Glimpses of dialogue: transitional practices in digitalised classrooms

Atle Skaftun[a], Mari-Ann Igland[b], Dag Husebø[a], Sture Nome[a] and Arne Olav Nygard[a]

[a]Faculty of Arts and Education, University of Stavanger, Stavanger, Norway; [b]Faculty of Teacher and Interpreter Education, Norwegian University of Science and Technology, Trondheim, Norway

ABSTRACT

This socio-culturally informed qualitative study examines digitalised classrooms in Norwegian secondary schools, with a focus on the relationship between information and communication technology (ICT) and dialogic aspects of literacy practices. In the article, we foreground two cases: one on the use of digital mind maps and one on a writing process with online response. These cases display productive results of the tensions between old practices and new technology in that they open up spaces for dialogic interaction. This experience calls for a deeper historical contextualisation, and in the article, we refer to different time scales: First, the restricted time scale of practices observed in the local school contexts over an academic year; second, the somewhat wider perspective of 20–30 years of educational research addressing technological innovation; and third, the extensive time scale of cultural history, with an analogy to the slow move from orality to literacy in ancient Greece. On this basis we suggest the term 'transitional practices' as an appropriate reference to all of these three timescales. Against this background, the glimpses of dialogue observed are seen as promising precursors of future development, but also as vulnerable plant shoots that may very well shrivel and die if they are not supported.

1. Introduction

The tension between existing print-based practices and educational practices 'for the Internet age' (Wegerif 2013) is a prominent feature in public, professional and political discourse on school development in the Western world (NOU 2014:7; NOU 2015:8; Pellegrino and Hilton 2013; Rychen and Salganik 2001). In educational research addressing technology and school development, there is a growing consensus towards a more balanced view, which holds that access to new technology alone is not enough (Bigum and Kenway 2005; Elf 2014; Selwyn 2010; Warschauer 2009). The ques- tion of utmost importance is how new technology is and might be used in the everyday life of the classroom (cf. Niemi, Kynäslahti, and Vahtivuori-Hänninen 2013), and this is also a question of how new practices are integrated with existing ones. At the moment this 'place called school' (Good-lad 2004) is probably the last institutional stronghold resisting the deep impact of digital technology on social practices in Western society. Two decades after the visionary manifesto of the New London Group (1996) – 'A Pedagogy of Multiliteracies' – we may still be said to remain at the digital cross- roads on our way towards the school of the twenty-first century. In this article, we will suggest a his- torical framing of this problem in order to acknowledge that cultural change does not necessarily happen at the same pace as technological innovation.

The research project underlying this article is called Responsive Literacy Practices in Digitalised Classrooms (for short: The Response Project). Its main objective is to gain new insights into how the introduction of one-to-one computers affects classroom practices of literacy teaching and learning. To this end, a group of researchers have followed the lower-secondary schools (Years 8–10) of the small Norwegian municipality 'Fjord'[1] over a period of three years, commencing in August 2014, when the first 12–13-year-old Year 8-students obtained their own school computers, and until the same students finished lower-secondary school in June 2017. In this article, we focus on relationships

between new technology and dialogic qualities observed during the first of the project period of three academic years, asking whether and how the use of new technology may be said to open up new opportunity spaces for agency and dialogic interaction in newly digitalised classrooms.

The first part of the article provides a historical and dialogic context for the understanding of what we call transitional practices. On the one hand, this concept has been coined with reference to the interplay between tradition and change during 'a time of provisionality' (Kress 2009), thus signalling a historical framing. On the other hand, it provides a conceptual lens enabling insight into the glimpses of dialogic possibilities that may be opening up when the introduction of new technology disturbs the relative stability of 'the way we do things at school'. This is what we focus upon in the second part of the article, where we first present the design and methodology of the Response Project, as well as the general findings from the first year of observations, and then take a closer look at two illustrating examples of how technology may create new opportunity spaces for dialogue in a time of change.

2. Theoretical perspectives

History tells us that verbal communication has been through several epoch-making technological transitions – from orality to literacy to mass communication enabled by the printing press, film, radio, TV, etc. – all involving a redistribution of power (Gee and Hayes 2011). At a deeper level, what is and has been at stake is a matter of agency, that is, the right to produce meaning, as opposed to being merely a consumer. Hence the choice of pedagogical framework for the school of our time may have far-reaching consequences. Wegerif (2013), in full awareness of this, notes that the internet and dialogue share the same open-ended network structure, pointing out that the internet may pave the way for a productive re-actualisation and legitimisation of a dialogic approach to literacy education and the teaching of thinking (Wegerif 2016). In short, this means an approach that values students' active participation highly. These two perspectives – the historical context as a horizon for dealing with change in rather robust school practices, and dialogic qualities as a meaningful point of reference in contemporary education – are crucial to the understanding of the classroom events observed in the research project underlying this article.

2.1. A historical perspective

The term technology is derived from the Greek word techne, which refers to the ability to perform adequately in a specific domain. Over time, the meaning of the term has widened to encompass machinery and tools as well as the more 'human aspects of technology' (Selwyn 2011, 8). In fact, the full range of meanings is relevant in, and may provide historical depth to, the discussion about digital technology as a means of enhancing and supporting dialogic interaction at school.

Changes brought about by new technology may occur on different levels simultaneously. We may be perfectly aware of them and work actively to make them happen, but we may also be completely blind to fundamental rearrangements taking place in the assumptions underlying a specific practice (Zepke 2015). In Preface to Plato, Havelock (1963) situates the philosopher at the epicentre of a major shift from oral to literate thinking in ancient Greek culture, convincingly illustrating how long it takes before the full impact of the new technology – that is, literacy – is comprehensible. According to Havelock, the Republic (Plato 1998) was written at a time when literacy was gaining momentum: a 'community of readers' (Havelock 1963, 41) was about to be established, and written communication was challenging the hegemony of the oral epic as the 'tribal encyclopedia' (66) and the principal 'didactic device' of the community (292). Havelock's analysis emphasises that this shift from an oral to a written methodology of thinking became possible through a long transitional process following the first use of alphabetic writing, and he sees Plato as a school reformer representing a detached

type of conceptual reasoning, which opposes an old-school practice based on narrative tra- dition and engagement.

