

CALL FOR PAPERS

The LearnXdesign is a conference series by DRS Special Interest Group in Design Pedagogy (PedSIG), cultivating symbiotic exchanges between design education and design research. The first symposium in the series was held in Paris in 2011 and covered a small number of invited presentations mainly by British and continental European researchers. The Oslo 2013 and Chicago 2015 conferences were embraced by the design education research community at large and involved an impressive number of contributions across design disciplines and educational levels representing diverse traditions in research and education. And finally, the fourth conference was hosted by Ravensbourne University London in 2017.

The Fifth International Conference for Design Education Researchers will be hosted by Middle East Technical University (METU) Department of Industrial Design between 9-12 July 2019. We are truly excited to invite you all to our Ankara campus characterized by its unique natural and built environment as well as by its egalitarian culture and open intellectual milieu. Despite Turkey's becoming an uneasy passage from multiple conflict zones to tightened EU borders, our department will have quite a few occasions to celebrate in the coming year. The year 2019 marks the 50th anniversary of the first course on industrial design offered in Turkey, at METU Faculty of Architecture by the American industrial designer David K. Munro. The same year we will also be celebrating the 40th anniversary of the establishment of our department as a separate academic unit at METU. We feel that design education matters more than ever!

The theme for the DRS Learn X Design 2019 is **Insider Knowledge**. We are happy to announce that the conference has 18 tracks, fifteen of which are chaired and three are open. We would like to invite the local and international design education research community to contribute to the tracks detailed in the following sections. For your full paper submission, please use the template provided at the conference website at <http://drslxd19.id.metu.edu.tr/>. Full paper submission deadline is **30 December 2018, Sunday**.

Warmest regards from METU, Ankara,

DRS Learn X Design 2019 Conference Co-chairs

Naz A.G.Z. Börekçi, Fatma Korkut and Dalsu Özgen Koçyıldırım

THEME I: LEARNING SPACES

TRACK 01. ALTERNATIVE STUDIOS

Co-chairs

Derek Jones, Senior Lecturer in Sustainable Design, The Open University, UK.

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Contemporary higher design education is making increasing use of online, digital and distributed studios to augment, or even replace, physical (or proximate) studio space. In part this is due to increasing pressures on resources but it is also in response to increasing professional and practical uses of online and digital tools. Both have been enabled by developments in online technologies and their associated adoption as broader socio-technical tools. The body of scholarship and knowledge around such 'alternative studios' has grown steadily but slowly over the past decades. Very often it is scholarship, small-scale projects, and case study-based work that contributes knowledge. Whilst this is valuable, especially to practitioners and teachers, it can often be at the expense of studying deeper ideas and themes. In particular, basic questions around how alternative studio pedagogy differs (if at all) from proximate studio pedagogy, are very often answered superficially or not addressed at all. This track proposes to bring together researchers, practitioners and educators involved in alternative studios to share knowledge, cases and consider deeper themes of these as a pedagogical mode in art, design, architecture and engineering education. This will be one of the earliest gatherings of experts to focus only on alternative studios as a specific mode of design education and a further intention would be to initiate the emergence of an international community whose interests centred around this particular research area. This track would like to explore, but is not limited to, the following topics:

- Review of definitions (or frameworks) and meanings of alternative studio 'spaces', for example: proximate, physical, virtual, online, distance, social, dispersed, mobile, etc.
- Studies and work on the differences and similarities between proximate and virtual studios.
- Research into the affordances and affect in online and distance studios.
- Intersections between social media technologies and online studios.
- The boundaries of what an online studio is –technically, socially, professionally, and educationally.
- Theories of the pedagogy of alternative studios.
- Scholarship of alternative studios: case studies; learning and teaching design; practice based theory(ies).
- Intersections between professional and educational online and distance studios –similarities, differences, modes and methods.
- Alternative studio modes and uses with a relevance to design pedagogy and practice or studio theory.

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TRACK 02. VIRTUAL MOBILITY AND DEMOCRATIZATION OF RESEARCH AND TEACHING PRACTICES

Co-chairs

Ayşen Savaş, Prof. Dr., Faculty of Architecture, Middle East Technical University, Turkey.

