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Review article

The picture of smartphones at school is not a dire one and the picture of student competence is a bright one

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1. The (not so) dire picture

In the United States, where I am based, one would get the impression that smartphones are a dangerous drug. Adults worry about smartphone addiction, the correlation of depression with smartphone usage, and an excess amount of screen time (e.g., Duke & Montag, 2017; Elhai, Levine, Dvorak, & Hall, 2016; Škařupová, Ólafsson, & Blinka, 2016). News headlines appear about technology moguls who will not allow their own children to have their own mobile device despite they themselves being the leaders in smartphone products and services. This then evokes guilt and causes anxiety for all the other American adults who are not multi-millionaires from the tech industry yet allow their own children to use mobile devices. These alarmist headlines appear in regard to smartphone use in discretionary time. One could imagine the fear and angst that might result from headlines about research on permitted mobile phone use in the classroom. Fortunately, various researchers from Nordic countries have done some of that research and provided empirically grounded arguments for what happens when smartphones are actually used in classrooms. They did so across two countries and with clever instrumentation that could capture what students were seeing on their phones in a way that gave options for students to choose what not to disclose to the research team. Americans can breathe a sigh of relief and look to this special issue for signs of what happens.

So then what happens when smartphones are used in Nordic classrooms? My impression is that behaviors both change and stay the same, depending on what aspect of classroom behavior is being foregrounded. The desire for student socialization during plenary teaching appears to stay the same. In Sahlström, Tanner, and Valasmo (this issue), we saw students socializing and having side conversations while the teacher was leading instruction. That is not new, as passing notes and whispering to another student has been a part of subversive classroom behavior for as long as I can remember. However, what is different is who participates in these conversations and what the teacher can see. When the notes being passed are digital and on a screen that faces only the student, the teacher does not know who else is participating in the conversation. The teacher cannot even be sure that there is a conversation taking place, rather than purposeful academically-focused search. Sahlström et al. note that uncertainty as one of the more dramatic differences with how smartphones affect the classroom. The abilities for students to interact with a world beyond the classroom and the world of classroom have changed, whereas those of the teacher have not. I see that asymmetry as worth acknowledging, but the underlying forces at work – a desire among the students to seek and share information with peers – to be largely the same. Thus, what stays the same are the underlying forces that encourage and constrain particular behaviors – be it the overarching structure of a teacher-led lesson or the need for students to act somewhat covertly in their socialization activities. What differs are the means by which those behaviors are manifested. It is not the case that the appeal of smartphones and the ability to communicate with so many others has pulled student attention to the point that they are persistent non-participants in the lesson. Those who feared such a dire image can direct their anxieties elsewhere. The addiction was not so strong as to destabilize the script of the classroom.

Where there has been more change is in what *form* the communications take. This seems to be a key finding across papers. Peer communication was an important theme that appeared both explicitly and implicitly throughout all of the articles in the special issue, with Paakari, Rautio, and Valasmo (this issue) showing just how much time in class was spent on smartphones and how much of that time was spent on social media and communications apps. Importantly, many of those apps had strong visual components (Ståhl &

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Kaihovirta, this issue) whether they were video or Internet meme-like images. The form that social messages took is one way in which things appear quite different, whether that image involves one's Snapchat-filtered face, a mysterious photograph of a research microphone, or favored online art. My suspicion is that if we had the opportunity to track covert communications behavior in the classroom before and after the introduction of smartphones, we would see comparable frequencies in the amount of time used for socialization. However, the composition of messages, with text, static image, and dynamic image, is where I would expect to see large changes. Though, this is an unverified hypothesis based on the assumption that underlying forces remain the same but the technology changes who can participate and what information can be exchanged. I do have some basis for this in prior work I have done looking at how the composition of classroom textbooks have changed in light of historical changes in technology and capability (Lee, 2010), so it is hopefully an educated guess of the outcome for that hypothetical comparative study.

Regardless, and returning to the topic of smartphone usage, it was also worth noting that not all smartphone behavior was "off-task". Smartphones were being used to seek additional information that was tied to classroom activities. This was demonstrated in the examples of student searches for "gungan" in the Sahlström et al. (this issue) and for "Ingrid Bade" in Jovonen et al. (this issue). This is another point of continuity for how students behave in classrooms. In the past, we would have expected some occasions where students sought out information beyond what the teacher had immediately given, whether it involved getting up to examine some common teacher-provided reference material (such as a class set of encyclopedias) or to ask a peer what they had as an answer to a specific problem. However, physical encyclopedias are seemingly obsolete, and why would a student need to make public to their peers that they are uncertain about a topic when they can privately search for more information on their phone?

What I found striking about these examples of academic information search in the two aforementioned papers and in others was that, aside from being much less common than socialization activities, they were brief searches. It led me to wonder how much more students could get in these searches if there were more classroom support for information literacy skills of the research sort. This is driven by a robust appreciation I have developed in recent years for the library and information sciences (Lee & Phillips, 2018), which emphasize information literacy and intelligent search behaviors along with the design of spaces where learners can both produce and seek information. It could be that the students were very good at targeting their searches already, and the presence of high levels of student competence is a point I will return to shortly. However, it was difficult to tell how sophisticated were the students' information seeking behaviors. I expect that is an important area for future education research related to smartphones in the classroom. To the extent that we try to engineer smartphone use in the classroom, it seems as educators we want to cultivate effective and useful information searches that can include, but still go far beyond what can be asked of a physically-present peer.

