8 Interpreting technologically fluent classrooms: digital natives' attitudes towards the use of technology in primary schools in Norway

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Abstract

This qualitative study provides baseline data on young learner attitudes towards the use of technology in primary schools. Through individual interviews, the students highlighted the importance of its application and acknowledged its potential in the education process. The benefits that they put forward are grouped into four categories: technology-infused classrooms promote (1) collaboration, (2) active learning, (3) authenticity, and (4) higher order thinking skills. The findings also reveal a general favourable consensus among the interviewees regarding their teachers' efforts to adopt technology in class. Yet, students cautioned that technology-integrated lessons should fulfil specific classroom purposes while stressing at the same time the importance of satisfactory preparation before their implementation. For the students, the use of technology should essentially serve two purposes: (1) provide an engaging and interactive alternative to the traditional approach to teaching, and (2) address different learning styles. Acknowledging the student voice, the study concludes, contributes effectively to the optimisation of the learning experience.

Keywords: digital natives, digital literacy, 21st century classroom, student voice.

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1. Introduction

Literacy has customarily been linked to the linguistic and functional ability to read and write. Recently, however, there has been a gradual shift away from this perception to a more advanced and multivalent definition that introduces new literacies that do not simply focus on reading and writing (Krulatz & Neokleous, 2018; Lankshear & Knobel, 2011). The multivalence of literacy is already mirrored in various national curricula including, for instance, Australia and Norway (ACARA, 2016; Norwegian Directorate for Education and Training, 2016), with digital literacy being highlighted as quintessential in 21st century education (Lankshear & Knobel, 2011). In fact, the Norwegian national curriculum has identified digital literacy as the fifth basic skill in every subject at every level and an important prerequisite for schooling along with reading, writing, arithmetic, and oral fluency (Norwegian Directorate for Education and Training, 2016). Because of the emphasis on digital competence, most schools across Europe have been equipped with the latest forms of digital tools and infrastructure to enhance young learners' technological aptitude and fluency (Almås & Krumsvik, 2007). Despite the importance placed on digital competence, research revealed that primary school teachers interpreted this newly acquired focus in varied ways and, consequently, in many cases had different expectations from their students (Engen, Giæver, & Mifsud, 2015). In trying to unearth the reasons behind the discrepancy as to what digital competence in young learners should entail, through collecting data by educators, researchers identified the inadequate formal education in teacher-training programmes (Engen et al., 2015).

While most studies regarding the use of technology in primary classrooms delved deeper into in- but also pre-service teacher attitudes (e.g. Petko, 2012), the lack of the student voice in research widens the gap that prevents bridging theory and classroom practice (Geer & Sweeney, 2012). A study, therefore, which would exclusively focus on primary school student attitudes through self-reporting, would give a more accurate portrayal as to what being technologically fluent in a digital age encompasses. At the same time, it would shed light on the pedagogical expectations young learners have from their

teachers, and the constructs that support their learning in the 21st century classroom.

2. Method

Before proceeding with a discussion of the results, this section presents an overview of the research design that was adopted. Trying to elicit the views of primary-school students in Norway through interviews and classroom observations, the purpose of this chapter is to address the following questions:

- What do young learners think of the general presence, but also their teachers' use of technology in their classrooms?
- What is the value of using technology as a resource for learning as seen by the participants?
- For what purposes do participants believe technology should be used in the classroom?

Based on the list of questions, the most appropriate way to address them was by carrying out a qualitative study. Four 10th grade classes from four public schools situated in four different locations across Norway represented the sample. The rationale behind this decision was the depiction of a representative portrayal of the participants' perspectives. Collecting data from students in geographically different parts of a country is believed to generate a broader and a more varied portrayal of the results (Saldaña, 2015). In addition, the four teachers were selected as they all identified themselves as technology-enthusiasts who made frequent use of various forms of digital tools in the classroom (e.g. Chromebooks, web 2.0 tools). The four classes were observed during four different phases of an entire semester. The teachers agreed that on those dates their lessons would be technologically-enhanced. At the end of the semester, 14 students from these classes volunteered to be individually interviewed with an average of 3.5 students per class. Field notes taken during the observations encompassed the third data

collection technique. Interview and observation protocols were also developed to assist the researcher in acquiring and preserving the study's focus during the data collection process.