Felix Sattler, Curator, Tieranatomisches Theater-Exhibition Research Space, Humboldt University, Germany.

Museums are primarily didactic institutions, and web-based education platforms bring innovative perspectives to object-oriented learning practices towards increasing the potentials of virtual mobility and democratization of research and teaching practices. New display environments also provide a medium to question the authority of museums as storages of knowledge and the authorship of producers (artists, designers, curators, etc.). This track invites designers, museum experts, historians and specialists in related fields, to seek and exchange alternative ways of sharing knowledge in e.g. museums, archives, and collections and initiate future research using the potentials of digital cultural heritage. It supports cross-disciplinary research initiatives that integrate science, design, engineering and aesthetics at the core and focuses on virtual mobility and democratization of knowledge and finds its space in museums. Professional engagement (curatorial, artistic, educational) as well as museum visits require mobility, which is highly restricted today due to various political, economic and social conditions. It is necessary to eliminate these boundaries with the establishment of shared platforms that can make the collections accessible and provide new ways of exploring and connecting knowledge and engaging with the objects. This track would like to explore, but is not limited to, the following topics:

- Web-based education platforms
- Object-oriented learning practices
- Digital cultural heritage
- Cultural techniques
- Scientific narrations
- Visualization of intellectual data
- Monopolisation of knowledge
- Exhibitions and aesthetic practices
- Digital displays
- Scenographies of knowledge
- Aesthetics of didactic objects
- Other modes of representation

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TRACK 03. OPEN TRACK FOR LEARNING SPACES

This track is open to topics related to learning spaces such as learning in situ, learning through collections, etc.

LEARNING IN SITU. Factories, design offices, workshops, labs, nature. Benefits, challenges, and ways of integrating learning in situ into designers' education. Learning at the work space; summer practices in factories and design offices; impact on curriculum. Onsite observations, field trips, field study.

LEARNING THROUGH COLLECTIONS. Museums, design museums, archives, special collections, exhibitions. Are they still valuable? Connecting generations and inspiring minds through collections. Approaches, methods, tool kits, assignments that facilitate engagement, reflection and creativity with reference to collections in design education.

OTHER TOPICS you would like to suggest.

THEME II: LEARNING CULTURES

TRACK 04. RETHINKING DESIGN BASICS AS TRANSLATION

Co-chairs

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Starting from the historical tradition of Bauhaus, *basic design* can be considered as the core of design education. Basic design exercises have migrated through a variety of cultural traditions (German, Italian, Swiss, American, etc.). In these specific cultural contexts, historical models to teach design basics through a strong interaction between practical, theoretical and methodological issues in relationship with aesthetics, technology and society have been developed. We may ask if these models are still valid or whether they need to be revisited. What could be new in basic design? How can we describe new basics for the field of communication design? We suggest that communication design is facing today many levels of complexity and it demands new sensibilities and extended competencies that support 'translation processes' among cultures, codes and patterns, senses, multiple languages and media. The translation paradigm, interpreted as a

process of mediation, transfer and re-transcription between different systems, can represent a new reference scheme for rethinking design basics. The same field of Translation Studies seems today to open up to possible interdisciplinary intersections that go beyond the simple textual translation and offer thematic connections of great interest. In parallel to the categories of linguistic translation we can describe the following aspects of a translation for basic design:

- *Intralinguistic translation* (the interpretation of signs by means of other signs of the same language);
- *Intersemiotic translation* (the process of transposition/transmutation between different semiotic systems, for example from verbal to visual, and from visual to sound);
- *Cross-media/trans-media translation* (the interactions between different media and their narrative potentialities);
- *Interlinguistic translation* (the mediation by design in the process of communication between different cultures, for instance through extra-textual translations).