In all, as I take stock of what has been shared in these papers, the image of smartphone use in the classroom was not a dire one as my American eyes, influenced by sensationalized reporting, would be inclined to believe. Students are using their phones a fraction of the overall class time and are briefly socializing with others both in and out of the classroom with their smartphones. They also use the phones for some academic tasks in ways that were not solicited nor directly requested by the teacher. That should be encouraging even for those who are skeptics of the role of smartphones in schools, although more work could be done to make such work more productive and fruitful.

2. The bright picture

Continuing with the sequence of the title of this commentary, I turn away from the dire picture and toward the "bright" picture shown by research on smartphone use in Nordic classrooms: student competence. What can be lost in the shuffle of discourse around whether smartphones are good or bad for academic settings is how sophisticated students are with smartphones and the content to which they provide access. This stood out to me especially in the paper by Ståhl and Kaihovirta (this issue), who explicitly offered some assertions about where and how the case study student, Maria, showed competence with image selection and sharing. Maria knew what images would elicit reactions and how to leverage that. These were part of "technical competencies" and "knowledge of social norms". These are nontrivial. Too many adults are limited in their social media prowess, and we have reached a point that commercial interests now seek out social media influencers who are effective at portraying specific images and lifestyles that are consummate with how the marketing team of a brand or a product would like to be positioned. Though she did not necessarily achieve the status of social media influencer, Maria impressed me with what she knew to do, and Ståhl and Kaihovirta impressed me by calling that out for all to see.

Similar statements could be made for Gilje (this issue). In their paper, they showed how out-of-school competence with smartphones could be brought into classrooms with thoughtful camera angles and film design for class projects. We saw amateur filmmakers knowing how to use a ubiquitous tool in thoughtful ways to craft a visual message. In that respect, they were demonstrating competences comparable to Maria, even if these were not as explicitly called out. This followed from letting students use their own personal mobile devices that they felt safe using, rather than special school or researcher-issued ones as had been tried with middling results in the US (e.g., Philip & Garcia, 2015).

Another form of competence appeared in the multilingual identity construction on mobile phone communications documented by Rusk (this issue). The students examined in this study demonstrated an expanded communications repertoire by way of mobile phones and were able to productively maintain those conversations without disrupting the plenary teaching around them. As Rusk noted, the students were also reverting back to the primary language of the classroom with ease when their linguistic participation was expected. The competence appeared in two ways: one was being able to operate across multiple languages and the other was knowing in which context to use which language(s).

Together, the papers in this special issue showed that the smart phone is more than just an added convenience. It is a communicative means which has added demands that can be met by students in order to do the communicative work that they intend to do,

whether it is with other conversational partners outside of the classroom or for a class assignment. These are encouraging signs that important and demanding work is being done with smartphones in the classroom, even if they are not of the form of accessing and researching information from authoritative sources on the Internet. We should do more in the future to identify other competences.

3. One possible cause for worry

Overall, my commentary has sought to allay concerns that smartphones are causing serious problems relative to what we typically expect of classrooms. In some respects, our alarm might be better suited to responding to the observation that the smartphones are not being used for as many academic tasks as one might imagine being possible, given the level of connectivity that they offer. Still, we are observing youth who are skilled at communicating with smartphones in images and in a variety of languages. It would make little sense to deprive students of the opportunities to demonstrate and build upon those competences at school.

Where there may be cause for concern is in Paakari et al.'s observation that the smartphone and the associated apps are not neutral entities but rather inherently commercial ones. Smartphone services and companies are actively encouraging user participation and collecting data and content that can be repackaged back as a product for others to consume. That is an asymmetry in power that is more alarming. It is also one that does not appear to be going away any time soon. In addition to encouraging greater information literacy, and in light of new regulations that have come forward to better disclose data use and privacy rights of online service users, a personal data literacy may be our bulwark as smartphone use in classrooms becomes more common. That is, schools may want to accept that smartphones are being used and that students could be armed with more knowledge about data, privacy, and their relationship to smartphone companies. I would also favor returning the data to the user so that they can run their own personal analytics from the information that they had produced (Lee, 2013).

Regardless, we now have the outlines of the picture of mobile phone use in Nordic classrooms. Translating this to the American context, I would infer from this that we need not be so alarmed about smartphone usage by children. Moderation still seems wise given the range of experiences that students can have in and out of school that may or may not involve smartphones. I would like my children to go outside and enjoy nature and play physical games in addition to using their smartphones. I would also would urge more adults to partake in joint media engagement (Takeuchi & Stevens, 2011) with youths' smartphone content. Accepting that smartphones in classrooms are in some ways inevitable, we should take steps to empower students and educators to more strategically use smartphones in service of desired goals, although how we do so will require thoughtful consideration of policy, practice, and a space of possible design solutions. As we pursue such work, informed by the papers of this special issue, we should expect that another picture – a positive and desirable one where smartphones offer rich academic learning opportunities – may then come into focus.

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