The semi-structured interviews with the 14 students were transcribed and coded based on Saldaña's (2015) two coding cycle methods. The purpose was to ascertain the students' attitudes as far as the use of technology was concerned, but also to detect whether they agreed with their teachers' decisions concerning its integration in the classroom. The observational protocol rubrics and the field notes were also coded to further contribute to the triangulation of the results. The decision to carry out classroom observations and interviews with young learners required certain procedures pertaining to ethical considerations, including seeking approval from the Norwegian Centre for Research Data. Permission was granted from the administration of the four schools. Furthermore, the students' parents were informed about the presence of an observer in the classroom and the rationale behind this. Consent was also granted from the parents whose children were going to be interviewed. To ensure that the results of the observations would not have been altered and conditioned by disclosing to the participants the purpose of the study, the participants were made aware of the actual focus during the interviews. They were then asked whether they were still willing to take part. None of them wanted to withdraw.

3. Results and discussion

Overall, the 14 interviewees unanimously expressed their appreciation for the use of technology in the classroom. As they elaborated, integrating technology is "a requirement" in today's classrooms and a practice that "all schools should promote". The student-participants underlined its potential but also its value in all subject areas while they also emphasised its impact on classroom dynamics. Based on their learning experiences with technology in their classrooms, as exemplified in the following section, the advantages that they put forward in their interviews are grouped into four categories.

3.1. Student verdict on technology

3.1.1. Technology and collaboration

A specific aspect of technology-integrated lessons that the students highly valued was the opportunity they provided in helping them interact with their classmates in a way that traditional lessons do not. As Student 9 claimed: "Because I had the chance to work with my friends was something I liked". As Student 3 exemplified: "I enjoyed working with two of the guys in my class as we realised that we had so much in common, so I actually cannot wait to work with them again". Four of the young learners who defined themselves as "very shy" deemed the dynamic interaction opportunities that these lessons offered "helpful". Being asked by their teachers to cooperate in groups, as the four interviewees explained, made them actively participate while normally they would "sit back and just observe".

The four students of the second school cited the project collaboration with a classroom in a different part of the country through synchronous communication platforms and discussion boards as a "motivating experience" that encouraged "more engagement". In fact, what the students particularly enjoyed about the collaborative nature of technology-enhanced lessons was the positive classroom atmosphere cultivated along with the possibility of connecting and building links among them even outside the classroom. As they further elaborated, the learning environment boosted their self-confidence because it prompted them not to "be afraid to participate" as they were able to express themselves "without fear or judgment". Similarly, research studies have highlighted that technology can enhance collaborative learning (Yau et al., 2003).

3.1.2. Technology and active learning

Securing a more active role in the lesson was an additional benefit that the use of technology offered. During one of those lessons, as five students outlined: "It was one of the few times where we actually have to do something in class and not just listen to our teacher and, you know, copy stuff from the blackboard". In this way, they continued, "as each one of us was assigned, like, a role… learning is more

fun". As opposed to the traditional teacher-fronted classroom, the technology-integrated lesson directly engaged students in the learning process as they had a leading role towards unfolding the intended learning objectives. As a result, this engagement fosters independence and cultivates a sense of responsibility to students. Active learning prompts them to take on responsibilities because for similar activities they do not have to rely on their teacher to accomplish a specific goal.

In their interviews, 11 students underlined that the possibility to contribute collectively to the completion of an activity rendered them more determined to reach the intended goal while it also sustained their motivation. Most significantly, as the 11 students elaborated, technology enabled them to actively interact and engage with the material being relayed based on their preferred learning styles. For instance, because it was effectuated in a way that was relevant to her needs, Student 7, who described herself as a visual learner, appreciated the use of concept-mapping web tools as it helped her structure her understanding and incorporate the new information into practice. The effectiveness of technology in promoting active learning, and thus enhancing learning outcomes, was also underlined in the literature (Shieh, 2012).

