

Backchannels: 'Covert Digital Backchannels in the Overt Classroom'

Thomas Kjærgaard¹ and Roland Hachmann²

¹UCN University College, Aalborg, Denmark

²UCsyd University College, Haderslev, Denmark

tmk@ucn.dk

rhac@ucsyd.dk

Abstract: A study of backchannel *communication* during lessons in higher education. This paper presents a study of how students utilise social media as backchannels for 'reflection in action', 'reflections on action', social banter and critique of the ongoing physical presence lesson with digital technologies. The research question was sparked by the overt ways in which the students communicated in the chat in videoconferences in online lessons during the first lock-down (March-June 2020). The students appeared to help each other and sort out practical and academic issues without involving the lecturer in the chat. This initial discovery led to an actual investigation of how the students communicate, digitally during physical presence lessons after the lock-down lifted. It became evident that most students engage in covert, digital communication during lessons. So, while the backchannel was overt and inclusive in online lessons, it turned into a covert exclusive practice in the physical, presence lessons. The paper introduces the notion of a 'backchannel' that carries undisclosed strands of student-initiated communication during a lesson. The study also identifies different types of backchannel communication that take place amongst students during lessons. Furthermore, the paper suggests a typological organisation of the different types of reflection the backchannels support. A backchannel is defined as a secondary, informal, unmanaged communication channel that happens simultaneously with a physical, presence lesson. The backchannel seems to be a process that either, covertly, support the students or, overtly, supports the lecturer and the students. The identified backchannels are divided into three different kinds of backchannels in the paper. The types found in the study include: 'Rhizomatic, covert backchannels', 'Lecturer initiated backchannels' and 'hybrid joint contribution backchannels'. The paper investigates the pedagogical circumstances under which the backchannels emerge and how they are utilized. Furthermore, the article discusses the implications that covered, digital meta-communication during the lessons that may have on the relationship between lecturer and students. Lastly, the paper presents suggestions for how to use the covert backchannels as a constructive element in the lessons. Finally, the article suggests pedagogical practices that offer the students other possibilities to engage and express insecurities and general questions during lessons and presentations.

Keywords: backchannels, social media, lecturer-centred teaching, student-initiated activities, reflection-in-action

1. Introduction

Most of us properly remember tossing 'paper-ball notes' to our classmates during class to let our peers know that the teacher's fly was open or to arrange after-school activities. The notes solidified relations between peers and excluded the other classmates – and the teacher. The communicative need that the notes represent may represent a 'real need' as opposed to a need contemplated by the teacher (Ayers, 2011; Parker, Maor, & Herrington, 2013). Furthermore, it may have developed a practice for the virtual part of a face-to-face lesson (F2F). It may appear in an ever-changing variety of common social media platforms that have often been problematised because they could turn into bullying in anonymous platforms like Ask.fm or Annono. However, bullying could also happen on user disclosed platforms like TikTok, Instagram, Snapchat, etc (Ho, Chen, & Ng, 2017; Johansen & Larsen, 2020; Larsen, 2007; Larsen, 2019; Mischel & Kitsantas, 2019; Tække & Paulsen, 2016a; Tække & Paulsen, 2016b; Wilkinson, 2014).

The idea of having a parallel, digital communication channel during the lesson didn't only start out as a student invention, it also emerged as a teacher/instructor driven activity. The notion that participants (pupils, students, audiences, etc.) may benefit from having the means to contribute to the lesson, during the lesson, has presented itself in various forms during the last 15 years in media like; Twitter, TodaysMeet, PadLet, Socrative, etc. (Dr. Rankin, 2009; Kjærgaard, Thomas & Sorensen, 2014a; Manca, Lafferty, Fioratou, Smithies, & Hothersall, 2014; Mathiasen, 2011; Thoms, 2012).

