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At the Intersection of the Digital and the Material: Teaching and Learning Crafts during the Pandemic

Abstract

Although the value of crafted artefacts and craft activities is recognized in contemporary research and discussion, crafts as a standard school subject is still struggling with stereotypic labels; some consider the subject a relic from the past. This commentary demonstrates that crafts is an innovative school subject that engages students in creative thinking and up-to-date digital-material practices. The commentary relies on Finnish craft teachers' experiences of learning and teaching crafts during the Covid-19 pandemic. Material was collected in two webinars in autumn 2020.

Keywords: Crafts, craft education, digital materiality, pandemic pedagogy, educational change

Introduction

In Finland, crafts is a standard school subject that all Finns attending basic education experience. Craft activities reveal the makers' skills; thus, they are often experienced as very personal and are associated with strong emotions (Marjanen, Lindfors & Ketola, 2018). As craft teachers ourselves, we often encounter people who have somewhat negative memories of school crafts, with connotations echoing crafts' inability to meet the everyday interests and practices of youth. These experiences are reflected in some of the present-day discussions about school crafts in

which the subject is seen chiefly as technique-based practice, sometimes in a dull and old-fashioned light (see Marjanen, Lindfors & Ketola, 2018; also TOL, 2018). In fact, school crafts have undergone enormous changes throughout history (Marjanen & Metsärinne, 2019), and have increasingly involved digital aspects in practice-based activities. In this commentary, we address the innovative and hybrid nature of present-day Finnish school crafts at the intersection of the digital and the material, in contrast to the view of school crafts as adhering only to traditional craft techniques and materials without connection to the digital-material crossings and intersections of today's technological world.

In our previous study on remote pandemic craft education (Kouhia, Kangas & Kokko, 2021), we analyzed experiences and reports about learning and teaching crafts during the Covid-19 pandemic, shared by 123 craft educators representing craft teachers mainly from basic education but also from other institutions, such as vocational training and non-formal adult education. We conducted an inductive qualitative coding of the data consisting 27 groupwork documents produced by the educators participating in two craft webinars on remote craft pedagogy in autumn 2020. The analysis entailed three core categories concerning the challenges, opportunities and ways of interaction faced and reframed during pandemic craft education (ibid.). Although many challenges, such as uncertainty, differentiation of teaching practices and constraints imposed by craft learning tasks and materials, were faced in craft education during the Covid-19 outbreak, pandemic pedagogy also resulted in practices that can be beneficial for school crafts in the post-Covid era. Indeed, it was noticed that remote pandemic teaching and learning practices broadened educators' views and visions of the school subject, and at the same time, offered new input for student-centered craft learning and sustainability thinking in crafts. Above all, we noticed that as the Covid-19 outbreak forced schools to move to flexible learning practices that could be implemented from home (e.g., FINEEC, 2020; Robinson, 2020), craft education opened to digital practices that were not previously realized, utilized, or even fully approved within the subject.

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In this commentary, we deepen this analysis (see Kouhia, Kangas & Kokko, 2021) by focusing particularly on the digital-material revolution that occurred in crafts during the pandemic. Our intention is to open a discussion of the worth and value of digital pedagogy in crafts, resulting in a better understanding of the possible futures of the school subject. Utilizing the concept of digital materiality (Bratteteig, 2010; Leonardi, 2007; 2010; Pink, Ardèvol, & Lanzeni, 2016), we consider how crafts have developed as a cutting-edge school subject with practices implemented at the intersection of the digital and the material.

The term digital materiality is rooted in the culture created around computing and data objects addressing an awareness of the different ways of defining and constructing the world in and across physical and digital spaces. Digital materiality encompasses materiality implemented on, or by means of computing (Bratteteig, 2020), or more specifically, ‘materiality presented in electronic environment such as online digital worlds’ consisting of ‘intangible representations and simulations’ of the material world that are mediated on the screen (Kedzior, 2014, p. 7). In this commentary, we approach the digital materiality of crafts through the ‘material features’ (Leonardi, 2007, p. 816) that provide makers with the capability to perform actions, establish policies, or instantiate ideas in practice within digital space. In other words, we ask the question, how do teachers and students fuse elements from digital and material worlds in order to generate abstract ideas of management, communication, and interaction through an entanglement of craft materials, and pixels and software?