This grid of the design process seen as translation, can be an open matrix for a new experimental pedagogy with the goals to improve the comprehension and accessibility of the content, characterize the most appropriate form of expression for a new medium, facilitate the quality of communication in a multilingual, intercultural context, promote self-reflection, and reinforce cross-disciplinarity. This track would like to explore, but is not limited to, the following topics:

- The modernist tradition
- The new basics
- Structural approaches to design
- Translation processes in design
- Experimental pedagogy
- Intersemiotic translation
- Intermedial translation
- Synaesthetic translation

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TRACK 05. MORE-THAN-HUMAN PROTOTYPING AS PEDAGOGICAL IMPUGNATION

Co-chairs

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Although modernist principles (e.g. form, colour, composition, ergonomics, structural analysis, etc.) are still in widespread use in design pedagogy, they have not for some time now represented the only option. One alternative is the 'anthropological turn', often referred to as 'human-centered design', where the defining concept is that the designer is not an adequate surrogate for the user. This anthropocentric epistemology has arguably become the common, uncontested and politically correct place from which to teach and practice design. Nonetheless, as every frame of action that is taken for granted hides political and epistemological standpoints, the concept of human-centered design silently influences not just the process, but also the kinds of questions we tend to ask when practicing and teaching.

This track aims to precipitate a space for critically reviewing and contesting naturalized epistemological and methodological frameworks (e.g. user-centered design, problem-solving design). We want to dedicate special attention to the anthropocentric biases that encourage us to ignore the urgent ecological demands expressed by other-than-human beings in times of environmental crisis. Furthermore, we are also interested in the question of how critical action becomes an appropriate matter of design. Prototyping with other-than-human beings as a learning exercise, along with favouring a performative critique of anthropocentric politics, provide analytical keys to make the conceptualization of our modes of existence a matter of design, and in turn, to recognize design as a critical space to materialize unexpected and more-than-human ecologies. With this double challenge, we want to encourage participants to share experiences and reflections on design learning, where other-than-human actors significantly impact the affective and operative framework that a design classroom project produces. This track would like to explore, but is not limited to, the following topics:

- Prototyping
- Speculative research
- Cosmopolitical design
- Experimentation in design education
- Interspecies explorations
- More-than-human correspondence
- Design facing the Anthropocene
- Environmental enrichment
- Design anthropology
- Situated knowledge
- Performativity

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TRACK 06. COMPUTATIONAL DESIGN THINKING

Co-chairs

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The new computational design paradigm indicates a shift from representation to simulation with a special focus on creating integrated systems. Material properties, performative qualities, natural evolution and other important knowledge is being integrated into highly interdisciplinary design processes. Designer-authored generative systems enable us to conceive and manage the design process as a dynamic ecosystem rather than fragmented practices of form-finding, analysis and production. All of these developments entail transformations both in design education and practice. However, we can see an unequal pace of developments in both fields. A select group of pioneering schools and firms is pushing and developing the notion of computational design thinking, whereas a large section of both are struggling with the

concept or altogether dismissing it. In schools, non-Euclidean geometries produced by the new media are embraced enthusiastically by the students, but mostly it needs to be incorporated in an educational pedagogy. The question of how to prepare graduates as “computational designers” remains unanswered from both schools and practice. The distinction between computation and computerisation in design education is critical in this sense, since the real potential of computational design lies in its conceptualization as a way of thinking. Within this framework, this track calls for innovative and thought-provoking work around the following 5W1H questions:

1. What is computational design thinking?
2. Why is computational design thinking important in design education?
3. How is computational design thinking employed in practice and design education?
4. Where and when is computational design thinking best employed in practice and education? What does the transformed practice/curriculum look like?
5. Who is responsible for teaching and managing computational design?

