

All aboard online

Prof Kay Stables, Goldsmiths, University of London, UK

Dr Erik Bohemia, Loughborough University, UK

2017 and Volume 22 saw our Journal move totally online – paper copies will no longer be published. Moving online has the advantages of streamlining all processes of creating and publishing the journal and for Issue 22.2 this also means a fresh new look as the Open Source Journal (OJS) repository, hosted by Loughborough University, has undertaken a major upgrade of the system. This should mean that the website not only looks cleaner and fresher, but is also easier to navigate. With this new upgrade, the Editorial team have decided to move nearly all parts of the ‘workflow’ process online, from submission to review, to editing, to publishing.

For those who just enjoy reading the journal, apart from the new look, you should find that the reader interface has been improved meaning that the website is easier to read on tablets, for example. It is also more straightforward and quicker to register. For authors the shift means that all submissions can now only be submitted on line, with the advantages that authors can now easily upload multiple files and track the progress of their submission. In addition, feedback from reviewers and editors will also be provided online, with email alerts to signify when new information is available.

The shift has resulted in a new url for the Journal (<https://ojs.lboro.ac.uk/DATE/index>) – so bookmarks will need updating. As with any major upgrade, we would be foolish to imagine there won’t be some teething problems, and if problems are encountered, please let us know.

We would also encourage anyone who does interact with the journal to sign up for New Issue alerts, which you will find under Announcements.

But now to what you can find in this issue. As usual, we start with a reflection piece in which Richard Kimbell reflects back on Decisions by Design, research he conducted some years ago that highlighted the core value of developing designerly thinking and action. The research focused on the impact of this on school managers, but his broader point is the value for all people, whatever their age. This is followed by six research articles representing research across age groups from as young as five and six year olds, to undergraduate students. The articles also represent a broad geographical spread, drawing from Canada, England, USA, Turkey, Iceland and Nigeria. While the contexts of the articles are quite different, the combined lessons that can be learnt have broad relevance.

The first research article, A Model of Framing in Design Teams, comes from Mithra Zahedi and Lorna Heaton (University of Montreal, Canada). Based on a case study of a team of four second year industrial design students, the paper explores a major research question of how design ideas develop in collaborative design projects. The students worked as a team to design a pop-up shop. Drawing on Schön’s work on naming, framing and re-framing through processes of reflection in action, a collaborative, project based learning activity was created that would allow the researchers

to explore the students' thinking and actions as articulated through their interactions. Taken together with the 'traces' of the project (drawings, presentations etc.) the authors identified a set of designerly action themes used to analyse the students' activity, enabling the creation of a model of how processes of framing, deframing and reframing emerge in a collaborative design project. The authors present their model as a new approach to "analysing design communication in social settings."

The second article moves us to a case study of very young fledgling designers – five and six year olds. In *Traditional tales and imaginary contexts in primary design and technology: a case study*, Matt McLain, Mike Martin (Liverpool John Moores), Mel McLain and Jess Tsai (St. Michaels in the Hamlet Community Primary School) and Dawne Bell, David Wooff (Edge Hill University), provide insights into the value of working from imaginary contexts in design and technology to develop design thinking, dialogue and critique. Drawing on concepts such as speculative design, science fiction and design fiction, they highlight the potential for such development when working in a fictional realm. They take the tradition story of *Three Billy Goats Gruff* as a starting point, and show how the young children were drawn into the context by receiving a letter requesting help from the billy goats, who effectively became the clients for the children. Design ideas were sent back to the billy goats who returned comment as the projects developed. Through interviews with the teachers involved and analysis of the children's work, a rich picture of design learning emerged. This showed how young children focused on "the social and affective aspects of the 'problem', rather than fixate on the practical aspects", with teachers scaffolding learning in relation to technical making when needed. In line with conclusions of the authors, it is easy to see how those working with older learners could also benefit with building such approaches into learning and teaching in D&T.

The third article also focuses on critique, taking an innovative approach to assessment, working with undergraduate graphic design students. In *Visualizing the critique: Integrating quantitative reasoning with the design process*, Kathryn Weinstein (Queens College, City University of New York) focuses on the impact of linking using data analytics and visualisation strategies with the critique of design assignments. In a case study of students undertaking an Information Design course Weinstein describes how, at the end of the course, an anonymous survey replaced a more traditional group critique. The data from the survey was then given back to the students as the basis of an assignment to create visualisations of the information and to support understanding of Quantitative Reasoning (QR). In advance of the visualisation assignment, group discussions on the data itself prompted responses including students saying they gave more honest responses in the survey and that both students and teachers could benefit from the results of the survey. Following the development and presentation of the visualisation of the data, a verbal group critique revealed both the learning benefits in terms of QR (for example the students having more 'at homeness with numbers') but also a shift in the students' approaches to critique, such as focusing more on coherence and accuracy than aesthetics, the development of reflection skills and how assessment feedback can be used for personal development.