3.1.3. Technology and authenticity

In addition, ten students stated that the use of some of the technology tools in the classroom enabled them to focus on topics, issues, and materials that are of particular interest to them. In one of the four classrooms observed, the students had to listen to a Podcast excerpt that offered practical considerations of an abstract concept they were taught in class, and which triggered their interest. They then had to create their own Podcast in which they would explain to their classmates an abstract concept of their own choice with real-life examples. Student 2, who participated in this activity, described the tasks associated with specific technology tools, such as podcasts, as "more relevant, more useful than some of those of my textbook". As the excerpt illustrates, the students did not only endorse the authenticity of the audio-text because of its links with their interests and the outside world but also the authenticity of the task that followed

because they "could take this and do it at home". Creating authentic learning situations has been one of the goals of classrooms across the world, as it is believed to enhance learning (Lever-Duffy, McDonald, & Mizell, 2002). The forty-eight pre-service teachers in Luo, Murray, and Crompton's (2017) recent study employed technology to create authentic learning opportunities. The findings showed that students displayed "a high level of engagement in reflective and collaborative learning" (Luo et al., 2017, p. 141).

3.1.4. Technology and higher order thinking skills

The ability of some of the technology tools used in their lessons to harness their creativity constituted for the students another important gain. For instance, as four interviewees exemplified, being able to create their own comic strip to display the different interpretations of the modal verb *can* in their English class made them understand that "there are fun and creative ways of practising English", without necessarily, Student 14 continued, being "a pharmacist or a waiter [in a role play]". Along with cultivating their creative skills, twelve students have also underlined technology's capacity to foster higher-order thinking, including decision-making and critical thinking skills. In one of their classes, students had to choose the best option between two different routes in a journey-mapping tool and justify their choice. Such tasks, as transpired from the student interviews, "make… [us] understand that we have to think through the decisions we make… and how difficult it is to make the best decision". Research findings have also shown that the integration of technology-enriched classroom settings enhances technology and higher order thinking skills (Hopson, Simms, & Knezek, 2001).

3.2. Student verdict on teacher use of technology

As outlined in the section above, several studies showed that technology-enhanced lessons have a positive impact on learning. Yet, the teacher's role is also pivotal in establishing a technology-integrated classroom that would promote learning with motivated and engaged students (Lever-Duffy et al., 2002). In this study, there was a general favourable consensus among the 14 interviewees regarding their teachers' efforts to employ technology. As it

emerged, however, because the participants are competent users of technology themselves, they had heightened expectations that, as six students stated, "had not been delivered". For this reason, in their interviews, the students cautioned that technology-integrated lessons should fulfil specific purposes while they also stressed the importance of adequate teacher preparation before their implementation in class.

Ten students underlined the importance of technology accomplishing clearly defined objectives. Even though its integration in the classroom can act as a strong incentive, when there is a vague sense of direction from the teacher, Student 9 exemplified, "the lesson can get more interesting… but only for a while… I then drift away". This sentiment is echoed in the interviews with the students from the different schools as they stated that "most teachers think that just by using technology the lesson would be more interesting". For them, as they clarified, the different forms of technology the teacher introduces should have a clear purpose and should not be used just for the sake of it. As an example, Student 2 cited the lesson in which they were asked by their teacher to use their laptops to write the answers of a gap-fill task that was featured in their coursebook. Similar uses of technology, the participant argued, "cannot make the lesson more fun or more… captivating". Elaborating on this idea further, Student 1 continued, "it is not like this [activity] will make me learn cool stuff about Microsoft [Word]… it was perhaps easier for the teacher to collect the answers". This idea was also mirrored in Gorder's (2008) study, which revealed that essentially teachers used technology to facilitate the lesson and not to instil learning. The emphasis placed on how to work the digital tool shies students away from delving deeper into the learning opportunities and potentials that it offers (Bauer & Kenton, 2005; Wepner, Tao, & Ziomek, 2006).

In their interviews, students also stated that technology-integrated lessons often resulted in "wasting" classroom time to address technical issues that their teachers were in most cases "unaware how to fix". Their teachers' desire to employ various novice technological applications and tools in the classroom was criticised by seven students who argued that "we often spend time trying to teach our teacher how each [tool] works". As the interviewees

elaborated, "it's like they want to impress us with trendy web tool without fully understanding what each tool can do". Not only do teachers not possess the required technical skills to carry out a task with certain forms of technology, Student 11 continued, "they sometimes do not pick it up fast, time is lost, and we don't even use technology in action". Literature also identifies the issue of inadequate teacher preparation pertaining to more complex technological tools (Ertmer, 2005; Gorder, 2008), with Gorder (2008) underlining that "teachers often learn along with the students" (p. 63).