This track would like to explore, but is not limited to, the following topics:

- Material-based design
- Digital fabrication
- Computational making
- Biologically inspired design through computational methods and tools
- Shape grammars
- Parametric design
- Performative design; performative architecture
- Responsive design; responsive architecture
- Coding education
- Computational thinking in the design studio

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TRACK 07. INTERCULTURAL COLLABORATION IN DESIGN EDUCATION

Co-chairs

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The ability to work effectively in a global environment has become essential for designers in the current workplace. Educational institutions need to nurture student skills not only from a design skills perspective that takes into consideration a broad worldview, but also from an intercultural perspective that incorporates the necessary communication skills, cultural sensitivities and flexibility. Design schools around the world have been collaborating through international events such as design workshops, summer schools, or design projects for the generation of solutions developed by intercultural student teams. Since 2014, we have been conducting the annual series of International Collaboration Workshops between Turkey and Japan. In addition to the aforementioned educational objectives, these workshops have proven to be beneficial for the instructors regarding the management of the differences in educational approaches and cultural traditions between the participating countries. It also provided the instructors with the opportunity to conduct joint research. Furthermore, the design solutions developed by the intercultural student teams have attracted the attention of local industries. Based on these arguments and experiences, we suggest that *in situ* intercultural collaboration has significant benefits and implications for design education, research and practice. We expect to uncover further insights through your experiences concerning international or intercultural collaborations in design education. This track would like to explore, but is not limited to, the following topics:

- International collaboration in design education
- Intercultural design student teams
- International workshops, summer schools, projects, etc.
- Intercultural management

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TRACK 08. INSIDER OUT: KNOWLEDGE TRANSFER IN ALTERNATIVE DESIGN PRACTICES

Co-chairs

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Design education mainly targets skill development and knowledge enhancement. Design information, which is used to establish design knowledge, comprises of data ranging from raw to structured. Consequently, educational practice in design aims to create and utilize these data. However, the design knowledge is usually implied, or tacit and design act is generally based on implicit utilization of this domain knowledge. The knowledge transfer is usually performed on an experience base. This experiential nature often pushes design act to a non-institutional ground. With the advancement of technology, new forms of design practice has emerged both in handicrafts and technology centred making. The emerging mind-sets and skills enabled new design practitioners and communities to appear in small-scale making, analogue and digital crafts. Therefore new forms of experiential knowledge transfer occur in the practice of 'designers' who have not gone through a formal design education, such as craftsmen, or makers. The track aims to scrutinize this issue. Possible questions may be as follows:

- How is knowledge transfer made within these communities?
- How are the skills acquired?
- What are the alternative mediums of communication and transfer?
- What are the training programs offered?
- Can these new communities integrate with design education or practice?
- How can these emerging mind-sets and skills contribute to formal design education?
- What are the ways of transferring tacit knowledge generated and acquired by these communities to novice design students?

This track would like to explore, but is not limited to, the following topics:

- Craft communities
- Maker movement
- Knowledge Transfer
- Mental Models
- Training Materials
- Knowledge structures
- Skill-based performance

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TRACK 09. OPEN TRACK FOR LEARNING CULTURES

This track is open to topics related to learning cultures such as hidden curriculum in design, the "project", tutors and critiques, teamwork, etc.

HIDDEN CURRICULUM IN DESIGN EDUCATION. Values, norms, beliefs, implicit rules, customs and rituals. Geographical and institutional patterns. Changing écoles around the world, changes in écoles throughout history. Proficiency, skills, knowledge.

THE "PROJECT". The studio project as "the curriculum in a nutshell". Projects and design briefs, what do they tell us about the design education we offer/receive? What happens while we are busy making projects? Problem-based learning.

TUTORS AND CRITIQUES. How do tutors facilitate, listen and intervene? Power relations, master- apprentice relationship, alternative models. Questions and challenges posed by mass education.

TEAMWORK. Dialogue, discussion, decision making, conflicts, crises, performance, evaluation. Consensus and dissensus. How can we get ready?

OTHER TOPICS you would like to suggest.

THEME III: EVOLVING SKILL SETS AND MIND SETS

TRACK 10. LEARNING FOR AUTONOMOUS DESIGN

Co-chairs

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Julia Keyte, Course Leader for Furniture and Product Design, Bath School of Art and Design, UK.

