

Editorial

Making, creativity, materiality and making ‘specials’ more special.

Kay Stables

Lyndon Buck

Welcome to issue 25.2 of the journal. This issue has been prepared at a time when the world is dealing with the challenges of the pandemic created by Covid19 and, like so many things, has required us to work differently and to take on roles that we are not used to. For us, as editors, we have needed to also become a production team – and if this means that the journal doesn't look quite like it has in the past, we hope this can be excused, as we are novices in this respect!

But out of necessity has come what we hope will be seen as a positive step. This issue is a Special Issue, having guest editors who have curated a collection of articles focusing on design and technology in primary education. In recent years, we have combined special and general issues into one issue, and this continues with the current issue. But, while looking for a solution to some practical matters, we realised that we can create Issue 25.2 in two parts Part 1 the general edition and Part 2 the special edition. This means that for the first time, while all articles can still be viewed and downloaded individually, there will be two composite documents, one of which will be entirely dedicated to the special, guest edited section. We see this as an important way of highlighting the value provided by the special edition, and hope that our readers do to. We would be very happy to receive any comments on this.

The Guest Editors, Wendy Fox-Turnbull and Swathi RR, have curated a collection of articles which, collectively, provide insights that include a strong focus on the importance of language and classroom talk in students' learning and also into the influence of cultural norms and behaviours in technology education. The articles also collectively present an international perspective with authors contributing from Australia, Israel, The Netherlands, New Zealand and Sweden. These articles are all introduced in the Guest Editorial in Part 2 of this issue.

Part 1 of this issue is made up of four research articles, a reflection and a book review. Despite the articles coming from authors coming from different national contexts and phases of education, there are interesting threads that run through: creativity, making and materiality.

The first two articles focus on school age learners, the first with nine to twelve year olds, the second with thirteen and fourteen year olds.

The first presents research on the value of hands-on modelling in supporting creative thinking. In *How focus creates engagement in Primary Design and Technology Education: The effect of well-defined tasks and joint presentations on a class of nine to twelve years old pupils*, Annemarie Looijenga, Remke M. Klapwijk and Marc de Vries (Delft University of Technology, The Netherlands) explore building on the Montessori tradition to structure and focus tasks in ways that encourage both spontaneity and freedom when designing. In what could be seen as a counter-intuitive approach they

explored using brief, simple tasks, often with a single technique at the core as a way of encouraging freedom to think creatively. Using a case study approach and building on previous research with six to nine year olds they focused on joint presentations early in an activity followed by formative reflection and dialogue that created shared insights and encouraged engagement and the freedom to think creatively. The article is valuable in the ways that it illustrates how pedagogic approaches used with young children can be successfully adapted for use with older learners and how taking a structured iterative approach can increase learners' liberty to be creative.

The second article explores developing pedagogical design in the context of maker-centred learning, including the use of both material and digital practices. In *The development of pedagogical infrastructures in three cycles of maker-centred learning projects*, Sini Marti Riikonen, Kaiju Kangas, Sirpa Kokko, Tiina Korhonen, Kai Hakkarainen and Pirita Seitamaa-Hakkarainen, (University of Helsinki, Finland) took a design based approach to their research and incorporated digital fabrication instruments into more traditional Finish craft classrooms. In doing this, their research explored the impact of a makerspace approach within formal schooling. With some similarities to the research of Looijenga, Kalpwijk and de Vries, they provided structure through pedagogic scaffolding and took a collaborative co-invention approach with the learners to support creativity through design based, maker centred approaches. They also incorporated peer-tutoring. The article provides immense detail in the structure and focus on a three year-long study in one school, revealing how students were engaged in practices of design and machining, and how design tasks, support structures and knowledge resources were scaffolded. The article also details how social infrastructure was created that enabled collaboration and interaction through student team work and team teaching and how materials and technologies were made available. Amongst a set of conclusions, the authors make the following, telling, comment that "According to our experiences, developing maker-centred learning is not dependent on teachers' sophisticated socio-digital competencies, but relies more on the opportunities provided by the curriculum and the schools' structural practices".