Today, digital technology poses an analogous challenge to educational practices rooted in the paper-based technology of the printed word. Now, as then, it is hard to grasp the scope of a major shift while it is taking place, and even harder to predict what future practices will look like (cf. Zepke 2015) – especially because of the rapid development of new technology (Warschauer 2009, 123 f.). During our fieldwork in the Fjord schools, we have observed otherwise robust practices at a time of change at all levels, from the underlying technological basis, to explicit demands set out in educational programmes and reforms. We find that even if schools as a system of practices are definitely resistant to change, they also respond to the above-mentioned pressures for change – that is, to new technological possibilities, an ideological shift away from valuing experience and stability, and educational reform and development in general. Drawing an analogy between the prolonged technological shift from orality to literacy described by Havelock and the technological tensions of our time, we would like to characterise the responsive practices observed in newly digitalised classrooms as transitional.

Our conception of practice is rooted in New Literacy Studies (Barton 2007; Gee 1996; Van Leeu-wen 2008). In this article, the term is used to designate patterns of action on different levels of speci-ficity (school, teaching, classroom and literacy events). Its suggested qualifier, transitional, is introduced to invoke a general historical context for the study of literacy practices in digitalised class-rooms. In addition, this qualifier may refer to the timescale of specific changes in a local context. This historical perspective – both the more global and the local – is a vital part of a theoretical framework based on a socio-cultural and dialogic understanding of human life worlds.

2.2. Dialogic aspects of practice

Bakhtin's dialogism can be described as a philosophy of becoming rather than of what is in the world. The great dialogue of human life consists of a chain of utterances bound together as responses and anticipations of response. On all levels, from single utterances to life worlds and cultures, meaning is never fixed for all times. Bakhtin's famous characteristic of the genre as 'always the same and yet not the same, always old and new simultaneously' (Bakhtin 1984, 106) also applies to such micro- and macro-levels of meaning. For an utterance to be intelligible in a specific domain, it must be shaped in relation to existing genres in that domain. In times of innovation, single utterances challenging the established genre gain momentum and contribute to its change. Dialogism thus provides us with a theoretical framework geared towards dealing with practices in becoming, or transitional practices.

The educational research community seems to agree that supplementing or substituting mono- logic features of traditional school practices with more dialogic qualities has a positive impact on students' engagement, understanding, thinking and learning (Alexander 2008; Cazden 2001; Dysthe 1995; 2011; Mercer and Howe 2012; Nystrand 2006; Wells 1999; White and Peters 2011). Yet, creat- ing this kind of dialogic opportunity space has proved to be difficult (Lefstein 2008; Nystrand 2006; Sedova, Salamounova, and Svaricek 2014; Segal and Lefstein 2016). Addressing dialogism as an appropriate holistic conceptual framework for education in the internet age, Wegerif (2013) offers a productive and promising approach in which dialogic features and qualities are legitimised and anchored as sensible and necessary responses to the demands of society. The logic of internet- based interaction provides new dialogic conditions, which are technologically mediated yet retain important similarities to the oral culture of Plato and his time. Hence a key task for schools is to create dialogic spaces (Wegerif 2013) where students are allowed to gain subject-related experience and discuss it with their peers and teachers, meaning that they are active in their zones of proximal development (Vygotsky 1986).

Opening dialogue (Nystrand 1997) means organising classroom activities in ways that position students as more active participants. Dialogic qualities are displayed in open-ended events, tied to the here-and-now of work rather than to teacher control and student compliance, and Bakhtin's term eventness (Bakhtin 1993) may thus be used to grasp the qualities of the moment. Relating dialogically to others means meeting them in an open-ended event, trying to understand them. This is a challenge to both teachers and students, owing to the power of traditional practices (cf. Goodlad 2004) where students are too often deprived of the opportunity to see with their own eyes and work through problems in their own spoken language, supported by the concepts and language of the specific subject.

3. Methodological considerations

The Response Project is a longitudinal, qualitative case study with an 'embedded structure' (Yin 2009) of student groups and classrooms in the three schools of Fjord municipality,[2] which is located on the outskirts of a larger town. Fjord is a small, yet complex municipality, encompassing rural as well as urban features of society, and may be characterised as a micro-version of the overall Norwegian educational context. All of its three schools span the entire range of basic education, i.e., Years 1–10 (age range 6–16). The City Centre School is located in the administrative centre of the municipality and recruits students from a population which is comparable in terms of social mixture with what is found in larger cities in Norway. The South West School is located in the most rural part of the municipality, but most of the students are recruited from a garden city of single-family homes in its catchment area. The North East School is in-between the other two schools with regard to the socio-economic background of its students.

Since Fjord was among the first municipalities where the school authorities decided on a one-to- one digital solution for all students in its lower-secondary schools (starting in 2014), it is reasonable to consider this municipality a 'critical case' (Flyvbjerg 2006) at a national policy level. All schools in Fjord now use Google Drive or Classroom and associated software and apps; recently Fjord has also chosen Google hardware (Chromebooks) for its students. The Response Project was designed in collaboration with the municipality and its three school principals, in connection with a framework for school-based competence development (Utdanningsdirektoratet 2015). In the 2014/2015 academic year, the research team offered a series of six seminars for teachers introducing low-threshold digital resources (digital mind maps, Google Docs, Blog tools) linked to everyday practices in different subjects. The content of these seminars was designed with an emphasis on response at different levels, starting with reading as a response to written text, moving through teacher response to student writing, and then on to the creation of collective spaces for written communication. Two of the schools included the seminars in their school-based competence-building programme, whereas the third (the North East School) was only able to make room for a mini-seminar during its planning days, at which the main ideas were briefly introduced.