This track is intended to address concepts, methods and practice in design education that coach students towards awareness, criticality and mindfulness of their future professional practice. In a world of rapid technological, economic and environmental change where it is possible to design and make so much, there is a need for a designer who is able to respond not just to the global market but to global circumstances. Design education is overwhelmingly defined by the instrumental role of design in the global economy, but must re-orientate towards practices of sustainment. Design communities and individuals are driving change from within and outside the traditional boundaries of design practice, but such critical approaches are marginal. This relation must be reversed. A

designer is needed who can respond to global circumstances, named by Arturo Escobar as “the autonomous designer” (Escobar, 2018). Critical pedagogical methods are emerging that challenge traditional approaches embedded in design education. Central to this is identification of new and re-configured essential knowledge for future designers. This equally involves critical engagement with implicit design values, norms and rules within design education that sustain the unsustainable. This track aims to engage dialogue across design disciplines and practices, and build on previous literature such as *transition design* (Gideon et al., 2015), *social design* (Armstrong et al., 2014), *redirective practice* (Fry, 2010) and *design after design* (Willis, 2006). Of relevance to this track are both successful and failed experiments, critical dialogue within education and industry, and the challenges inherent to capturing critical methods. While criticality may implicitly be part of some designers’ insider knowledge, it needs further elaboration and theorization to be disseminated within design education and beyond. This track would like to explore, but is not limited to, the following topics:

- Mindfully experimental approaches to learning and designing, and how we express these.
- Methods to support learners in defining their relationship to the material world, and to build up a critical sensitivity to it.
- Supporting agency of the learner in defining their own projects.
- Developing self-awareness of the design educator.
- How to engender enthusiasm for redirecting design creativity towards the conditions of now.
- Intellectual resources: which non-design areas of knowledge are essential for future critical designers?
- Developing new skills, learning and dispositions needed to work meaningfully in the gig economy.
- How to elevate the importance of non-traditional design practices (co-design, social-change design, etc.) as desirable career paths.

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Public Engagement initiatives in UK higher education institutions offer one route to confronting elements of social exclusion in society. Diversity -ethnic, gender and socio-economic- in STEM and arts education and careers is low (The Warwick Commission, 2015; Archer et al., 2013), linking to low levels of social inclusion. Design-led approaches such as SMASHfestUK and the Heart and Lung Repair Shop have been recognised as successful mechanisms for engaging underserved and underrepresented publics, and challenging institutional public engagement culture. The prevalence and effectiveness of design as the driver for public engagement and social inclusion development is, however, underexplored and uncertain. Design, often through the concept of design thinking (Brown & Wyatt, 2010) has been popularised as a universal approach to innovation across disciplines. Can the claimed benefits of a design approach enhance social inclusion, and develop the effectiveness of public engagement strategies and delivery? Some initiatives are explicitly design-focused, whereas many others are carefully designed (but without acknowledgement of the discipline and approach), while others have evolved from the disciplinary heritage within which they sit. The aims of public engagement, as defined by the National Coordinating Centre for Public Engagement, are “the activity and benefits of higher education and research [that] can be shared with the public” and that can enhance inclusion in higher education (Ćulum, 2015). Across public engagement initiatives, human-centred, design-led innovations seem to be emergent.

When Emi Kolawole (2016) asks that we “...consider what a human-centered approach to growing diversity and inclusion might look like”, this consideration has resonance with the emergence of design within this sector. This track aims to explore the state of the sector, and landscape in expert and diffuse design for public engagement and social inclusion (Manzini, 2015), interrogating a diverse range of perspectives about philosophies, practices and impacts within the landscape. This track also aims to explore the understanding, prevalence and impact of design and human-centred approaches within this field. What do researchers and practitioners recognise as ‘design’? Whether there is recognition of design as explicit (expert) or implicit (diffuse) within these approaches? Whether diffuse or expert design lead approaches (Manzini, 2015) are considered the optimum approach within the community of practice? How are initiatives and individuals confronting embedded ‘feet-on-the-ground’ recruitment metrics in higher education and cultural organisations? The track seeks contributions from researchers or practitioners engaged within design, design for social innovation, public engagement/public engagement with research, social policy, STEM or arts communication, and general or design education to enable a broad consideration of the state-of-the-landscape and to drive future conversation within the area and in society. This track would like to explore, but is not limited to, the following topics:

- Design thinking
- Design for social inclusion
- Design for social justice
- Design for widening participation
- Embracing diversity
- Public engagement
- Public engagement with research (PER)

TRACK 11: DESIGNING FOR SOCIAL INCLUSION AND PUBLIC ENGAGEMENT

Co-chairs

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- Experience design for public engagement
- STEAM
- STEM communication
- Arts communication
- Socio-economic status
- Social policy

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TRACK 12. INTEGRATING SOCIALLY AND CRITICALLY ORIENTED APPROACHES TO DESIGN EDUCATION

Co-chairs

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Recent literature on design competences reports how design education has changed both its emphases and contexts over the last decades. As design educators, we all seem less concerned with the traditional, technical and designerly skills, than 'soft' skills, which are expected to help design graduates at the job market navigate a wide range of job offerings as curators, coordinators, design thinkers, and strategists. In these roles designers collaborate with a wide range of stakeholders for a seemingly endless range of innovation problems. A common sight in design curricula are those projects that are shaped with social and political considerations: projects where design students work with communities, with schools, with local craftpersons; projects of criticality and fiction

through which they inquire into today's and futures; projects where they learn to position themselves not only professionally but politically within real-world environments. Rather than considering merely to prime our students for a more flexible job market, however, design educators are genuinely enthused by the learning opportunities that socially oriented projects offer: in teaching design students lessons in social responsibility, critical thinking, political awareness, and empathy.

We are interested in papers that contribute to a discussion over possibilities of integrating socially and critically oriented pedagogies in design education. Possible topics are as follows:

- Strategies for integrating social responsibility, critical thinking, feminist epistemologies and intersectional positions, politics of dissent, etc., into design curricula.
- Use of ethnographic, generative and other design research methods in teaching for fostering awareness, reflexivity, criticality and empathy.
- Shortcomings of novel learning models or practices as currently applied in design education.
- Studies of power asymmetries within social, participatory and critical design practices in education, not least between design educators, design students and project stakeholders.

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TRACK 13. SYSTEMIC DESIGN APPROACH FOR TRANSDISCIPLINARITY

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Design discipline is currently undergoing a phase of great and challenging debate, chiefly sprung by the expression and acquaintance of a reality that is intrinsically complex. This feature is still emerging and figures out the world as a sole living system. Design has to face unprecedented social, environmental, political and economical challenges with a new perspective, questioning the

role it plays, its tools and methodologies. This track invites to explore how design, finding itself transdisciplinary and acting so, can face the complexity of issues, actualizing a one design act by the interplay among all disciplines. Moreover, it encourages critical reflections on how disciplinary contamination affects the design pedagogy of present and future generations of researchers and practitioners. Design studies acquire the awareness not to be a self-standing discipline anymore, taking the advance of a systemic thinking. This has been the first real contamination among knowledge and led inter alia to the flourishing of a completely new approach to design, in meaning and doing. From this angle design moves from being solutions supplier to critical reader, with the capacity of grasping facts with an holistic point of view. The current purpose and requirement of design gets close to a social function, assuming a key responsibility in understanding how to manage complex challenges by setting networks of people and professionals to plan mesh of solutions. Systemic design embraces designers' expertise in an advanced position. Based on interconnected knowledge, spins over them to envision and draw strategies by founding relations and implementing a comprehensive cross culture. Contributions are welcomed from students, researchers and professionals from the fields of design, architecture, education, anthropology, sociology, economics, management, environmental sustainability, among others. This track would like to explore, but is not limited to, the following topics:

- Systemic design
- Holistic approach
- Founding relations
- Designer roles
- Fluid disciplinary boundaries
- Multi-Inter-Trans Disciplinarity
- Insider/Outsider knowledge
- Complex issues management
- Design to mediate
- Design to connect
- Mutual strengthening