Between these first two articles rich insights into how pedagogic approaches for collaborative, iterative, design-based making can enrich learning and creativity in design and technology education.

Linking continues with the third article. In *Material tinkering for design education on waste upcycling*, Carlo Santulli, (Università di Camerino, Italy) and Valentina Rognoli, (Politecnico di Milano, Italy) focus on the importance of understanding materials in design education and provide insight into the range and scope of approaches that expand Nigel Cross's concept of *designerly ways of knowing* to *designerly ways of knowing materials*. In this they refer to, for example, concepts of Materials Driven Design and Materials Experience, alongside the growth of materials libraries, fab labs and maker culture. For their research the focus is on material tinkering, with a particular focus on "DIY materials" - creating and exploring materials derived from waste upcycling. Their research is set in university design schools. Providing a background on the value to students of first-hand experience of such aspects as technical, sensorial, expressive and functional possibilities and potentialities of materials they present the concept of material tinkering and its educational value. They detail a case study of a material experience course with design students that takes a culinary metaphor. Students were encouraged to take a material tinkering approach working with a range of waste materials

(such as those with a starch or protein or cellulose base) for students to create what they call a “material demonstrator”. The results of the students’ developments are presented descriptively and visually, showing a broad range of innovative development. The authors also present examples from sources beyond those of the students’ work. They highlight the challenges and problems of the approach, but most importantly they open up the possibilities of taking a very different approach to educating design students through designerly ways of knowing materials.

The final research article in Part 1 is something of a departure from articles the journal typically publishes. It is a scholarly review, with a particular focus on the value of using music as an interdisciplinary approach in a design studio. In *A Literature Review on The Use of Music in Architectural Design Education*, Burcu Ölgün, (Işık University, Turkey) provides a background on research that has focused on using music as a conceptual starting point or inspiration for creative thinking, specifically in the context of architecture studios. Through his scholarly review, we are given insight into a broad range of research into the impact of music in architecture and design studios, showing how music supported students’ imaginations in creating concepts and form and opening up possibilities for this inspiration to be taken further by exploring its value in a range of architectural structures, products, facades and interiors. Across the range of research reported on, different approaches have been taken including using music to inspire the design of instrument forms, as a starting point to express feelings that are transformed into 3 dimensional forms, as a starting point for conceptual design and for a range of three dimensional forms. Commonalities between music and design are noted, through terms such as rhythm, ratio and harmony but the overarching connection between the all of the research reviewed was the impact on students’ creativity.

Beyond the research articles in Part 1 of this issue, we have the regular inclusions of a reflection piece and book review.

The reflection piece in this issue comes from Richard Green, Independent consultant and former CEO of the Design and Technology Association. In an article entitled *A new normal?* he reflects on the current situation in education in the light of the Covid19 pandemic. Focusing predominantly on the situation in England, he places current events in the context of shifts in education policy and practices. He considers both positives and negatives that have emerged over the last several months as alternative approaches to teaching and learning have been devised, adopted and explored. With these in mind he ponders on the question of what will, for better or worse, be the “new Normal”.

Finally, this issue includes a review of a recent edited book published by Sense publishers in their International Technology Education Studies series - *Reflections on Technology for Educational Practitioners*. This collection of fourteen chapters, edited by John Dakers, Jonas Hallström and Marc de Vries is reviewed by Nicolaas Blom (University of Limerick, Ireland). In his introduction, he highlights the in-depth focus on philosophy and the range of perspectives that different philosophers bring to developing understandings in technology education. He provides a descriptive overview of each chapter, concluding his review with a short critique, highlighting what he sees as both strengths and weaknesses and an overall conclusion of the books value through the questions, guidelines and reflections that the chapters collectively present.