The seven researchers in the Response Project team have followed all seven groups of students from they started Year 8 in Autumn 2014 and through their years in secondary school (Years 8–10). The data consist of field notes and diaries, photos, student texts, transcribed conversations and interviews with students, teachers, school principals and representatives of the municipal administration, as well as curricular plans and documents concerning the school context. Each group of students is visited four or five times per semester, with a strategic shift in focus, from randomly chosen days representing everyday life in the classrooms, to teaching trajectories in specific subjects where teachers make active use of computers. This strategy is consistent with the overall twofold interest of the project in two issues: (1) how the computer is used in digitalised classrooms and (2) how the use of computers might enhance opportunity spaces for dialogic interaction at school.

In the fieldwork from the first year, which is reported here, the fact that the North East School did not take part in seminars actually opened up an opportunity for more direct, personal collaboration between teachers and researchers right from the beginning. The first case presented below is based on this kind of collaboration in one of two student groups. The second case stems from a task given at a seminar, but the content and form of the teaching process were conceived and planned by the teachers. In both cases, the researchers were participant observers while the plans were carried out, a decision in line with the general collaborative approach to the Fjord schools. The project is approved by the Norwegian Centre for Research Data, and all participants are anonymised.

Our analytic approach is hermeneutic on different levels, with Bakhtin's dialogism as a general interpretative framework. Event and eventness are key interpretative categories derived from this framework, alongside Wegerif's conception of dialogic space. Based on Vygotsky's understanding of mediation, we also use visual representations of cognitive operations as a semiotic tool in the analysis. After an exchange of impressions among the researchers, we chose an overall image of 'business as usual' obtaining at the schools as the starting point for a collective close reading of field notes across classroom contexts. A prominent category derived from this process is that of technological event, which describes a large number of observations made during the autumn semester of 2014. This category encompasses events where technology is in the foreground, often owing to technical or organisational problems. Further, the concept of transitional practices links together observations made in the different classrooms and is also used as a link between the observed universe and historical and theoretical perspectives.

4. Analysis

According to Wegerif (2013), the technology around us calls for a dialogic approach to teaching and learning, and it provides new opportunity spaces for dialogue. However, it seems wise to bring into the equation the fact that changes take time and often create tensions and friction. The two cases we present below represent productive outcomes derived from friction in what we consider to be transitional practices on different time scales. At a global 'large-time' level of historical time, they are part of a slow process of technological change in educational contexts, and at a local level, they are typical examples of changes emerging from an intensified period of technological enrichment. Before we take a closer look at these examples, however, we will provide an overall image of the practices we have observed, intended as a 'dialogising background' (Bakhtin 1981, 340).

4.1. Overall experiences from the first year of observations

During the autumn semester of 2014, we observed that a great deal of attention was being devoted to technological issues per se in all classrooms. For example, negotiations over the organisation of shared and personal files was a recurring kind of technological event that took up considerable amounts of classroom time. In an interesting variation on this theme, one of our teachers consistently drew the whole structure of folders – symbols and names – on the blackboard in order to help the students get it right. We also observed that teachers were cautious about making plans that made them dependent on internet access – quite sensibly, given that the internet connection was a recurring problem throughout the autumn semester.

'It's a transition', one of our teachers exclaimed laconically after a lesson filled with technical problems: The information and communication technology (ICT) consultant entered the room in the middle of the lesson to start an update procedure on the classroom computer and by doing so forced the teacher to stop using it; and when the teacher instead resorted to her own portable computer, she had difficulty connecting to the internet. Recurrent technical issues had, in fact, been a problem throughout the autumn semester. In fact, the teacher's exclamation sums up a very prominent fea-

ture of our observations from Year 8 classrooms in Fjord municipality, as well as a recognisable experience from large-scale ICT rollouts in Norwegian upper-secondary schools over the past 10–15 years (cf. Aagaard 2015).

Despite the trouble described, the level of frustration with ICT was never very high. By January 2015, the technical internet challenge had been solved, and the technological events, so prominent in our autumn-semester observations, faded into the background. From this point onwards, we observed a rapid change towards familiarisation, where the technology increasingly became a natural part of the environment and ceased to be a disturbing factor in classroom activities.

The computer was to a large extent used as a writing tool or as a platform for reading pre-pre- pared educational content – that is, in ways based on an underlying 'book logic'. One prominent question to be explored along the longitudinal dimension of the Response Project, is how and according to what kind of logic the technology is integrated into practice in the long run. Our focus here is on the period of most intense change, when the computer still represented a disturbing force in the somewhat rigid routines of established practices. As illustrated by the two examples focused upon below, this friction may create glimpses of new, dialogic practices.

4.2. Digital stepping-stones towards dialogic possibilities: using digital mind maps

The North East School has approximately 50 students in each Year, divided into two groups. The teachers at the school work in pairs, with regard to both the planning, the conduct and the evaluation of teaching. Mona and Elisabeth teach Social Science and Religious Studies together in group 8A. Elisabeth is in her early thirties. She has worked at the school for eight years, teaching Mathematics, Religious Studies, German and Social Science. Mona is in her late 20s. She started her teaching career at the school a year ago, with Social Science and Norwegian as her subjects.

