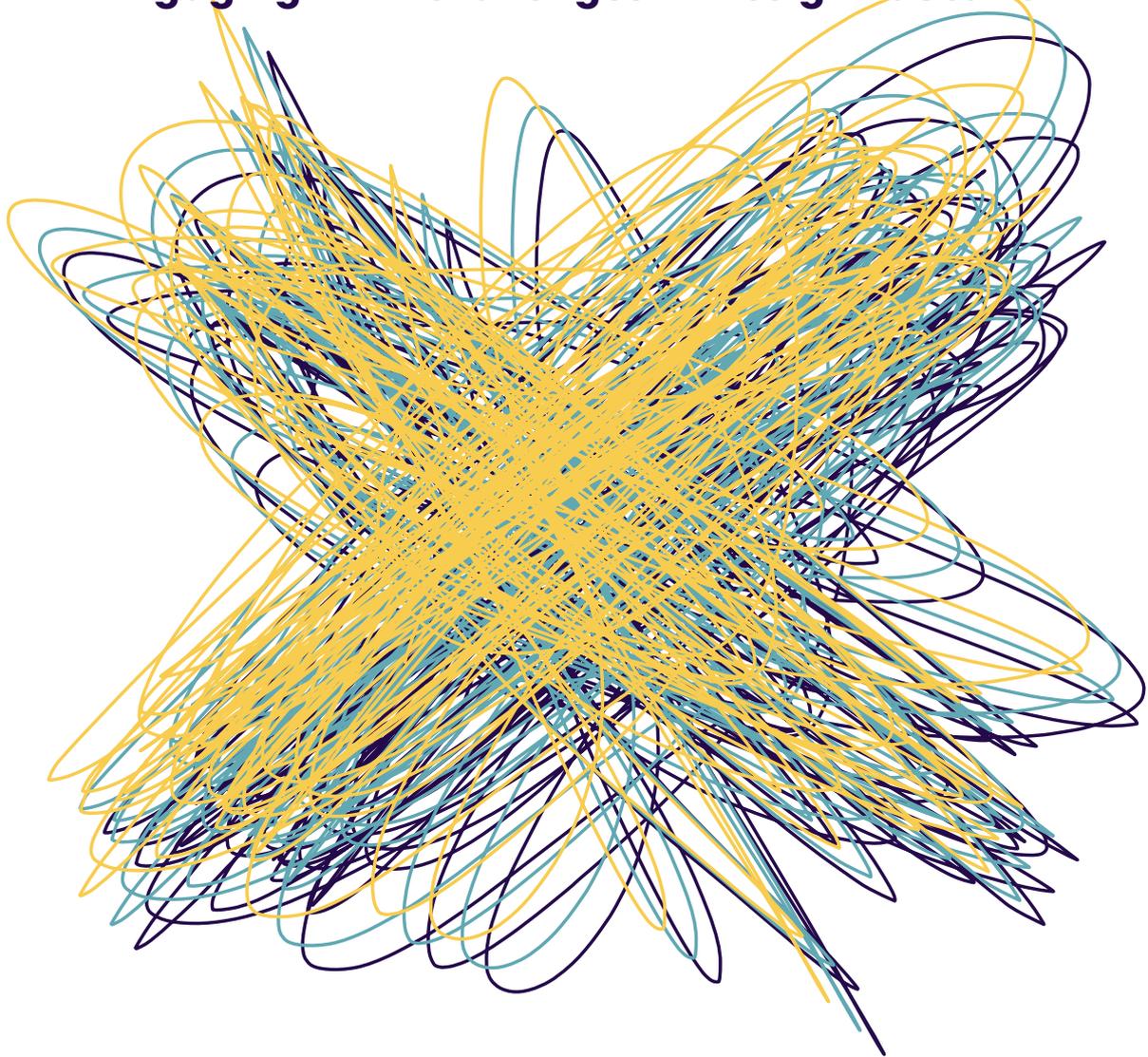


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PROCEEDINGS

DRS LEARNxDESIGN 2021

Engaging with Challenges in Design Education



**6th International Conference
for Design Education Researchers**

24–26 September 2021
Jinan | China

Editors

Erik Bohemia
Liv Merete Nielsen
Lusheng Pan
Naz A.G.Z. Börekçi
Yang Zhang

Proceedings of the DRS LEARN X DESIGN 2021

6th International Conference for Design Education Researchers
Engaging with Challenges in Design Education