However, the first attempts at engaging and interacting with an audience through technology started as early as the 1960ies, when TV producers wanted to test the audience's reactions to 'pilots' for TV series, etc. (Blackburn & Stroud, 2015; Maloy, Greene, & Malinowski, 2016). The technology was called Audience Response Systems (ARS by Audience Systems Hollywood 1966). Since then, the technologies for interaction have developed dramatically. The initial interactions were quantitative (yes/no, multiple choice) input, thus, making it a simple interaction providing rudimentary information to the producers of the TV series about the audience's

reception of the TV series. However, with the development of Web 2.0 tools some 40 years later (2008) the possible inputs became richer and included qualitative, multimodal inputs as we know them today.

In any case, the aims of utilising audience or student response systems (SRS) in class are similar, the interaction should motivate the students to participate and improve the lesson (or TV series). The inputs from the SRS inform the lecturer about the immediate reception of the lesson, thus, allowing the lecturer to adjust the pedagogical design on the fly. Thus, SRS becomes a potential tool for ‘reflection in action’ (Schön, 2017). Furthermore, the lecturer may include SRS to poll the students’ understanding of the content of the lesson or to poll the opinions and attitudes towards the content of the lesson

Conversely, the recent focus on the importance of data protection (GDPR) has rooted out most of the open platforms for creating lecturer-initiated backchannels, which, in turn, leaves the lecturer with the GDPR-approved platforms that the institutions provide, which in this case narrows down the choice to Office365 tools and TEAMS as a Learning Management System (LMS), leaving it to the lecturer to analyse and utilise the, maybe, less obvious affordances of the approved technologies. However, the discovery in this article shows another kind of backchannel. A backchannel that is beyond the control of the lecturer and beyond the GDPR guidelines. This leads to the research question:

How do the students utilise self-initiated backchannels during lessons and what do they gain from participating in the backchannel communication?

1.1 Context of discovery

The findings in this article emerged in 2018 in a study of the implementation of blended learning at 4 University College programmes published in the article ‘Hybrid Homework–Blending blended learning and face to face in four undergraduate education programmes’ (Kjærgaard 2019). The study investigated the process of converting parts of a programme from presence lessons (F2F) to blended learning (BL). The study unveiled the students’ dependency on PowerPoint presentations in F2F lessons and a strong dependency on affirmative, personal, and F2F feedback from the lecturer on the students’ work. During the interviews for the initial study in 2018, it became clear that implementation of BL the learning designs would require a firm and structured rigour and that the students would need to be instructed on which learning strategies to develop and deploy to succeed in the BL learning designs (Kjærgaard, 2019). It also became evident that the BL learning designs needed a more structured and developed communication strategy from the lecturer. A strategy that included a shared backchannel, in which, the students could raise questions and present their work while the lesson was in session. However, the study also revealed an existing practice amongst students of utilising Facebook Messenger (FM) as an ad-hoc backchannel during lessons.

2. Empiric data

This section describes the data production and the empirical background for the findings. The first data production consisted of 4 online surveys distributed to students and interviews with lecturers, as described in (Kjærgaard 2019). The second data production session consisted of structured research interviews carried out on campus (Flick et al., 2007). The third data production session consisted of field notes from observations of the students’ digital practices in lessons and in recorded online lessons. Investigating the students’ covert communication practices turned out to be a sensitive matter because the students’ unveiled communication that they regarded as confidential and personal, thus, the interviews and the filed notes are kept anonymous. The students only opened their FM threads to me because they themselves were interested in discussing the nature of the covert communication in the lessons. Their own interest was nurtured by the fact that they themselves would be leaders of a classroom in a very near future, hence, they also wanted to know the results of this investigation.

Table 1: Data description

Data production	2017-2018	2019	2020	2021
Context of data	Data for (Kjærgaard 2019)	Data for this study		
Surveys	4 surveys to students and lecturers in the affected programme			Survey (2021) (Class L20-10, 2018) 19 students, Ba. of Edu.

Data production	2017-2018	2019	2020	2021
Interviews	19 students and 8 lecturers			Interview (2021) (Class L20-10, 2018) 3 students, Ba. of Edu.
Observations Fieldnotes	8 lessons in 4 programmes	Fieldnotes (2019) Insights to 4 students (Class L18-10, 2018) practices in FM during lessons. 21 students, Ba. of Edu.	Fieldnotes and observations (2020) Online (lockdown) (Class L18-10, 2018). 21 students, Ba. of Edu.	

