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# Track 06: Learning though materiality and making

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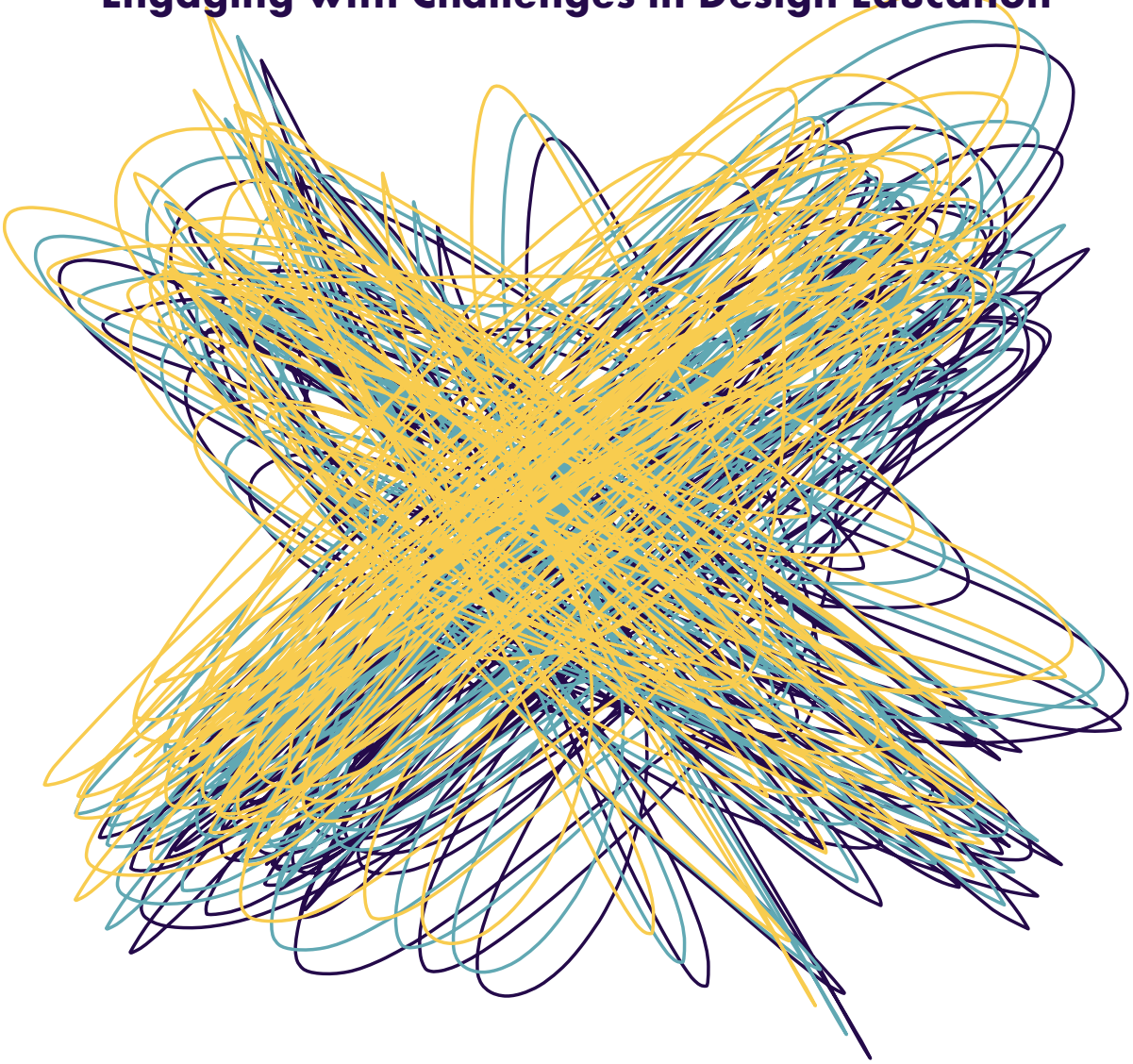
VOLUME 3

# PROCEEDINGS

## DRS LEARNxDESIGN 2021

### Engaging with Challenges in Design Education



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# Section 06

**Learning Through Materiality and Making**

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# Track 06: Learning Though Materiality and Making

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When the theme for this track was planned, we were already living in the shadow of the covid-19 pandemic. However, no one could fully fathom its extent and length of time. The pandemic era including emergency remote teaching (Hodges et al., 2020), and research carried out based on the realities that apply from March 2020, have shown that the topics discussed in this track are important.