The article that follows stays with undergraduate students, in this instance architecture students. In *Searching creativity: (N)On Place design workshop*, Gökçe Ketizmen Önal (Eskişehir Osmangazi University, Turkey) presents a highly focused exploratory study of a design workshop using paper folding techniques and modelling with architecture students in an exploration of developing

creativity. The study explores the value of informal workshops and the impact on creativity of folding as a technique to explore spatial and organisational pattern. The methodology for the workshop draws on literature on creativity, including approaches to stimulate creativity within design processes, and Rhodes' "4Ps of creativity (person, product, process and press)". For data collection, the author has drawn on retrospective protocol analysis and structured interviews with eight architecture students. The focus of the workshop was designing a city structure and ran over two days. The detailed analysis of the models created and the thoughts expressed by the students to explain development indicated the value of having initial explorations in 3D modelling with paper, for example in the holistic ways the students conceptualised ideas, the ways they used the approach to consider user issues and interactions, such as psychological impacts on space and place and the ways students were enabled to "perceive the interactions of spatial, conceptual and volume at the moment of creation". The informal nature of the workshop also highlighted benefits, for example social-cultural aspects.

The penultimate research article shifts more directly to approaches to teaching. In *Examining Teaching Practices in Design and Craft Education in Iceland*, Gisli Thorsteinsson (University of Iceland) and Brynjar Olafsson (University College of Southeast Norway) report on research aimed at gaining insight into the current situation of Design and Craft (D&C) teaching in Iceland elementary schools. The particular areas of focus were the most common teaching methods, how the Icelandic National Curriculum is used and how teaching could better meet the individual needs of learners. The article begins by providing some background to the development of D&C teaching in Iceland, starting with influences from Scandinavian sloyd. It then provides insights into the development of the Icelandic National Curriculum that includes the subject D&C, first developed as school industry (craft) that has been mandatory since 1936, the term Design and Craft, with an emphasis on technology, being introduced in 1999. Throughout this time an underlying sloyd pedagogy was the basis for learning and teaching. Previous research has identified some common approaches, such as outdoor education, collaborative learning, direct instruction and the use of workbooks. Based on a questionnaire to which 101 teachers responded, the authors explored the current situation. Findings indicated that the majority of teachers used mainly traditional teaching methods, most commonly direct instruction, that most teachers used the National Curriculum to structure their teaching, although some used it only occasionally. The majority of teachers based teaching on student's individual needs, but it was the younger teachers who focused more on individual differences and the teachers who had a degree level teaching qualification (as opposed to a vocational qualification) who allowed more flexibility in design decisions. The authors conclude that improving teachers' practices, possibly by in-service courses, could improve the quality of teaching and status of the subject.

The final article is *Influence of cognitive styles on technical drawing students' achievements in senior secondary school in federal capital territory, Abuja*, by A. Samuel Owodunni, (Federal University of Technology, Minna Niger State) Sanni & T. Abdulramam (University of Ilorin, Kwara State), Joy Nwokolo-Ojo (Benue State University, Makurdi) and C. Obeta Igwe (Federal University of Technology, Minna Niger State). It presents a study that explores the relationship between cognitive style and technical drawing skill and relates this to the impact understandings could have on learning, teaching and achievement. The context for the study is Nigeria and a concern that Nigerian students be scientifically and technologically literate. The authors raise concerns about poor

achievement in technical drawing, poor teaching in the subject and a lack of students pursuing a career in related fields. The article provides an underpinning of the nature and significance of cognitive style for learning and reports on a study with senior secondary school students in the Federal Capital Territory, based on a Group Embedded Figure Test. Students first undertook an assessment that allowed researchers to identify three different cognitive styles and the research then tested a null hypothesis that “cognitive styles have no significance on the mean achievement scores of students in Technical Drawing”. Their findings indicated that performance across the three groups was significantly different and that poor teaching, based on teachers’ inability to see difference in cognitive style could contribute to underperformance. On the basis of the findings they suggest that teachers should use cognitive styles to facilitate their teaching and that pre and in-service teacher education should address this.

Finally, we move to reviews, and for the first time include an extended Review Essay by Steve Keirl (Goldsmiths, University of London). In Reframing the status quo in design education: it’s not a rehearsal Keirl presents a review of Elizabeth Resnick’s new book *Developing Citizen Designers* and then provides a developed critique of the book that creates an extended essay, drawing on a range of issues and further literature. We conclude the issue with a more traditional review of *Technology Education Today: International Perspectives* by Marc de Vries, Stefan Fletcher, Stefan Kruse, Peter Labudde, Martin Lang, Ingelore Mammes, Charles Max, Dieter Münk, Bill Nicholl, Johannes Strobel and Mark Winterbottom. This book is the first in a series to be published by a new collaborative international research association, The Centre of Excellence for Technology Education (CETE).

We hope that you find this current issue valuable, useful, interesting and enjoyable. If you have any feedback, please let us and the authors know.