Mona and Elisabeth have a close professional relationship, taking turns in leading whole-class activities and supporting the students in one-on-one tutoring. They both seem to have above-average ICT skills, and they are both comfortable with the feeling of being left alone with the responsibility for finding potential uses for ICT – they actually seem to appreciate it:

> There are no guidelines [for how to implement the use of personal computers in our teaching], but in fact I don't know if I would have wanted that, either. Being locked into such and such ways of using it, that would quickly bring out a negative reaction in many teachers. [...] but instead I would have appreciated being presented with possible ways of using [different tools]. (Interview with Elisabeth on 20 April 2015)

Mona and Elisabeth underscore that presenting useful tools and concrete examples to practitioners is one way to promote new ideas and potential changes of practice. One such example is when they were introduced to digital mind mapping in early September 2014. They used 'MindMup for Google Drive', which is free of charge, quite simple to use, and also contains features for personalising the aesthetics. Our first observation of this application in use was made during a lesson held by Mona and another teacher, Signe, who were collaborating in the subject of Norwegian, and during our fieldwork in the first semester, we subsequently observed several ad hoc examples of the mind map being put to use.

In March 2015, Mona and Elisabeth wanted to try using mind maps more systematically in Reli- gious Studies, in order to promote in-depth learning about Islam during five lessons over a period of three weeks. One of their stated aims was for the students to develop categories in which to organise their learning about Islam. The students started off individually with maps based on their pre-under- standing, without any textual support. They uploaded these mind maps into their private folders on

Google Disk. The teachers read these first versions and gave written response between lessons, challenging the students to go deeper into some of their chosen categories, completing the overview or clearing up misunderstandings. If something seemed unclear or appeared to reflect a misconception, the students were asked to investigate it. Figure 1 below illustrates how this teacher response appeared in the students' texts:
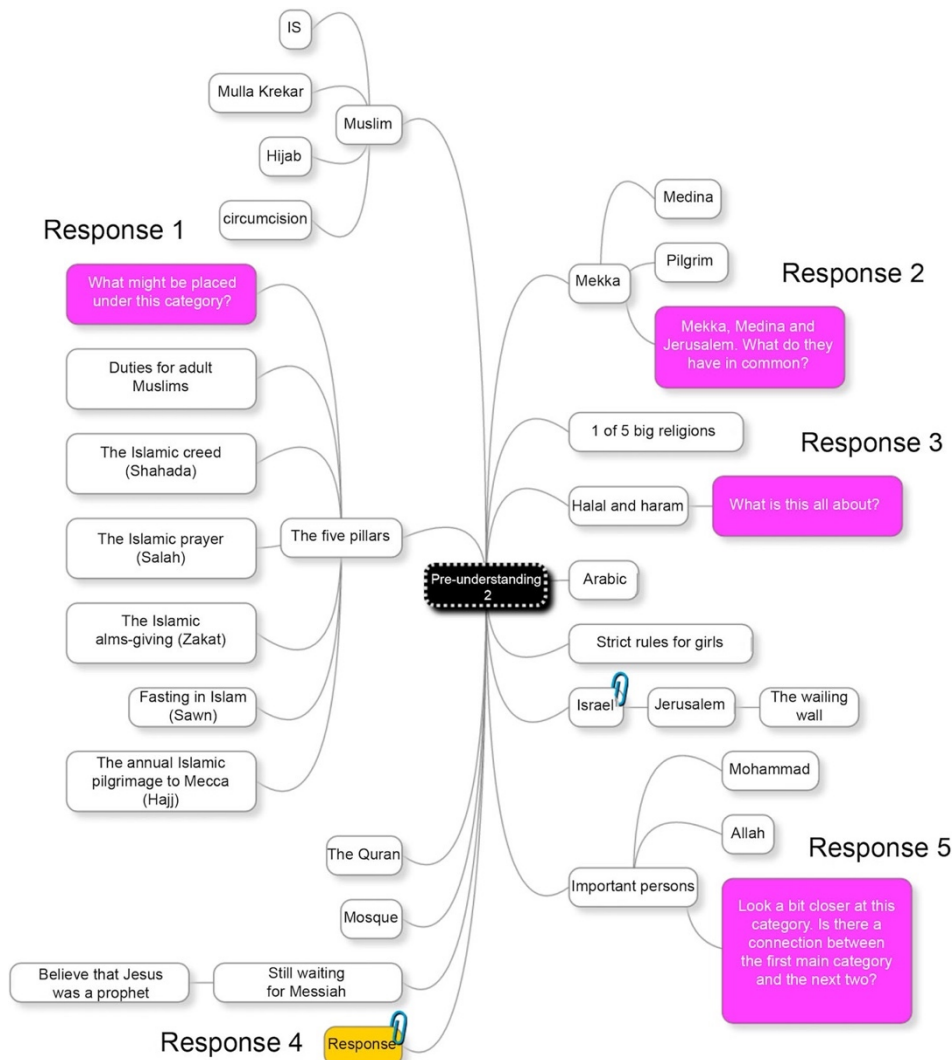

Figure 1. Teacher response to mind maps.

Responses 1, 2 and 3 are attempts by the teacher to motivate the student to dig deeper into parts of Islam where he or she had shown particular interest. Response 4 is attached, as indicated by the clip, and refers to the two boxes above: 'Is this so - that Muslims believe that Jesus was a prophet and that they still waits for Messiah?' In Response 5, the teacher is asking the student to have a closer look at the two levels of categories used: 'Important persons' at a higher level and 'Mohammad' and 'Allah' at a lower level: the student should consider whether these categories are coherent.

This dialogic exchange on how to organise an overview of the entire topic of Islam into key categories certainly has educational potential, not only in the subject concerned. Indeed, mapping content is considered one of the master strategies for processing and understanding any subject matter. Mind maps in general quite literally make the logical structure of content visible. Revising and reworking the mind map, guided by the teachers' response, seems like a potent learning strategy

that will enhance the power of the general mapping strategy. As we see it, this is about making thinking visible. In this case, the dialogic space represents a very good example of a zone of proximal development (Vygotsky 1986): the structure of the student's own understanding is the starting point for response from the teacher and for reorganisation by the student, guided by scientific concepts and by the relational structure of those concepts within the subject domain.