The changing subject: Crafts and craft education in a state of flux

During the past 150 years, the focus of Finnish craft education has undergone major changes. Craft education began with utilitarian purposes in the late 19th and early 20th century; the targets of today focus on creating 21st century skills, such as problem solving, collaborative capacities, creativity, and innovation (Trilling & Fadel, 2009; Griffin & Care, 2014). As Marjanen and

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Metsärinne (2019) suggest, the changes have reflected the societal development and the requirements and ideals of each time period. However, the main idea for crafts as a school subject has always been to support the students' personal development, their creativity and self-esteem and their knowledge about surrounding culture and sustainable way of living (FNBE, 2016). It is essential to keep this in mind, as sometimes school crafts are criticized for not providing the students with the high-level craft skills that are needed in certain industries, particularly in regard of the development of students' technological skills (see Kokko, Kouhia & Kangas, 2020).

Today, crafts is a standard school subject in basic education taught to all students from grade one to at least grade seven. As craft education has an established status in Finnish basic education, craft pedagogy is constantly being developed in both practice and research (Kokko, Kouhia & Kangas, 2020; Pöllänen, 2009; Riikonen et al. 2020). Crafts is a specific school subject as it combines elements from a range of disciplines (Karppinen, 2018; Kokko, Eronen & Sormunen, 2015). In a way, craft teachers have been on the frontline of developing contemporary pedagogical practices by adapting digital means to their teaching and learning. A good example of this is evident in the early creation of a virtual shared platform Punomo^[1], established in 1996, where craft teachers have since shared their digital teaching practices, student assignments, and other pedagogical and research material (Kröger, 2003). Indeed, the curriculum of crafts in basic education directs using digital means for designing, documenting, and assessing craft processes (FNBE, 2016). Fortunately, this background helped craft teachers to adapt their teaching to remote pedagogy as the pandemic hit the world (Kouhia, Kangas & Kokko, 2021).

The conventional narrative of craft is embedded in the idea of skilled material practice (Adamson 2013), which in the context of education, enables makers to learn by doing and acting, and by experimenting with different materials (Groth, 2017). With the inclusion of digital technology in design and making, today's crafting may extend to diverse digital and material resources and a range of digital-material practices from information and communication technologies, 3D

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production, craft-enabled animation, and the use of a contemporary matrix of tools, such as digital knitting machines, computer-assisted looms, or digital printers (Andersen, Wakkary, Devendorf, & McLean, 2019; Kouhia, 2020; Myzelev, 2015). Crafts may occur as digital-material objects that perform and function through digital communication, such as photos of handcrafted objects posted online, in which the real-world materiality is no longer distinguishable from the digital performance of the objects (Kouhia, 2020). Moreover, there are new innovative solutions and practices, including computer-aided design and digital printing, where crafting is embedded in the creation of objects, tools, and designs with digital techniques (Treadaway, 2007). Indeed, crafting tapping digital tools and technologies has been addressed as ‘a new kind of digital craftsmanship’ (Andersen et al., 2019), which engages makers in processes where the physical and the digital spaces become blurred as ‘the machines craft along with us’ (ibid.). All in all, the many layers with diverse materials paired with digital processes and transitions and hybrids between these states, are expanding the boundaries of representations, processes of designing and making, and their education.

Digital-material boundary-crossings within the craft subject during the Covid-19 pandemic

Regarding the entanglement and crossings of the digital and the material in crafts, we consider, first, the transformational shift from material practices of classroom teaching to activities in the digital environment, and second, the emergent digital solutions that supported and completed the material practices used for crafting that took off with remote education during the Covid-19 outbreak.