10th Anniversary of the International Conference for Design Education Researchers
国际设计教育学者大会10周年

Editors

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Liv Merete Nielsen
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Naz A.G.Z. Börekçi
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Section 04

Collaboration in Design Education: Theoretical and Methodological Frameworks for Learning Through and From Partnerships

Track 04: Collaboration in Design Education

Theoretical and Methodological Frameworks for Learning Through and From Partnerships

Naz A.G.Z. Börekçi, Fatma Korkut and Gülay Hasdoğan
https://doi.org/10.21606/drs_lxd2021.00.319

We made the call for this track with the hope of exploring the benefits and challenges of collaboration in design education, through theoretical and methodological frameworks displaying how various stages of the collaboration are managed, communication between partners is maintained and commitment of parties to design education is sustained. Collaboration carried out in design education, brings with it opportunities and challenges for all parties involved, namely, the university, the students and the partners. Partnerships and collaboration in projects is a significant part of design education, feeding the academy with experiences incorporating different approaches, knowledge and tools, and enriching the overall outcomes. Such collaboration provides insights to the academy on the expectations of various partners from the professionals of design, affecting in return how the professionals-to-be are equipped in design education with the knowledge and skills related to their field.

Ideally, all parties benefit and learn from a collaboration project. For the university, the benefits may be related to access to and acquisition of resources, future collaboration possibilities, obtaining new points of view, experimenting with new methods, gaining new knowledge, developing know-how, and finding support for new research in the area. For the students, the benefits may be related to access to practical and theoretical knowledge in the area, raising the quality of educational deliverables, learning to collaborate across disciplines, and the possibility of future professional experiences through this collaboration. For the partners, the benefits may be related to access to educational know-how, tools and methods, being updated on latest research in the field, acquiring academic expertise and consultancy, obtaining insights from a young population, gaining insights into local users and practices, and getting to know the oncoming pool of human resources.

There also are many challenges related to such projects, influencing how the various stages of collaboration are managed, such as forming of partnerships, initiation of collaboration, building the right channels of communication and sustaining them through the right means, conducting and completing the process, assessing the overall outcomes in terms of all parties involved, and making projections for future collaborations.

We recently observe changes in the patterns, types and means of collaboration in design education, which have speeded up following the outbreak of the Covid-19 pandemic. With these new patterns, the exceptional has become the regular; collaboration has become global while shrinking distances and adjusting paces, raising an interest in “what others are doing”. The physical barriers have collapsed, with new barriers arising, such as language, and access to software. With all difficulties aside, in some aspects it has become easier to reach out, invite, access and contribute: We exchange academics, researchers, experts, consultants, students, communities, and individuals of interest; we exchange experiences, knowledge, ideas and methodologies; we document, record and share these collaborations. We have deeply explored alternative communication channels, developed new intervention measures, embraced new mindsets, and acquired new skill sets for these evolving patterns of collaboration.

In the light of the above-mentioned issues, with this theme, we made our call for papers, case studies and workshops sharing collaboration approaches and experiences within the context of semester projects, graduation projects, live projects, research projects and other types of collaboration carried out in academia, including the spectrum of connected working, with the common purpose of serving design education and research. The questions we addressed included, but were not limited to, the following ones:



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- Why do we collaborate in design education? How do we set our educational objectives and pursue these in collaboration projects?
- How do we select our partners? How do we maintain communication and commitment?
- What are the frameworks for a successful design education collaboration experience?
- How have our collaboration models evolved, and what are the projections for future collaboration models?
- What are the students' perceptions of the collaboration experience? What is the impact of collaboration on student learning, engagement and satisfaction?
- What have we learnt from collaborating in design education in the Covid-19 pandemic, and how has this reflected on our know-how, collaboration approaches, educational objectives, practices, and coping strategies?
- What are the research opportunities that arise from collaboration projects and how can design education benefit from this?

Responses to the Call and Their Scope

Twenty-one submissions were made for this track, with 13 of them being accepted. Among the accepted submissions we have eight research papers, four case study papers, and one visual paper. Thirty-four colleagues were involved in the two rounds of review process and we would like to thank them all for their contribution.