Based on their reading of the students' texts (and their own responses to them), the teachers divided the students into small groups according to shared topics of interest, as displayed in their individual mind maps. Each group was then given a special task to dig deeper into the particular category in which its members had shown individual interest. From this point on, the students in each group designed a shared mind map, using different textual resources to broaden their understanding of Islam in general, and to delve deeper into one particular topic, such as 'art and architecture', 'textual tradition', 'religious beliefs', 'religious practice', 'important issues today' and 'family life'. While the students were working on these topics, the two teachers supported them and gave oral feedback on the students' evolving mind maps. The student groups were instructed to share their common mind map on Google Disk. Finally, each group gave an oral presentation to the whole class based on the category that they had chosen for the description of Islam, with a special focus on one issue. Both the teachers and the fellow students gave oral feedback on this final presentation. The different mind maps, Elisabeth and Mona underscored in class, were to be regarded as the students' co-constructed Year 8 knowledge base of Islam.

The mind maps were saved in subsequent versions, as part of a subject-oriented dialogue over a three-week period. The new technology became a tool that helped the teachers co-operate in the stu-dents' learning processes through written dialogue. This co-operation was not only about finding the right level of complexity and the correct answer – it also involved aspects of motivation, in that the teachers were able to respond particularly to the matters that the students themselves showed an interest in. By supporting the students through a dialogue tailored to their personal interests, the teachers were able to find an approach enabling the entire class to understand and research Islam together with their teachers. As a result of being allowed to develop the categories in which the subject knowledge was organised and presented, the students became co-constructors of meaning and of the knowledge distributed in the classroom and on Google Disk. Informal conversations with the students indicated that they appreciated the mind-map practice. One of the students said that he found it particularly useful in subjects where it is necessary to manage and systematise bits and pieces of knowledge, found in different types of texts and multimodal resources.

During subsequent lessons after the Islam case was completed, we also observed several students exploring the affordances and possibilities of the MindMup application without being told to do so by their teachers or as part of a particular class. Using such a technology, experimenting or even playing with it, appears in a deep sense to be a shared project between teachers and students, allowing the students to benefit from their digital experience in contexts in and outside school. In and of itself, the use of new digital applications offering more possibilities than are really needed for teaching purposes, might thus open up a space for student-initiated exploration and engagement.

4.3. Adding eventness to scripted dialogue: online response to student writing

The South West School is the smallest school in Fjord, with approximately 30 students in each Year, divided into two small groups. The groups observed during the first year of our study consisted of 16 students each. Their teachers co-ordinated their work closely, especially Ingrid and Anne, who were the form teachers from Years 8 to 10). Ingrid taught Norwegian, English, Social Science and Religious Studies in 8A, while Anne taught Norwegian, Science and Mathematics in 8B. They are both experienced and confident teachers, always well prepared, and dedicated to making themselves and

the subject matter they teach understood by all students – who are, on their part, generally loyal and respectful. Both teachers display active leadership in their respective classrooms, and their positions as classroom leaders seem anchored not only in subject-matter knowledge, but also in common and firmly established speech genres (Bakhtin 1986) of teaching practice.

Ingrid and Anne attempted to engage their students in classroom dialogues, but the students' responses often signalled procedural rather than substantive engagement. Taking part in a truly open-ended dialogue based on a genuine presence, obviously involves a great deal of risk for teachers as well as for students, as opposed to the safety that comes with the bargains struck between teachers and students that allow both parties to get through the day (Nystrand and Gamoran 1991). However, the cost of this kind of safety is the loss of a sense of eventness (Bakhtin 1993), i.e., the sense of being present in the open-ended moment of ongoing activities, or, in other terms, the loss of substantial engagement.

As part of their co-operation with the research team, the two teachers planned and performed a writing project in their Norwegian classes, intended to involve teacher response and to explore and exploit the affordances of Google Docs, more specifically the opportunity for the teacher and the student to work with/on? the same document simultaneously. Anne and Ingrid asked their students to write fairy tales for Year 2 pupils during a four-week project that was carried out in January and February. The project consisted of several steps. As a basis for lectures on genre features, both classes read Norwegian folk tales and watched an animated folktale film. This was followed by a planning session where the students made up their minds about the characters and plot of their own stories. Based on a question sheet handed out in class, they produced a written plan for their stories. Over the next two weeks, time was specifically set aside for writing in Norwegian classes. During such sessions, the students could discuss what they were writing with their teachers, peers and the researchers, but they spent most of their time writing. When all texts had been revised and edited, each student read his or her folk tale to a Year 2 pupil. However, this procedure was in fact transformed at an early stage of the writing process.

The teachers and researchers were both present in the classroom, and the researchers also took active part in supervising the students. What happened in this situation was that the teachers, in addition to reading the students' texts online, also started commenting on them online. The teachers and researchers quickly agreed to work systematically and divided the students among them. This type of response at an early stage of the process represented a deviation from the plan – an improvisatory move, so to speak (cf. Twiner et al. 2014). It simply happened, and it paved the way for acting outside the plan and the familiar script. All students received response and made revisions, in a generally positive atmosphere. A third (9) of the students replied to the comments on their own initiative, limited to saying 'thank you' in some cases, but also by engaging in explanations tied to the text in progress. Figure 2 displays one example of a student text with online response from the initial phase of the project:

Figure 2. Student text with dialogue in the margins.