3. Analysis of empiric data

The data were categorised according to, which type of communication the backchannel represented and according to the selection of participants in the backchannel. The categories for communication types that emerged were:

- Academic clarification (content),
- Discussion of lesson quality (form),
- Personal chat (non-academic).

The categories for backchannel participant selection were:

- democratic in online lessons (overt for everybody)
- undemocratic during F2F lessons (invited participants only)

3.1 Developing learning strategies – excrescences and outliers

In the unfilled vacuum of lacking lecturer guidance or requirements on how to develop a constructive backchannel practice on the one hand and a growing need for constructive practices for utilising relevant digital technologies, on the other hand, this study discovered new, rhizomatic excrescences filling the vacuum. The spontaneous, ad-hoc network is referred to as ‘rhizomatic’. The metaphor is based on the biological term for a type of root network that allows weeds and other resilient plants to survive under harsh conditions. This metaphor is chosen for two reasons.

The first reason is that, according to the students, the backchannel emerges under conditions in which the network is not anticipated or desired by the lecturer, much like weeds appear in the garden in the places that are deemed mostly unwanted by the gardener. These rhizomatic excrescences emerged from an academic, yet informal, need to communicate and share amongst the students that the lecturers did not anticipate or address in the lessons.

The second reason is the metaphor’s philosophical application. The sub-networks took on a rhizomatic character, which in philosophical terms refers to a sub-network that is unmanaged, non-hierarchical, unstructured, and empowering the students to become agents in the backchannel (Buchanan, 2007; Deleuze & Guattari, 1987; Kjærgaard, Thomas & Sorensen, 2014a; Kjærgaard, Thomas & Sorensen, 2014b; Kjærgaard, Thomas & Sorensen, 2014c; Kjærgaard, Thomas, 2016). The philosophical ‘rhizome’ describes exchanges that enable the vitalization of self-efficacy in plateaus of intensity.

3.2 Facebook Messenger (FM) as a rhizomatic channel for communication

The backchannel could be understood as a digital brethren to the archaic ‘paper ball notes’ containing a ‘secret’ message from one student to another that flew across the classroom in the ‘analogue’ classroom of the last century.

According to the survey (2021) and fieldnotes (2019), the students start a backchannel in FM due to an unexpected occurrence during the lesson. Examples from the interviews:

- A student explains that a specific backchannel emerged when the lecturer started singling out specific students, requesting them to answer academic questions. The message read ‘What just happened?’ and:

'Does anybody know the answer, let's help xxx'. The student later reflected that the teacher, assumably, reacted to a quiet and nonparticipating class and that the teacher acted out of desperation.

- In other observations, the students would create ad-hoc groups with peers to find the answer and post it in the backchannel. The students utilised FM to form sub-networks for communication during the lessons.
- Sharing notes and explaining tasks
- Clarifying and understanding the content of the lecturer's presentation

The messenger groups emerged when the lesson took an unanticipated direction or when the students got bored. A reoccurring reason for using the backchannels is sharing notes. In the survey, interviews and field notes from observations, the students express the following scenarios as triggers for enabling the backchannel and starting a FM conversation with peers:

- When the lecturer spontaneously asked random students questions during the lesson
- When the lecturer asked a question that was regarded as out of scope for what the students had prepared for the lessons
- If the lecturers presented themes, theories, topics, and content that left a group of students not able to follow the presentation during a lesson
- The membership of the messenger groups was determined by who amongst the students in the room considered themselves as peers.
- The lecturer was never part of the FM group.
- The students also express that the emergence and utilisation of the backchannel is depending on the relation to the lecturer. If they are confident and feel comfortable with the lecturer, the students would rather ask the lecturer upfront than engage in backchannel communication
- The backchannels also emerged as a pastime during lecturing, where the students shared humours memes, online shopping advise and general banter.