Collaboration with non-profit organizations (NPOs) has been increasingly on the agenda of design education. We have been witnessing an ever-growing interest in developing more inclusive, generative, and thus more sustainable responses to diverse societal and environmental challenges, preparing a fertile ground for win-win collaboration projects with NPOs in the educational context. In their paper titled "Tutors' Perspectives on NPO Collaboration in Industrial Design Education," Yalman-Yıldırım and Hasdoğan explore the NPO collaboration experiences of industrial design programs in Turkey in the last decade. The interviews conducted with 20 tutors across ten industrial design programs revealed a shared focus on design for sustainability: The project topics concentrated on special groups, local development, and environmental issues; the pedagogic approaches highlighted participatory and co-design, inclusive design, and new instructional practices. The study also developed an extended classification for NPO collaboration based on collaboration initiation: tutor-driven, NPO-driven, and student-driven.

The visual paper titled "Towards Radical Synergy for More Just and Equitable Futures" by Bennett, Eglash, Graf, Butoyila, Johnson, Low and Rocha takes a critical stance towards the mainstream understanding of innovation and design depicted as regenerating our global social, technological, economic and environmental problems. Inspired by the Tuareg triangle from North Africa, the nested triangles visualize the interplay of the four components of radical synergy: deep collaboration informed by anti-racism and decolonization, integrative critical analysis, and integrative design thinking and making. The paper reflects on the pedagogical concept of radical synergy, its impact on the MDes program in Integrative Design at the Penny W. Stamps School of Art and Design at the University of Michigan, and how this approach has been practiced in community-based collaboration projects. The authors declare that the possibility of radical synergy lies in adopting "design curricula that integrate critical perspectives (anti-racism, decolonization, feminist theory, etc.); material analysis (sustainability, political economy, labor emancipation, etc.); and democratization (participatory design, community-led design, emancipatory design, etc.)."

In their paper titled "A Format to Bridge the Transition From University to Work: Insights From the Product-Service System Design Tour Development", Taverna and De Sainz Molestina report a digital extracurricular activity developed for the MSc program in Product-Service System Design (PSSD) at Politecnico di Milano in collaboration with an advisory board, the program students and the alumni. The activity "PSSD tour" aims to enable the graduate students to explore the diverse areas and practices the service design sector has been involved in through the conduct of remote interactive sessions bringing student groups together with collaborating partners. The paper also identifies the factors that impact the success of the tour format as well as the challenges, good practices, and opportunities.

The latest developments in production technologies have reflected upon the skill sets of craftspeople, highlighting the value of craftsmanship, and building on the know-how of SMEs involved in design development. Production models have digitally evolved, requiring that establishments acquire new skills in management and logistics. These developments have also been an influence on the qualifications that the graduates of design programs possess. In their paper titled "Educational Programs in Between Design and Supply Chain: Significant Examples of Academia-SMEs Joint Labs in Italy", Goretti and Denaro give examples of

collaboration between academia and SMEs in the form of joint labs. The programs supporting these joint labs bring together design students and SMEs in the furniture industry, providing educational and career opportunities for design students, and skills acquisition for the SMEs on digitizing their management processes.

As a well-established instrument in design studio pedagogy, especially at the undergraduate level, collaboration with external partners deserves explorations from alternative perspectives including geographical and historical ones. "Collaboration Practices in Industrial Design Education: The Case of METU From a Historical Perspective, 1981-2021" presents a retrospective study spanning four decades - the entire collaboration history of the department established in 1979 in the Turkish republican capital Ankara. Börekçi, Hasdoğan and Korkut identify five periods of collaboration and narrate the challenges and dynamics of a relatively disadvantaged campus location in terms of proximity to established industrial regions. The study attracts our attention to hard-learned lessons and effective internal strategies in the face of a multitude of external factors: Developing pedagogically specialized *project schemes* for collaborative "semester projects" and senior year "graduation projects"; developing separate project topic pools and *project process templates* matching the pedagogic needs and goals of each studio year; building and diffusing the collaboration culture from upper-year to lower-year design studios; and coupling graduate research with undergraduate design studio practices for developing generative methods and tools to gain a first-hand understanding of local users and support various stages of the design process in educational projects.