3.3. Student verdict on purposes of technology in education

In fact, research studies underline the difference between mere technology integration and technology integration for learning (Bauer & Kenton, 2005; Gorder, 2008). Despite not seeing the true purpose of employing specific technology tools in the classroom, as outlined in the section above, the interviewees acknowledged that for the majority of them, there was a rationale behind their integration in their lessons. The appreciation and enthusiasm of venturing into activities that relied on the use of technology was unanimous with the students identifying it as a great incentive. Based on the interviews, the use of technology should essentially serve two purposes in the classroom: (1) provide an engaging and interactive alternative to the traditional approach to teaching, and (2) address students' different learning styles.

Through technology, ten interviewees underlined the move away from the traditional teacher-fronted classroom to a setting in which students assume creative control over their learning experience. For instance, as they elaborated, providing a platform to collaborate on group projects and presentations with students in different physical settings fostered more engaging and interactive classroom environments. This experience, they continued, which was not "restricted to searching on Google and jotting down notes", allowed for a dynamic interaction that enabled them to take responsibility of their learning "beyond the four walls of the classroom". As they articulated, "technology should encourage more… attractive instruction… It is through this attractiveness that we learn things". Increasing and sustaining students' motivation in the classroom has

been a perennial pressing issue with which most teachers still grapple in their classrooms (Linnenbrink & Pintrich, 2003). Research has shown that technology and web tools act as motivators that can strengthen the students' want to learn (Liu, Hsieh, Cho, & Schallert, 2006). More recently, a study conducted by Granito and Chernobilsky (2012) through a period of nine weeks revealed the positive results that the use of technology can have on students' motivation to learn and retain new teaching material.

In addition to the alternative teaching paths that they offered, six students identified that one of the purposes of technology-enhanced lessons should be their capability of addressing different learning styles. The use of mind-mapping tools in one of the lessons, such as bubbl.us, provided visual learners with the opportunity to better process the information their teacher attempted to convey. In her interview, Student 7, who often complained that there are not enough visuals used, recognised her teacher's efforts to present new information in the form of graphics. Technology, however, as she explained, enabled her teacher to incorporate graphs and imagery in a way that helped her "organise the content of the lesson… and then apply what we learned in a new activity". As it readily transpires from the example the student offered, technology that is used with a clear purpose can assist the teacher in meeting the educational objectives, and thus enhance learning (Lever-Duffy et al., 2002).

4. Conclusions

Undisputedly, the prominence placed by national curricula on digital skills and competence is transparent across the world (Lankshear & Knobel, 2011). Teachers are encouraged to use devices such as smart boards and tablets to meet the students' needs and to facilitate learning. Most significantly, however, an important change that the integration of technology initiated is the gradual shift away from teacher-centred to student-centred classrooms with the students assuming control over their learning (Shieh, 2012). As the results of this study indicate, students acknowledged this change of focus and pinpointed it in their interviews as one of the greatest benefits of technology-infused lessons.

When designing such lessons, therefore, to generate a positive classroom impact and deeper learning opportunities, teachers should take into consideration certain key elements. Principally, it is important that the use technology has a clear sense of purpose with specific objectives in mind. Furthermore, the choice of digital tools should be accompanied by a focus on triggering motivation among students.

To guide teachers through a smooth integration of technology, primary schools could assign technology coaches. Their role would be that of a mentor who would assist in (1) familiarising in-service teachers with the latest digital tools and technological trends, but also (2) making sure that both the instructors and the students benefit from their use in the classroom. In addition, because of the pre-eminence of national curricula on digital competence as an important prerequisite and as primary school children are technologically fluent, teacher education programmes should also adequately train pre-service teachers in how to effectively employ technology in the classroom. Teacher trainers along with pre-and in-service teachers must understand the impact of technology in our contemporary society and promote, facilitate, and model fruitful digital learning experiences for students.

Despite the limited number of participants, the study paves the way for future research. Further research should explore in greater depth student perceptions on where and when young learners deem specific classroom-based technologies meet their needs and could contribute towards enhancing learning. Acknowledging the student voice would enable future research to centre on fields in which student and teacher views differ. Student-centred studies would effectively contribute to the optimisation of the learning experience and the fostering of a setting where digital natives will share the same language with their teachers.

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