3.3 Democratic pitfall

The affordance of FM, as it is designed now (august 2020), lends itself to forming ad-hoc groups because you can gather groups merely by typing in the names of the people you want in the group. The accumulated number of FM users/friends constitutes the total population of the group, thus setting the outer perimeter of the network to only include FM users, which challenges the democratic aspect of the network. The students who do not have a Facebook account are unable to take part and participate in the sub-network. This is an exclusion mechanism that we normally strive to avoid. In the pedagogical attempt to design and practice an inclusive classroom, we normally make equal participation a crucial circumstance for assessing the quality of our learning designs and teaching practices. Furthermore, the lecturer is excluded from the community on FM. Formally, due to the GDPR and university policies and, informally, due to the individual practice and belief of the lecturer regarding the privacy issues that may emerge from participating in Facebook networks with students. FM offers many relevant and effective means of communication between students and lecturers, conversely, it also blurs the ecotones between an educational area and a personal arena (Dau, 2016; Kjærgaard, Thomas & Sorensen, 2014a). Hence, FM is a contested technology in education because it includes immediate and relevant affordances for communication, however, it also raises a series of ethical questions on the relation between lecturers and students and data protection issues.

3.4 Democracy amongst peers – from 'reflection in action' to 'reflection on action'

The students' positive reasons for creating the messenger groups are to support each other in understanding the content of the lessons as a means to 'reflect in action' and not directly to discuss the quality of the lesson as a means to 'reflect on action' (Schön, 2017). The students express a need to deliberate the meaning of the content of the lessons in a safe environment before venturing into answering or raising questions in class. However, most lecturers in the study would prefer the classroom to be a safe environment in which all students feel safe to ask questions and engage in open, overt dialogue. The mere suggestion that the students should need a covert sub-network to deliberate what the lesson is about a regarded as problematic. Furthermore, the alleged need for a covert backchannel to deliberate who amongst the students are the appropriate ones to raise

a question is slightly provocative and unnerving. It is, in some respect, interpreted as a slight rebellion against the lecturer's supremacy in the classroom by the lecturers.

Another thing to factor in is that the lessons were conducted in English, while the backchannel communication was in Danish. This code-switching element of thinking in Danish and expressing oneself in English is very difficult for many students. The backchannel allowed the students to deliberate and answer in Danish and postpone the translation to English to the last minute before answering the question. In another example from the fieldnotes, the students would write in layman's terms in the backchannel before deciding on the more precise academic terms.

Organising in smaller communities within the class

Another element to consider is the class size in the context in question (n: 28 students). The number of students in the context of an English lesson appears to be inversely proportional to the willingness and confidence to participate in the dialogue (Dweck, 1975; Dweck & Wortman, 1982; Kjærgaard, T. & Lukassen, 2020). The fewer students, the more participation in the dialogue seems to be the rationale. According to the studies on how class-size and learning outcome interrelate, the optimal number of students in a dialogic learning context is between 7-15 students (Glass & Smith, 1979; Hattie, 2005; Monks & Schmidt, 2010; Schanzenbach, 2014). The backchannels seem to consist of approximately 5-8 students according to the students in this study, which supports the notion that smaller communities of self-chosen peers instil confidence in the students. Group work in smaller communities is a very common way for lecturers to organise the academic work in the lesson at this institution, however, it is mostly decided by the lecturer when, how and with whom the group work should be carried out.

4. Backchannels in online learning- 'hybrid, joint collaboration backchannel

This section describes and analyses backchannels identified in the same demographic group (21 teacher students, observations (2020)) in the online learning contexts that emerged during the lockdown (12/3-30/6 2020). The section focuses on online, synchronous lessons in English for teacher students. In the online context, the covert and overt networks become a hotchpot of synchronous communication in a complex network of teacher engaged and managed activities and overt, student-engaged sub-networks. The complex and mixed appearance of the communication during the online lessons is elaborated with an example from an online lesson on language acquisition at a University College in Denmark.