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Prototyping is central to design and teaching students to prototype well must be central to their education. The scope of prototyping has expanded to enabling each level of study, from undergraduate to PhD, to reify their ideas. We propose a set of topics outlined by Scaletsky et al. (2014), which include developmental, experimental and provocative prototypes. Currently, design education uses studio time for developmental prototyping; learning the process, skills and forms of production. These are useful skills, however it is only one area of prototyping currently covered in design education. There are new pressures on design educators to include topics such as new technologies, added theory, and methods that have changed studio curriculum. What have we learned from the 'prototyping' class? How do we teach designers to learn from making? Can we offer the 'werkbund' experience to all design students where they can produce full-scale prototypes? To paraphrase John C. Maxwell, 'learn fast by failing early and often' describes the strategy of experimental prototyping. The goals of experimental prototypes are not to create something for production, but rather to create something that embodies a theory to be explored. In the experimental type the notion of learning is more strongly bound to the observation of the user and objects in use. Theory is meant to benefit practice as generalizable knowledge that is applied to a variety of scenarios and contexts. Design students at the master's level should be well versed in the experimental form of prototyping. It is uncertain which form of prototyping comes first, experimental or provocative, but it is clear that we use the latter less often in the design process. Using prototypes as a form of brain-storming can help explore new behaviours, challenge presumptions, and offer new approaches to old ways of doing things. Provocative prototypes do not attempt to refine or address research questions but rather challenge people to think in novel or interesting ways. Prototypes are more important to the design process in all forms of design and often underutilized as a way of thinking about design problems. The subject is broad enough for new designers to learn more about their function and to be expanded further by many design researchers. This track would like to explore, but is not limited to, the following topics:

- Developmental - Production prototyping.
- Experimental - Prototype as thought experiment.
- Provocative - Prototype as idea generator.
- Prototypes are central to design - Design education starting with prototyping.
- Boundary objects - Prototyping consensus, collaboration.
- Large format prototypes - Systems designing for scale and complexity.
- Evaluation and analysis of prototypes.
- The dark side of prototyping - Catastrophic failure, fixation, and other prototyping problems.
- New tech beyond the rapid - High and low fidelity, functionality, add-on features.
- Types of prototypes - Aesthetic, functional, structural, alpha-beta-gold standard.
- Observing users - Prototype testing.

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TRACK 14: LEARNING FROM PROTOTYPES

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Bogers, M. and Horst, W. (2014). Collaborative prototyping: Cross fertilization of knowledge in prototype driven problem solving. *Journal of Product Innovation Management*, 31(4), 744-764.

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- Theoretical models for the integration of UX theory and methods into design education.
- Methods developed to familiarise students with UX awareness, tools and skills.
- Equipping design students with technical UX knowledge and skills.
- State-of-the-art examples of applied user research in design education.
- Hands-on experiences in integrating user experience factors into student design projects.
- Contextual design practices in design education.
- Practices of teaching design for special user groups and needs.
- Collaborations with UX industry in educational projects.
- Multidisciplinary collaborations in student UX projects.

TRACK 15. BRINGING USER EXPERIENCE (UX) AGENDA INTO DESIGN EDUCATION

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The rapid technologisation of the work, leisure and educational aspects of everyday life imposes a change in the design practice from object-focused towards a more comprehensive, experiential approach to designed artefacts. The reflection of these transformations on both academia and industry has recently brought about an interest in integration of UX knowledge and skills into the educational programs. Although different fields of design and technology pose varying approaches, we find it vital to develop a multi-faceted yet common educational agenda in order to secure a meaningful position for design students in their upcoming professional lives. Current professional practice of UX shows a strong tendency towards methods and skills relevant to screen-based interaction; all the same, the academia sustains a theoretical interest in instrumental or non-instrumental aspects of the user experience. Focusing on the design of meaningful interactions for users as the major premise of the experiential approach well aligns with the conventions of design education, especially the user-centred design perspective. Although having roots in ergonomics and human factors, user-centred approach in design education has been evolving into an awareness of user contexts, and designing for positive, holistic user experiences. The relevance of the UX process and methods for design education is also evident in recent publications reporting on local, institutional and independent efforts to equip the students with such emerging requirements of the professional life. From this point of view, we aim to create a space for dialogue between design educators and researchers who are interested in integrating UX awareness and skills into design education. We welcome contributions sharing teaching experiences as well as theoretical work aiming at bringing the UX agenda into design curriculum, hence preparing future designers and researchers for the emerging demand in design and technology industry. This track would like to explore, but is not limited to, the following topics:

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TRACK 16. DESIGN EDUCATION FOR SUSTAINABILITY: NEW DIRECTIONS AND DIMENSIONS THROUGH INNOVATIVE METHODS AND RESEARCH

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Design considerations focusing on the diverse aspects of sustainability have become a key source of drive for design education, which would include the development of design solutions in line with local needs and preferences, localization and personalization, open design and maker culture in relation to sustainability, enabling maintenance, repair and upgrade, design for behaviour change, and effective use of resources. To better address and reflect on these considerations, design educators and researchers could incorporate various tools and methods into the

design process, aiming to equip design students with the knowledge and skills related to design for sustainability and help them better understand and internalize sustainability considerations at the early stages of idea generation. Through critical discussion and reflection, and the employment of the innovative and generative tools and methods, design education projects could be effectively tailored to the principles of sustainability. The following items would be suitable to cover as topics under this track, and the list can serve as a guide to those interested in contributing to this track with a paper:

- Design education,
- Sustainability considerations,
- Generative design research,
- Exploratory design for sustainability,
- Design process,
- Localization and personalization
- Post-use,
- Maker culture,
- Open design,
- Effective use of resources,
- Design for behaviour change,
- Circular economy.

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TRACK 17. DESIGN MATERIALIZATION

Co-chairs

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The transition from ideas and concepts held in the designer's mind or on paper into physically achievable artefacts describes a process of 'materialization'. The prevailing approach to materialization has been a staged and rather engineering-dominated process, involving material elimination and selection using material database metrics allied to material family knowledge. Design educators have often complied with this approach for lack of resources or methods

defining alternative ways of teaching and learning materials. The currently developing situation is rather different and more exciting. Materials of today are more dynamic, expressive and adaptable than ever. They make us think, feel, and act in complex ways. Research and case studies on 'materials experience' have grown significantly in recent years. Broadly, this body of work is (a) defining how the practices of material 'selection' are evolving into more complex and active events during material 'creation' and 'appropriation', and (b) establishing the knowledge and skills needed to use materials as an influencer of people's experiences of the designed world. Materialization crucially attends not only to performative but also experiential requirements of artefacts. Introducing design students to this duality and defining confident, creative, engaging and effective ways for its teaching and learning is a major responsibility and challenge for design educators. Traditional approaches no longer adequately deliver.

This track invites contributions from educators using, adapting or creating contemporary methods to teach materials and design. Industrial, product and fashion design perspectives are obvious candidates, but submissions are also encouraged from interaction design perspectives, concerned with the physicality of user interfaces, as well as educational practices within interior design, architecture and the built environment. Of particular interest are submissions focused on teaching and learning of NEU (new, emerging, unusual) and ICS (interactive, connected, smart) materials, especially when exemplified through student projects and coursework. The track would like to explore, but is not limited to, the following topics:

- Material driven design projects
- The material studio versus the material lecture
- Integrating fab-labs and 3D printing in design curricula
- Relevance of 'making' and 'workshops' in contemporary design education
- DIY materials, material tinkering and material design
- Active learning for materials and design
- Educational exercises to learn materials and design
- Tools and methods for acquiring materials experience
- Material resources for design students
- Materialization in the absence of materials

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**TRACK 18. OPEN TRACK FOR EVOLVING SKILL SETS
AND MIND SETS**

This track is open to topics related to evolving skill sets and mind sets such as design education and intellectual property, etc.

DESIGN EDUCATION AND INTELLECTUAL PROPERTY. Educational design projects as intellectual resource; students, tutors and educational institutions as right holders; the use of IP resources in teaching design history and design management; alternative IP management approaches in design education; intellectual property and collaboration with external partners in design education.

OTHER TOPICS you would like to suggest.