Material

The Covid-19 pandemic forced many educators into an extreme situation, since education in artistic subjects concerns activities and materials that are created, modified, and manipulated through material mediation and corporal actions. Normally, most students work on their craft

projects under a teacher's direct supervision and guidance, with the materials and resources provided by the specifically furnished and equipped classrooms. Although digital tools and technologies, such as e-portfolios and platforms, have been used extensively in Finnish schools already before the outbreak of the Covid-19 (e.g., Mannila, 2018), digital learning and teaching practices have been rather fragmented (Hakkarainen et al., 2015). Crafts education during the pandemic raised questions about the role of digitalization in sustaining learning and communication, and therefore the means and measures to teach from a distance subjects that require hands-on guidance and special materials, methods, and tools. This forced educators, for instance, to adjust the pursuance of craft pedagogy and adapt the curriculum-based learning tasks by dividing the tasks into smaller assignments.

“The goals of learning were re-set in lower level comprehensive education, since materials available at students' homes restricted the arrangement and operation of the learning tasks. I was also wondering... how to teach from a distance students with such a diverse range of works in progress. Material packages were organized for the students, so that longer and more goal-directed learning tasks could be undertaken remotely.”

- Teacher, lower comprehensive school

In their efforts to solve the problem concerning craft materials in distance education, many teachers prepared material packages (Figure 1) for the students to take with them. Some packages included materials for an ongoing craft project that had already begun at school before the outbreak of Covid-19. Some material packages were specifically designed for remote learning. When the project concerned textiles, the packages included yarn, needles, cloth, knitting needles, crochet hooks, and buttons.



Figure 1. Maker boxes – an example of a teacher’s innovative material invention. Photo: Kati Sormunen.

To allow the students to work on hard materials, the packages consisted of the necessary pieces of wood, nails, and cords. In addition, the students were guided to utilize and collect materials from their home and surrounding neighborhood for their craft projects. Plants, stones, and branches were used for wreaths, weaving projects, and environmental art. There were also crafting assignments designed to use worn out clothes or other readily available materials from students’ homes and neighborhoods. The craft projects were comprised of modest and down-to-earth materials, such as spare socks, wild flowers, and even trash-like ready-mades such as odd buttons, straws, ice cream sticks, empty food cartons, shoelace, napkins, and sticky tape. Mixing different ideas and elements linked crafting to students’ home environment and everyday life, as resources for the projects were most often retrieved from home (Figure 2).



Figure 2. Recycled soft toy project from outworn accessories. Work-in-progress of a fifth-grade student captured on a study report. Both materials and tools for making for the project were retrieved from student's home. Photo: Johanna Säilä.

In many cases, craft studies during the pandemic involved embodied activities with material practices and required personal engagement. With the help of the material packages, students were able to carry out crafting in much the same way as they had pre-pandemic when crafting in the classrooms; this time they were working remotely. Basic materials and tools proved fundamental during the remote education period; however, the scarcity of materials led to new kind of ingenuity in the context of making, reconfiguring, and reimagining the culture of classroom crafting from home with the assist of digital technologies. Experiences of learning and

teaching accumulated along the way, as the pedagogy evolved framed through the application of digital technology.

Digital

The first task for the educators to learn was the use of video conferencing tools, such as Teams, Zoom, and Google Meet, which were quite new for teaching crafts. However, the main challenge was to develop a prompt online pedagogy to solve the problems about different facilities and resources available at students' homes. Although puzzled by the new situation, the teachers demonstrated strong resilience in their efforts to support learning through digital tools and technologies, remote communication web services, online portfolios and interactive learning platforms, such as Pedanet, Qridi, Showbie, SeeSaw, and Padlet^[2]. Many teachers also reported making their own instructional videos on YouTube.

“Craft teaching was what I invented ad hoc, conducted with the materials and tools students had at home. Several digital platforms were used, and I made instructional videos on YouTube that I linked to students in connection with the craft assignments. Students operated primarily through their cell phones.”

- Subject teacher in crafts, upper comprehensive school

In general, the use of online materials was experienced as convenient, as the students were keen on video tutorials, and reported having a positive attitude towards their individual interests. All in all, digital practices were developed promptly for the needs of craft subjects, and a wide array of digital media, blogs, and virtual platforms were used as learning spaces.