Context description: A student is attempting to express her experiences with 'school refusal' and the 'affective filtering' in language acquisition theory. She gives an example and code-switches to Danish for her to enable a broader vocabulary to express the complex nature of 'school refusal'. This is the same group of students that relied on covert backchannels in F2F teaching. In the online lesson, the students are confident enough to deliberate their answers in the open backchannel. This finding leads to the notion that the students might benefit from always having an overt, teacher-initiated backchannel. The data doesn't provide insights into why the students are more confident to engage in an overt backchannel in online teaching than they appear to be in a F2F lesson. However, the fact that the backchannel conversation is in layman's terms in Danish may be an educated guess why the students are more prone to participate. In the research on the use of backchannels in teaching, the lecturer seems to set up the requirements for participating in the backchannel in academic terms and the target language or the lecturer chooses a platform for a specific affordance (Carpenter, 2015; Du, Rosson, & Carroll, 2012; Harunasari & Halim, 2019). In the case of choosing a specific affordance in a specific platform (lg. hashtags on Twitter), the communication is conditioned by the affordance of the platform and not by the immediate need for communication. In the example below the backchannel is un-managed and it only serves the needs of the students, thus evoking the confidence to utilise the backchannel. In the screenshot below, taken during an online lesson, communication is mixed between private/humorous exchanges and academic deliberation. It is written in Danish leading to an oral answer in the videoconference in English:

The overt backchannel (chat in webinar-tool) of the online lesson serves as an open network for all to participate in, thus, making it an appropriate space for the lecturer, to elaborate and clarify the content of the lesson, thus, making it a 'hybrid, joint collaboration backchannel'. The number of students taking part in the backchannel and the polls was 23 out of 25 students and the interesting aspect of the example was that in the run of 56 online lessons during the spring of 2020, the students didn't utilise the covert messenger subgroups for academic

purposes. This should be seen in relation to a near 100% occurrence of covert sub-networks in F2F lessons. Unfortunately, we can only guess why that is, maybe the physical distance serves as a disarming mechanism? Maybe the lessons are more univocal and focused when designed as webinars? Maybe the students are more attentive? And, lastly, maybe the students also run a FM chat alongside the ‘official’ chat?

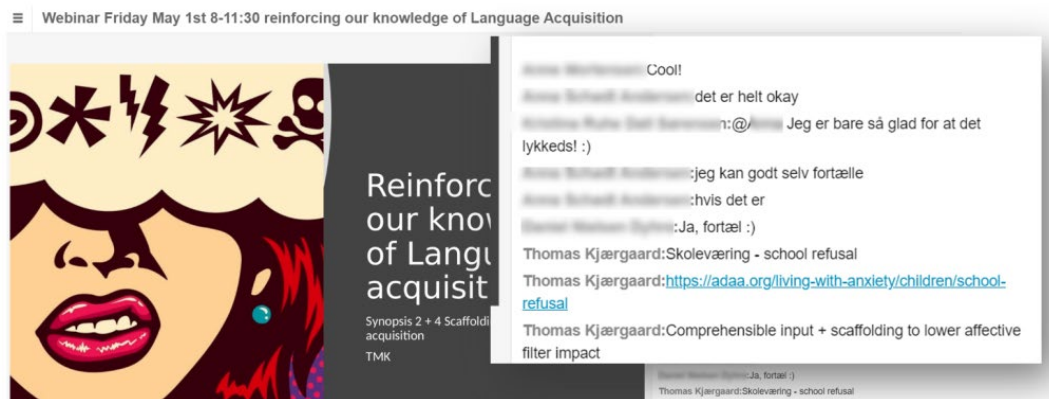


Figure 1: Overt webinar chat

In the next example, the webinar contains a game of Jeopardy. The quizzes were designed by the students for the students and deployed in the webinar tool. In this case, the chat served as my means to help the students. In the example below I choose to disclose the theoretical term to make sure the peer structure did not lower the academic level of the quiz. Had the backchannel been covered, I would not have had that opportunity.