This is the plan for writing a fairy tale produced by one of the students, John. The numbers refer to a list of questions provided as a tool for the planning process. The words selected early on in the text are 'a dragon', and the researcher's feedback reads, 'the dragon is not there – or is it one of the helpers?' This comment is based on the researcher's reading of the student's entire plan; it refers to the fact that the dragon is not mentioned again after the introduction in Point 2, where it is claimed that the story will be about a boy and a dragon. John responds by writing, 'Yes, a helper', soon after adding a second reply: 'It will come more into the picture when I get started on the story itself.' A few days later, John adds the dragon to his list of characters in Point 3 and marks the researcher's comment as 'resolved', meaning that the comment thread is closed. In this example, John does not at first make any changes in his text, such as simply adding the dragon to the list of characters as he eventually did, and his two initial replies to the comment suggest that he does not really see the point of drawing up a plan (conversations with him in the classroom confirm this impression). Nevertheless, he relates to the comment, he explicitly responds to it – and he does eventually act upon it.

The dialogue about John's fairy tale continues when he starts writing the actual story, and then he shows a stronger sense of responsibility. For example, he receives a comment pointing out an inconsistency: in the introduction to his story, he has stressed that the dragon cannot breathe fire, but suddenly – as the action heats up – this is exactly what the dragon does. John revises his introduction and remarks on this in a reply to the comment, thus displaying both the ability to make adequate revisions on a global level and – more importantly in our context – the ability to verbalise revisions and meaningful changes that make his own text more consistent. A contact zone seems to have established itself in the margin of the text, where John also signals in a colloquial style that he values the input; at one point, following a more holistic comment with a general piece of advice, he even explicitly says, 'Thanks, will vary it a bit more J'.

There are some cases where a teacher and a student actually discuss in greater depth where to go in the further development of a text, and there are also cases without an explicit dialogue in the margin. However, we would like to emphasise that even marking a comment as 'resolved' is a way of responding to it. Unlike simply deleting a comment after acting upon it, this represents dialogic, responsive and responsible action on the part of the student. The technology frames the situation in such a manner that the student takes responsive action in a way that we see as widening the opportunity space for dialogic interaction, engaging both the teacher and the student in the moment of an open-ended dialogue concerning the development of the student's text. This pulls the teacher

closer to the time and space of the student's meaning-making process, transforming the evolving text into an open-ended field of possibilities, based on a series of choices made on all levels of the text. As a result, the dialogue between the student and the teacher is brought into the openness of the present, adding eventness to that dialogue, which otherwise tends to adhere strictly to an established script in educational practices.

This meeting between teacher and student quite literally takes place in the margin of the student's text. Like most word-processing software, Google Docs allows comments to be made, but it also has some specific features that contribute to flexible foregrounding of the dialogue in the margins. First, it is possible to reply to comments and there is no limit to the number of rejoinders that may be included in a 'dialogic spell' (Nystrand 2006). Having students respond to comments made by their teacher seems like a great opportunity to be further explored by teachers and researchers. What we saw during the fairy tale project was only glimpses of what this might develop into, but even at such a small scale, the dialogues in the margin were instances of genuine meetings between student and teacher.

Our example is from writing in the classroom, and represents a dialogue situated in a shared temporal and spatial context. Within this setting, however, the meeting takes place in a digital environment. The classroom is a frame, surrounding the dialogue which is unfolding in the margin of the student's text, a frame whose existence makes it possible to shift spaces and talk to each other in the old-fashioned way, which would involve entering another setting and thus also give rise to an event other than the digitally mediated one. This technologically determined setting – we might also see it as an example of a 'chronotope of technology-mediated creative learning space' (Kumpulainen, Mikkola, and Jaatinen 2014) – provides a stage where both the teacher and the student are located as they are having a dialogue on the student's text. They are present in the same space, made visible in the margin of the text, in a way that is impossible when the text is physically on the move between the different settings of student writing and teacher response. This visible dialogic space expands the pre- sent of the writing process, making room for chains of written communication evolving over time.

The writing project created some sort of a 'bubble' where both teachers and students thrived, working together over several weeks. However, the bubble broke when the time came for assessment. Then both the students and the teachers returned to their familiar roles in the practices of everyday life at school. Thus, even if this case shows that it is possible to create dialogic spaces within edu- cational practice, it also highlights the well-known dilemma – or 'double bind' (Bateson 1972) – inherent in assessment subsequent to writing processes involving teacher response.

5. Implications for educational practice

A general observation made in the overall Response Project framing the data reported here is that it takes time to integrate computers into the practices of the classroom, and that the rate of adaptation to the digital classroom varies greatly among schools and teachers. At the present time, we find ourselves between an educational past that we know quite well, and a future of schooling that is not yet here. What happens in this interlude is a continuous negotiation on different levels, from single classroom events to overall educational policy, which brings to mind Otto Neurath's well-known image of rebuilding a ship at sea (in his case used as a metaphor for the holistic nature of language). Still, the task may not be an impossible one. For example, Niemi, Kynäslahti, and Vahtivuori-Hänninen (2013) sums up the success factors for integration of ICT in Finnish classrooms in six points:

(1) ICT included in strategic planning, as part of school culture, (2) teaching and learning methods facilitating participation and leading to empowerment, (3) flexible curriculums, (4) high investments in communication, (5) optimum leadership and management, and (6) teaching staff's strong capacity and commitment. (Niemi, Kynäslahti, and Vahtivuori-Hänninen 2013, 57)

There are a great many ideas about what the digital classroom should look like, but one lesson to be learned from several decades of research is that a more realistic discussion is called for (Player-Koro 2013; Selwyn 2010). Neurath's above-mentioned metaphor reminds us that rebuilding educational practice must be an ongoing task, and thus also that the ability to improvise in classroom settings is a necessary and potentially productive aspect of the modern teacher competence (cf Twiner et al. 2014). In order to understand this as well as possible, we suggest that it is appropriate to analyse what we observe as transitional practices. A deeper understanding of the interplay between change and stability in school practices might enhance the analytical tools used in educational research, and it might support a balanced approach to technological innovation at school (Bigum and Kenway 2005; Elf 2014; Selwyn 2010; Warschauer 2009).