Although the Finnish craft curriculum emphasizes the importance of good planning and process documentation, the role of documentation became profound during the Covid-19 outbreak. Most often, students documented their craft projects with photographs from their mobile phones that they uploaded to a shared online platform. Thus, students learned to split the craft process in phases to share and communicate making in a digital space (Figure 3). In this effort, students

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needed to find alternative ways to communicate on the relational materiality of a project being conducted. When analyzing the phases of crafting, various functions and trajectories of craft were risen. In parallel, new digital creations were enacted through the technologies-in-use, as photos of craft projects were uploaded online to document and share the outcomes.

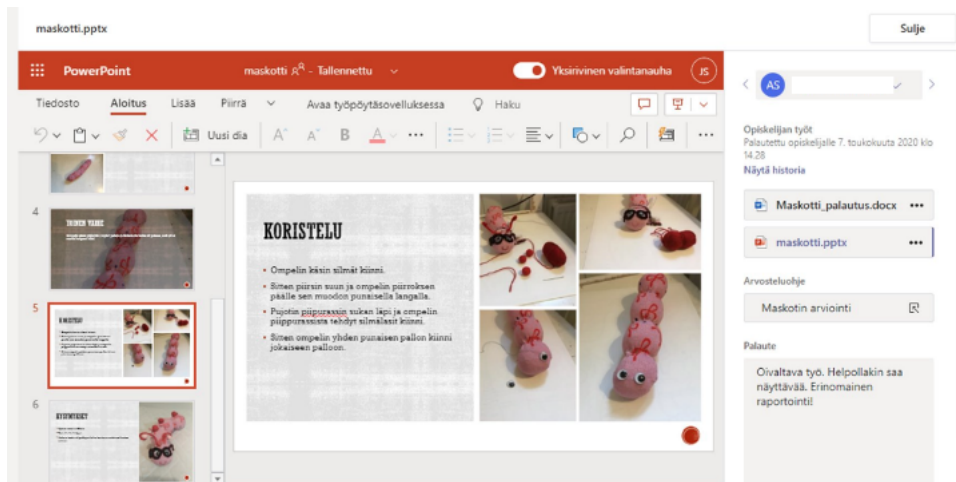


Figure 3. Student's process documentation with digital tools, and comments by the teacher.

Photo: Johanna Säilä.

Digital tools and technologies were largely included within craft pedagogy that ventured into new, hybrid territory of learning that was constructed amidst the material and the digital: New digital tools and technologies were undertaken for the purposes of craft education, requiring diverse modes of participation, agency, and skills for making, sharing, communicating and evaluating crafts. At first, many educators reported having felt helpless, when they could not continue the habituated teaching practices in the classrooms.

“At first remote education was difficult, stressful, but when new practices were learned, the situation eased. The importance of technology was emphasized, as the contents of the learning tasks had to be renewed.”

- Teacher, lower comprehensive school

However, remote pedagogy began to feel more executable and convenient as new digital practices were established and adopted. For instance, teachers reported making their own digital pedagogy materials, sharing assignments and instructions via online portfolio tools, and using newly introduced digital tools for communication; that is, creating, using, and sharing content that might not have been otherwise used or applied in craft education. Craft learning tasks were also modified, so that the students were provided with different options to undertake the tasks. These activities supported the empowerment of students, as they were free to choose the methods and materials for the project and construct their own trajectories for the representation and sharing of the project by bringing their own meanings to digital-material interaction.

Discussion and conclusions

This study is based on the stories of 123 craft educators framed up with the challenges, opportunities and ways of interaction in craft education in reflection of the concept of digital materiality. As was revealed, the challenges resulting from the move to distanced modes of education covered feelings of uncertainty, stress, and heavy workload among the teachers. Also, the conditions for learning varied greatly in terms of the availability and accessibility of resources, facilities, and social support. As digital tools and technologies were set to use almost overnight in March 2020, technology-related practices were fragmented among the educational community.

The positive experiences brought out opportunities to be utilized even after the Covid pandemic. Increased homework revealed crafts' potential in promoting an understanding of the real-world problem-solving at home, and enhancing integration of skills into various contexts from the students' own perspective. Although the modes of communication expanded due to the shift to digital environments, material interaction persisted in crafts during the pandemic. Thus, craft education combined elements of material and digital by utilizing a range of digital means to support material and embodied activities. In the light of digital materiality this implies that craft

making was not replaced by digital technology during the pandemic; rather, innovative material invention and documentation with digital tools were used to enrich crafting.