## Track Papers

This track consists of two papers. The two papers show that approaches can become more digital and thus develop the activities. The concrete materials are used as aids for learning.

In the first paper Thinking with Card: Tactile and Making-Based Resources for Active Remote Learning in STEM Subjects, Hughes describes a project corresponding to the need for stimulating active learning through making, suitable for home and remote learning. The aim of the constructed models was to help students understand complex concepts which are difficult to grasp from textbooks or even demonstrations. The physical nature of these resources can be helpful in situations where visual thinking and mechanical skills can enhance learning.

In the second paper Imaginary Museums: A New Approach to the Learning and Assessment of Design History, Jiang and Hughes outline an approach taken to re-establish the status, significance, and implementation of the design history component of a practice-based undergraduate design course. A project was undertaken to revise the teaching material and mode of assessment to be more appropriate for remote learning. The traditional lectures were developed into an online course using widely available video and texts, as well as seminar discussions and support of students' own research. Essay submissions were replaced by a piece of design work through which the research was presented.

## Learning With Materials

Nordic craft science stresses the value of learning within material activities and the process of making tangible artifacts in different materials and with the use of a variety of tools (Carlsen et al., 2018; Hasselskog, et al., 2018; Illum & Johansson, 2012). Craft science highlights the importance of activities that aim to develop the student´s ability to handle holistic processes including idea creation and development of idea, planning, and preparation for making, as well as the concrete making of the artifact (Pöllänen, 2009; Porko-Hudd, Pöllänen, & Lindfors, 2018). During all stages of this iterative process self-evaluation and evaluation together with other students are included. In the making of artifacts the student and the tools become a whole as material is transformed into concrete tangible artifacts.

Knowledge, intentions, and thoughts are used and developed in the making and embedded in the artifact, which thus gains a mediating role. In educational settings, this materiality is strongly associated with versatile learning that has denotative and connotative as well as media-specific and media-neutral potential and goals (Lindström, 2009). For example, when planning and making a wooden stool several technical problems occur and need to be solved. The developed solutions increase the individual material knowledge. At the same time, it increases a general problem-solving ability and gives a sense of empowerment in handling unexpected situations. In other words, a media-specific knowledge in wood techniques expands to media-neutral capacity for problem-solving.

The question in our digital age is also how to safeguard the communication in situations where students, teachers, materials, and tools are present. Digital encounters involving people, materials, and tools for the

purpose of creating learning are possible, but it has become clear that this form of knowledge inevitably also needs analogous encounters where the material is concrete and tangible, and where different and concrete forms of communication can be used to enable learning. Learning in crafts takes place during a verbal and non-verbal communicative process when students need access to both planned and spontaneous, as well as material guidance from the teacher, and the opportunity to learn from and with other students (Johansson, 2008; Johansson & Andersson, 2017). In local education, the teacher has the opportunity for synchronous supervision, teaching, and reviewing both individually and in groups. In remote education the possibilities for supervision are different e.g., as the teachers' opportunities to challenge students' knowledge, suggest alternative solutions or draw attention to critical points is replaced by asynchronous responses based on the submission of pictures of completed assignments or short reports of completed work steps. Digital resources, such as videos on YouTube or films made by the teacher, are good complements to the teaching, but cannot replace the concrete guidance that the students receive in local teaching.

The two interesting papers in this track raise a discussion about the role of materiality in learning. The pandemic era has brought to the fore the discussion about materiality, digitality, accessibility and communication in learning situations. Porko-Hudd and Hartvik (in press) state in a research article dealing with educational crafts in the pandemic era that versatile communication and access to equipment and workshops are extremely important when striving for the learning that can take place when people, tools and materials interact. Is there a risk with an increasing amount of remote teaching that we lose touch with the tangible material and the learning that exists in making processes where individual ideas become artifacts? This is an important topic that needs to be addressed in future conferences.

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