In this article, we have described and analysed what we see as technologically determined glimpses of dialogue in secondary-school classrooms at a time of change. These glimpses are individual cases from an overarching study of the three lower-secondary schools in a Norwegian municipality. With some important reservations concerning the lack of space for elaborate analysis of each case, we have, first, shown how the exploratory use of digital mind maps enables sharing and collaboration in text development, and how the visualisation of thinking (hierarchical organisation of bubbles in the mind map) represents a potent opportunity space for dialogue. With regard to this example, we have also pointed out that students who are introduced to simple uses of software may become engaged in exploring the potential of the digital tool in question. These observations may represent digital stepping-stones towards an educational future with increased room for student agency and thus also increased dialogic activity in the classroom.

Second, we have reported on a writing project in several steps, including response and revision. In this case, the affordance of the software used makes room for dialogues in the margins which appear in a not-yet-regulated space for teacher–student interaction, and also at a time when the teacher has not yet seen the complete student text. The use of technology thus contributes to adding eventness to written responses set in an opportunity space for open-ended dialogue between teacher and student. This response practice seems to have great potential for development as a way of implementing formative assessment in sensible writing instruction at schools.

Our cases are embedded in what we consider to be a critical case of systematic and educationally motivated digitalisation of secondary school, supported by policy decisions. The glimpses of dialogue described here represent, as we see them, indicators of what it is possible to achieve without a great deal of effort, provided that there is a will to open up classroom practice to the productive uncertainty involved in the use of digital tools, and – more importantly – provided that there is time to work in depth. Hence, we see possibilities in these glimpses of dialogue, but also some important challenges and limitations. What we have described are dialogic doorways, rather than fully developed dialogues. In-depth learning and understanding is central to student agency, but it is also a decisive factor for teachers who are changing their professional practice. Technology alone will not make any difference.

We suggest that the practices observed in digitalised (or digitalising) classrooms should be seen as emergent and evolving, and in that sense transitional, so that we can better understand the powers at work during a time of change. Glimpses of dialogue in today's digitalised classrooms may be indicative of future practice, and they also provide ideas for the further development of dialogic

aspects of practice at school. However, it seems wise not to forget the powerful mechanisms that sustain existing practices and make them resistant to change.

Notes

1. All names referred to are fictional.
2. In Norway, municipalities are in charge of years 1–10 of primary and lower-secondary education.

References

Aagaard, T. 2015. Når teknologi møter fagtradisjoner i norsk og mediefag på videregående skole [When Technology Meets Subject Traditions in Norwegian and Media Studies in Upper-Secondary School]. *Acta Didactica Norge* 9 (1). doi:10.5617/adno.1298.

Alexander, R. 2008. *Towards Dialogic Teaching: Rethinking Classroom Talk.* 4th ed. Thirsk: Dialogos.

Bakhtin, M. 1981. *The Dialogic Imagination: Four Essays*. Translated by M. Holquist & C. Emerson. Austin, TX: University of Texas Press.

Bakhtin, M. M. 1984. *Problems of Dostoevsky's Poetics*. Austin, TX: University of Minnesota Press.

Bakhtin, M. 1986. *Speech Genres and Other Late Essays.* Translated by V. W. McGee, and M. Holquist and edited by C. Emerson. Austin, TX: University of Texas Press.

Bakhtin, M. M. 1993. *Toward a Philosophy of the Act.* Translated by V. Liapunov and edited by M. Holquist. Austin, TX: University of Texas Press.

Barton, D. 2007. *Literacy: An Introduction to the Ecology of Written Language*, (2nd ed). Oxford: Wiley-Blackwell. Bateson, G. 1972. *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*. Chicago, IL: University of Chicago Press.

Bigum, C., and J. Kenway. 2005. New Information Technologies and the Ambiguous Future of Schooling–Some Possible Scenarios. In *Extending Educational Change*, edited by A. Hargreaves, 95–115. New York, NY: Springer.

Cazden, C. B. 2001. *Classroom Discourse: The Language of Teaching and Learning*. 2nd ed. Portsmouth: Heinemann. Dysthe, O. 1995. *Det flerstemmige klasserommet: skriving og samtale for å lære* [*The Multivoiced Classroom: Writing and Talking to Learn*]. Oslo: Ad Notam Gyldendal.

Dysthe, O. 2011. Opportunity Spaces for Dialogic Pedagogy in Test-oriented Schools: A Case Study of Teaching and Learning in High School. In *Bakhtinian Pedagogy: Opportunities and Challenges for Research, Policy and Practice in Education Across the Globe*, edited by E. J. White and M. Peters, 69–90. New York, NY: Peter Lang.

Elf, N. F. 2014. Teknologi, skrivekultur og skriveridentitet [Technology, Writing Culture and Writer Identity]. In *Skriv! Les! 2. Artikler fra den andre nordiske forskerkonferansen om Skriving, lesing og literacy* [Write! Read! 2. Papers from the Second Nordic Conference for Researchers on Writing, Reading and Literacy, edited by A. Skaftun, P. H. Uppstad and A. J. Aasen, 291–314. Trondheim: Tapir.

Flyvbjerg, B. 2006. "Five Misunderstandings About Case-Study Research." *Qualitative Inquiry* 12 (2): 219–245. doi:10. 1177/1077800405284363.

Gee, J. P. 1996. *Social Linguistics and Literacies: Ideology in Discourses*. New York, NY: Routledge.

Gee, J. P., and E. R. Hayes. 2011. *Language and Learning in the Digital Age*. New York, NY: Routledge.

Goodlad, J. 2004. *A Place Called School: Twentieth Anniversary Edition.* 2nd ed. New York, NY: McGraw-Hill Education.

Havelock, E. A. 1963. *Preface to Plato.* Cambridge, MA: Harvard University Press.