Remote craft teaching affected the classroom interaction between the students and between students and teachers in several ways. The technology intertwined with crafting in various phases of projects: from groupwork ideation and interaction via messaging to active online negotiations and photo posting and reporting on given topics. Although remote teaching and learning limited interaction, it also supported one-to-one student-teacher interaction. Due to the digitalized modes of communication, the teachers were able to provide students more individual feedback in comparison to normal classroom interaction.

This commentary has centered around activities coaxing digital and material in craft education during the Covid-19. During the pandemic, hands-on crafting was emergent, but by clicking the mouse, mobile phone camera button or laptop touch pad, the hands of the makers also touched an array of fresh materials to mediate the process of crafting through digital tools, software, and apps. All in all, viewing pandemic craft education through the lens of digital materiality makes us conscious that crafts do not exist within a specific material or technological realm, and modern craft pedagogy benefits a lot of utilizing digital communication or media. Since the pedagogy between and across digital and material domains enabled different levels of concretization and abstraction than pre-pandemic classroom learning, re-orientation and adaptivity was urgent in terms of the learning tasks, possible design solutions, making practices, and ways of communication.

Although Finnish teachers and students are already accustomed to virtual learning spaces through the curriculum-based development of digital competences, remote pedagogy was not topical in crafts prior to the Covid-19 crisis. Despite being puzzled by the new situation, many teachers coped with the situation reasonably. In addition, many shared a view that they had learned new practices to be utilized in the future. On a positive note, we found that the emerging role of digital practices eventually developed educators' views on school crafts by expanding the

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loci of crafting across digital and physical domains and opened a perspective on crafts as a subject capable of continuous renewal. Indeed, the current Covid-19 pandemic has disclosed that school crafts can be adapted in innovative ways to support the learning of skills, and more broadly, promote the whole culture around craft skills.

Counter to some views of craft education as a phenomenon of the past, we argue that crafts is a modern, up-to-date school subject that has the potential to promote technological innovation and a change towards a more sustainable future. To continue these kinds of digital-material interactions in the future, creativity, innovativeness, and collaboration are required from both craft teachers and students. We conclude that the conscious fusing of material and digital elements has much potential in embedding digital technologies in craft education, not only to unpack wide range of materiality that craft embodies, but also to enable makers to create new spaces of realization, interaction, and communication for the process of crafting. Contemporary crafters and artists have already explored these possibilities by making innovative experiments, such as reimagining lace in a digital space (Heffer, 2021) and crafting ceramics by using virtual reality (Hanssen, 2021). It is time to acknowledge that the school subject of crafts has undergone major changes throughout its long history, always reflecting the changes in the society and culture.

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^[1] *Punomo.fi* is an online platform centered around craft learning. It shares learning material, instruction and ideas for craft teachers. The content is sustained by support association *Käsityö verkossa ry* [eng. Crafts online assoc.] Platform's technical network environment is operated by *Punomo Networks Oy*.

^[2] *Pedanet*, *Qridi*, *Showbie*, *SeeSaw* and *Padlet* were frequently mentioned in the data as digital technology solutions supporting learning during the pandemic. *Pedanet* (peda.net) is an online learning platform coordinated by the Finnish Institute for Educational Research, which sustains customized content sharing within a selected learning group; *Qridi* (qridi.com) is a Finnish-based learning solution, launched in 2015, which was originally designed for primary schools as a tool for continuous learning assessment and is now widely used throughout the country as a digital technology learning tool; *Showbie* (showbie.com) is a free educational app for teachers and students headquartered in Edmonton, Canada, which provides tools for creating and completing assignments and providing assessments online; *SeeSaw* (web.seesaw.me) is a U.S. based educational platform for online pedagogy that offers solutions for digital learning; *Padlet* (padlet.com) is a browser-based virtual wall that enables content sharing as images, videos and text, provided by an educational technology startup company based in San Francisco, CA and Singapore.