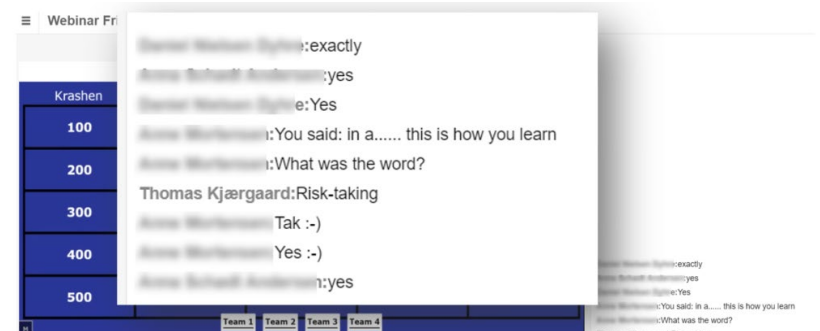


Figure 2: Overt webinar chat

The chat also included simultaneous, social commentary among the academic inputs in the chat, which introduced another challenge, namely, the challenge of separating social from academic content. In this case, I copy/pasted the academic content into our shared class notes, thus making it possible for the students to use the academic back-channel content at a later point in time.

5. Concluding comments

It surprised us that the need for covered, rhizomatic back-channels are more prone to emerge in a F2F lesson than in an online webinar. Our data do not give reasons why, thus we continue the research into the matter of overt vs covered dialogue and democratic backchannels vs closed, peers-only backchannels in both F2F and webinars. The conflict between a lecturer-initiated backchannel with an academic purpose and the student-initiated backchannel for ‘reflection in action’ pinpoints why this a difficult issue to handle. Promoting ‘reflection in action’ and the possibility to participate with the abilities that the individual student possesses is an important and inclusive pedagogical practice. However, it appears very difficult to design a ‘hybrid joint-collaboration’ backchannel without either making the backchannel an academic, lecturer conjured up idea with very little activity or a rhizomatic, student-driven, immediate solution to a ‘real need’ for reflection amongst peers. The in-between state where the backchannel is both beneficial for the lecturer and the students emerged in the online lessons described in this article. It emerged because the lecturer acted inclusive (accepting Danish communication) and academic (responding to academic questions). Furthermore, the backchannel wasn’t the focus of attention it was only a supplement to the oral exchanges. We suggest the development of local ‘hybrid, joint collaboration backchannel practices that synthesise academic agendas with the students’ ‘reel need’.