Kress, G. 2009. *Multimodality: A Social Semiotic Approach to Contemporary Communication.* New York, NY: Routledge.

Kumpulainen, K., A. Mikkola, and A.-M. Jaatinen. 2014. "The Chronotopes of Technology-Mediated Creative Learning Practices in an Elementary School Community." *Learning, Media and Technology 39* (1): 53–74. doi:10.1080/17439884.2012.752383.

Lefstein, A. 2008. Changing Classroom Practice Through the English National Literacy Strategy: A Micro-Interactional Perspective. *American Educational Research Journal* 45 (3): 701–737.

Mercer, N., and C. Howe. 2012. Explaining the Dialogic Processes of Teaching and Learning: The Value and Potential of Sociocultural Theory. *Learning, Culture and Social Interaction 1* (1): 12–21. doi:10.1016/j.lcsi.2012.03.001.

New London Group. 1996. A Pedagogy of Multiliteracies: Designing Social Futures. Harvard Educational Review 66 (1): 60–93. doi:10.17763/haer.66.1.17370n67v22j160u.

Niemi, H., H. Kynäslahti, and S. Vahtivuori-Hänninen. 2013. Towards ICT in Everyday Life in Finnish Schools: Seeking Conditions for Good Practices. *Learning, Media and Technology 38* (1): 57–71. doi:10.1080/17439884. 2011.651473.

NOU 2014:7. 2014. Elevenes læring i fremtidens skole. Et kunnskapsgrunnlag [Students' Learning in the School of the Future: A Basis of Knowledge]. Oslo: Kunnskapsdepartementet.

NOU 2015:8. 2015. Fremtidens skole. Fornyelse av fag og kompetanse [The School of the Future: Renewal of Subjects and Competence]. Oslo: Kunnskapsdepartementet.

Nystrand, M. 1997. *Opening Dialogue: Understanding the Dynamics of Language and Learning in the English Classroom*. New York, NY: Teachers College Press.

Nystrand, M. 2006. Research on the Role of Classroom Discourse as It Affects Reading Comprehension. *Research in the Teaching of English* 40 (4): 392–412.

Nystrand, M., and A. Gamoran. 1991. Student Engagement: When Recitation Becomes Conversation. In *Effective Teaching: Current Research*, 257–276. Berkeley: McCutchan.

Pellegrino, J. W., and M. L. Hilton. 2013. *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Washington, DC: National Academies Press.

Plato. 1998. *Republic.* Translated R. Waterfield. Oxford: Oxford University Press.

Player-Koro, C. 2013. Hype, Hope and ICT in Teacher Education: A Bernsteinian Perspective. *Learning, Media and Technology* 38 (1): 26–40. doi:10.1080/17439884.2011.637503.

Rychen, D. S., and L. H. Salganik. 2001. *Defining and Selecting Key Competencies*. Kirkland: Hogrefe & Huber.

Sedova, K., Z. Salamounova, and R. Svaricek. 2014. Troubles with Dialogic Teaching. *Learning, Culture and Social Interaction* 3 (4): 274–285. doi:10.1016/j.lcsi.2014.04.001.

Segal, A., and A. Lefstein. 2016. Exuberant Voiceless Participation: An Unintended Consequence of Dialogic Sensibilities? *L1-Educational Studies in Language and Literature* 16: 1–19

Selwyn, N. 2010. *Schools and Schooling in the Digital Age: A Critical Analysis*. London: Routledge.

Selwyn, N. 2011. *Education and Technology: Key Issues and Debates*. London: Continuum.

Twiner, A., K. Littleton, C. Coffin, and D. Whitelock. 2014. Meaning Making as an Interactional Accomplishment: A Temporal Analysis of Intentionality and Improvisation in Classroom Dialogue. *International Journal of Educational Research* 63: 94–106. doi:10.1016/j.ijer.2013.02.009.

Utdanningsdirektoratet [Norwegian Ministry of Education]. 2015. Rammeverk for skolebasert kompetanseutvikling [Framework for School-based Competence Development'. Oslo. Accessed December 15 2015. http://www.udir. no/Utvikling/Ungdomstrinnet/Skolebasert-kompetanseutvikling/Rammeverk-for-skolebasert-kompetanseutvikling- pa-ungdomstrinnet-2012-2017/.

Van Leeuwen, T. 2008. *Discourse and Practice: New Tools for Critical Discourse Analysis*. New York, NY: Oxford University Press.

Vygotsky, L. S. 1986. *Thought and Language*. Edited by A. Kozulin. Cambridge, MA: MIT Press.

Warschauer, M. 2009. Digital Literacy Studies: Progress and Prospects. In *The Future of Literacy Studies*, edited by M. Baynham and M. Prinsloo, 123–140. New York, NY: Palgrave Macmillan.

Wegerif, R. 2013. *Dialogic: Education for the Internet Age*. 1st ed. London: Routledge.

Wegerif, R. 2016. Applying Dialogic Theory to Illuminate the Relationship Between Literacy Education and Teaching Thinking in the Context of the Internet Age. *L1 Educational Studies in Language and Literature* 16: 1–21. doi:10. 17239/L1ESLL-2016.16.02.07.

Wells, C. G. 1999. *Dialogic Inquiry: Towards a Sociocultural Practice and Theory of Education*. New York, NY: Cambridge University Press.

White, E. J., and M. A. Peters, eds. 2011. *Bakhtinian Pedagogy: Opportunities and Challenges for Research, Policy and Practice in Education Across the Globe*. 1st ed. New York, NY: Peter Lang.

Yin, R. K. 2009. *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage.

Zepke, N. 2015. Purposes, Pedagogies and Practices in Lifewide Adult Education in New Zealand: A Preview. *International Review of Education* 61 (1): 1–15. doi:10.1007/s11159-015-9469-x.