teachers and became useful in the design articulation work for Talkwall, both as elements of an intermediary theory and as a foundation for thinking about interface metaphors and the core functionality of Talkwall.
Discussion

The four concepts for technology design have emerged during a period in which the technological landscape has shifted dramatically; however, the concepts represent a lasting result because they provide meaning to diverse artefacts when the aim is to facilitate classroom dialogues as the bridging concepts connect the understanding of productive dialogic interactions with the lived experiences of educators and students from everyday classroom talk and the design of socially oriented technology.

Research on conceptual constructs, strong concepts, and strong TEL concepts has generally discussed the development of one single concept as an intermediary form of knowledge. We argue that this may limit the design process and that using combinations of two or more concepts could provide a richer exchange between theory and practice. In this paper, we have demonstrated interdependency and combinations of bridging concepts in the interest of developing intermediary forms of knowledge, an approach that has the potential to contribute to knowledge on the application of DBR.

The bridging concepts can contribute to a more systematic understanding of how the technology is enacted by teachers and students in a dialogic space (Cook et al., 2019; Hetherington & Wegerif, 2018), that is, how it can represent diverse voices in a dialogue, how the contributions are made accessible over time, how the students in the class are able to invoke and combine ideas, and how ideas are kept alive in the dialogue. Talkwall and the other microblogging tools presented in this paper have different ways to materialise and enact dialogic spaces.

For example, the bridging concepts ‘contribution’ and ‘feed’ allowed us to consider how the mutual awareness of ideas in the classroom could be represented in the technology in a way that encouraged engagement with them. The design articulation of a feed in Talkwall keeps contributions accessible over time and was why the feed was designed to aggregate contributions from everyone and has a prominent place in the interface. This design articulation also has limitations as we have found as it may be overwhelming and challenging to be responsive towards. As the bridging concepts are elements of an intermediate theory rather than merely design articulations, they may encourage further design explorations into how a ‘feed’ may be represented.

The ‘wall’ was the most challenging bridging concept as it allowed us to consider multiple means for how ideas can be invoked and combined. We designed Talkwall to have separate walls for every group and the teacher, allowing for multiple selections and spatial organisations of ideas in the classroom. As mentioned, this design articulation has shown to be confusing as many expect the wall to be shared by everyone and indeed be a common dialogic space. However, by providing a shared feed, and separate walls, the design allowed us to develop a practice where teachers could shift between dialogue in groups and whole-class dialogue. These shifts are key to the enactment of a dialogic space as diverse ways of seeing are brought into the whole class dialogue whilst maintaining broad participation in the class. A ‘wall’ as a bridging concept has multiple interpretations, from a theoretical idea of a material dialogic space (Cook et al., 2019; Hetherington & Wegerif, 2018) to a mundane object found in every classroom. This bridging concept was useful in our work as a means to negotiate our dialogic intentions, teacher practices, and design articulations.

Another key aspect is how Talkwall is enacted as a dialogic space in terms of a mutually constructed dialogue by oral and digital contributions in the classroom. This hybridity, or the combination of oral and written contributions, poses new challenges both for how the roles of technology in the digitalised classroom are understood and in terms of how technology can be designed.
Conclusions
The distinctive contribution from the four bridging concepts is that they represent key technology affordances that can be considered pertinent to many technologies, not only microblogging, and their apparent relevance has persisted for a substantial period of time in which the technological landscape has shifted dramatically. Further, this research contributes to knowledge in the field because it explores the way contemporary technologies, such as microblogging, can be integrated into and are potentially transformative of pedagogical practices that develop learners’ ‘complex competencies’ (for instance, critically thinking about one’s own ideas and how they relate to the ideas of others through elaboration and reasoning).

The bridging concepts specifically enable the communicative process needed for a design that aims to tailor a material product to a specific educational practice as well as to draw on theoretical insights from this field of practice, namely dialogic theory. The translations of bridging concepts into design articulations and the range of exemplars that demonstrate the scope and potential of their applications (Dalsgaard & Dindler, 2014, p. 1635) have illustrated the use of technology, such as microblogging, within a diverse set of educational contexts over several years. Thus, specific concepts were used to form more generalisable concepts for pedagogical practices that are used to develop the complex competencies required to address students’ needs.

We have demonstrated that bridging concepts can connect theoretical concepts from sociocultural and dialogical perspectives in learning with the design of mediating cultural tools that partly constitute a learning ecology. As such, they contain the embryonic starting point of what ‘might be’ (Rasmussen et al., 2012). Because ideas of what ‘might be’ are often dynamic and hence difficult to preserve, teachers may find valuable a tool that inscribes significant aspects of dialogic theory and that may serve as a ‘digital companion’ with a potentially transformative impact on emergent dialogic practices.

Acknowledgments: This research is part of the Digitalised Dialogues Across the Curriculum project and funded by the Norwegian research council under grant no. 254761/FINNUT.

References