References

- Blackburn, M., & Stroud, J. (2015). Voices from 'the other side'—using personal response systems to support student engagement. *Smart Learning*, , 199.
- Buchanan, I. (2007). Deleuze and the internet. Carpenter, J. P. (2015). Digital backchannels: Giving every student a voice. *Educational Leadership*, 72(8), 54-58.
- Dau, S. (2016). (2016). The borderland: How blurred ecotones influence study activities. Paper presented at the *EDUlearn16: 8th International Conference on Education and New Learning Technologies*
- Deleuze, G., & Guattari, F. (1987). 1000 plateaus, capitalism and schizophrenia.
- Dr. Rankin. (2009). The twitter experiment – twitter in the classroom dr. rankin, professor of history at UT dallas. Retrieved from <https://www.youtube.com/watch?v=6WPVWDkF7U8>
- Du, H., Rosson, M. B., & Carroll, J. M. (2012). (2012). Augmenting classroom participation through public digital backchannels. Paper presented at the *Proceedings of the 17th ACM International Conference on Supporting Group Work*, 155-164.
- Dweck, C. S. (1975). The role of expectations and attributions in the alleviation of learned helplessness. *Journal of Personality and Social Psychology*, 31(4), 674.
- Dweck, C. S., & Wortman, C. B. (1982). Learned helplessness, anxiety, and achievement motivation: Neglected parallels in cognitive, affective, and coping responses. *Series in Clinical & Community Psychology: Achievement, Stress, & Anxiety*
- Flick, U., Kvale, S., Angrosino, M. V., Barbour, R. S., Banks, M., Gibbs, G., & Rapley, T. (2007). Doing interviews
- Glass, G. V., & Smith, M. L. (1979). Meta-analysis of research on class size and achievement. *Educational Evaluation and Policy Analysis*, 1(1), 2-16.
- Harunasari, S. Y., & Halim, N. (2019). Digital backchannel: Promoting students' engagement in EFL large class. *International Journal of Emerging Technologies in Learning*, 14(7)
- Hattie, J. (2005). The paradox of reducing class size and improving learning outcomes. *International Journal of Educational Research*, 43(6), 387-425.
- Ho, S. S., Chen, L., & Ng, A. P. Y. (2017). Comparing cyberbullying perpetration on social media between primary and secondary school students. *Computers & Education*, 109, 74-84. doi:10.1016/j.compedu.2017.02.004
- Johansen, S. L., & Larsen, M. C. (2020). *Undersøgelser af børn, unge og medier* Samfundslitteratur.
- Kjærgaard, T., & Lukassen, N. (2020). Læringsstrategier og strategisk undervisning. *CEPRA-Striben*, (26), 54-65.
- Kjærgaard, T. (2016). *The full circle of PowerPoint: Investigating the use of digital technology in university college teaching: And deleuze inspired suggestions for development*
- Kjærgaard, T. (2019). (2019). Hybrid Homework—Blending blended learning and face to face in four undergraduate education programmes. Paper presented at the *World Conference on Online Learning*,
- Kjærgaard, T., & Sorensen, E. K. Open source learning streams in online discussions in e-learning. Paper presented at the *Ecel 2014*, ECEL Copenhagen.
- Kjærgaard, T., & Sorensen, E. K. Qualifying the quantified self – A study of conscious learning. Paper presented at the *Icel 2014*, ICEL Chile.
- Kjærgaard, T., & Sorensen, E. K. Rhizomatic, digital habitat – A study of connected learning and technology application. Paper presented at the *Icel 2014*, , ICEL 2014(1)
- Larsen, M. C. (2007). Understanding social networking: On young people's construction and co-construction of identity online. *Internet Research*, 8
- Larsen, M. C. (2019). Sociale medier og trivsel i ungdomslivet: Hvordan kan sundhedsplejersker gå i dialog med børn og unge om deres online hverdagsliv? *Sundhedsplejersken*,
- Maloy, R. W., Greene, J., & Malinowski, A. (2016). Wikiquests, microblogging, and personal response systems in the history classroom. *Teaching History: A Journal of Methods*, 41(2), 84-98.
- Manca, A., Lafferty, N., Fioratou, E., Smithies, A., & Hothersall, E. Integrating twitter into an undergraduate medical curriculum: Lessons for the future. Paper presented at the *European Conference on E-Learning*, 330.
- Mathiasen, H. (2011). Clickers, en læringsunderstøttende ressource? *Dansk Universitetspædagogisk Tidsskrift*, 6(11), 26-31.
- Mischel, J., & Kitsantas, A. (2019). Middle school students' perceptions of school climate, bullying prevalence, and social support and coping. *Social Psychology of Education*, doi:10.1007/s11218-019-09522-5
- Monks, J., & Schmidt, R. (2010). The impact of class size and number of students on outcomes in higher education.
- Norman, D. A. (1999). Affordance, conventions, and design. *Interactions*, 6(3), 38-43.
- Schanzenbach, D. W. (2014). Does class size matter. *Policy Briefs, National Education Policy Center, School of Education, University of Colorado, Boulder*,
- Schön, D. A. (2017). *The reflective practitioner: How professionals think in action* Routledge.
- Tække, J., & Paulsen, M. (2016a). Sociale medier og ulovlige netværk i gymnasieskolen. *MedieKultur: Journal of Media and Communication Research*, 31(59), 22.
- Tække, J., & Paulsen, M. (2016b). *Undervisningsfællesskaber og læringsnetværk i den digitale tidsalder* (1st ed.). Kbh: Unge Pædagoger.
- Thoms, B. (2012). Student perceptions of microblogging: Integrating twitter with blogging to support learning and interaction. *Journal of Information Technology Education: Innovations in Practice*, 11(1), 179-197.
- Wilkinson, J. (2014). The cyber bullying epidemic. *Prep School*, (79), 30-33.