One of the major consequences of Covid 19 Pandemic is emergency remote teaching and distance education. In their paper titled "Socially-Engaged Distance Design Collaboration: A Study on the Effects of Digital Collaboration Over Design-Based Creativity" Aysel and Güvenir discuss the affective learning outcomes, creative and design self-efficacy and visual literacy levels of design students, through the results of a survey they conducted with first year industrial design students in a university in İzmir, Turkey. They conclude that digital collaboration tools provide a ground for socialization and group work. The resulting interaction serves as a motivational support for students, and leads to an increased level of self-awareness.

Based on the data collected from team design sessions in a craft design course of a Finnish university, Omwami, Lahti and Seitamaa-Hakkarainen examine the meanings that craft-education students give to collaboratively created mood boards in their paper titled "Reflections on Shared Mood Boards: Examining Craft-Education Students' Conceptual Design". Their analysis has shown that moodboards played a major role in the idea development processes of students. The meaning came from the active role that the mood board played in the collaborative idea development process and in expanding students' idea space. In the individual processes however, the mood boards were found to have a limiting and superficial meaning.

University educators can convey their knowledge about the design process to prior levels of education through collaboration. Through a case study, in their paper titled "Preparing to Introduce Design Thinking in Middle Schools: Critically Examining Planning Processes Involving School Officials and Design Educators" Gibson, Owens, Hyland and Donaldson critically analyse and describe knowledge gained by a team of university-based design educators and researchers who worked on introducing specific aspects of design thinking in middle school classrooms in Denton, Texas, USA.

Based on quantitative and qualitative data gathered over a span of eight years, Murdoch-Kitt and Emans explore in their paper titled "Improving Intercultural Collaboration With Visual Thinking", the productive and creative potentials of visual thinking in promoting a sense of inclusion in multicultural and diverse remote teams. Besides bringing an inclusive approach to design in the learning environment, process-based and hands-on visual thinking activities will support collaboration that is broken free from unconscious biases, and open up opportunities for dialogue and constructive discussion. The authors suggest a framework and provide examples of activities, methods and strategies for intercultural collaboration.

Hilton, Gao and Wei introduce to us their experiences of collaboration with international partners with multidisciplinary and transcultural groups of undergraduate and graduate students. In their paper titled "It's the Cultural Difference That Makes the Difference", they provide an overview of the collaborative online international learning projects coordinated between two universities from China and the UK, carried out in the past three years. Presenting the collaboration framework and the project conduct they offer insights from student experiences regarding transcultural collaboration, teamwork, project success, impact on employment prospects following graduation, communication, and pedagogic significance.

Intercultural engagement in design education has also been explored in the paper by Li, Gray, Toombs, McDonald, Marinovic and Liu, in their paper titled "Cross-Cultural UX Pedagogy: A China-US Partnership", this time also from the perspectives of instructors, besides the students. The paper reports on the creation, execution and iteration of two UX-focused programs, one in China and one in the United States. Besides offering insights of all parties involved in terms of impact of culture on experience, interaction with industry

partners, program and course expectations, and potential job roles, the paper also provides directions for action-oriented design education research.

The Covid-19 pandemic has been detrimental in the collaborative and creative traditional design education practices; students are in need of opportunities to engage in person, with each other and with the faculty.

Radtke, Dewhirst, Brewer and Schmidt address this issue in their paper titled “Process Based Collaborations: Spanning Boundaries for Future Provocations”, from an interior design education perspective. A

multidisciplinary platform for making and creating has been developed for a series of multimodal, maker-based experimental workshops. The collaborative nature of these workshops lies in the merging of interior design courses and design communication courses, with the contribution of external design experts from the field, and the participation of graduate students and undergraduate students from different years.

The process of identifying educational priorities requires consultancy from academic committees and councils that play a role in the determination of policies for design education and strategies for its improvement. In their paper titled “Advisory Committee Structures of Chinese Design Schools: Research From the Sustainable Development Goals (SDGs) Perspective”, Chen, Li and Yang explore this issue in reference to the SDGs that have come forth particularly since 2019. Analysing the advisory committees in Chinese design schools, they identify the expertise of the committee members and their role in the determination of institutional strategies regarding educational priorities. They establish that for an integrated approach in the attainment of the SDGs, expertise from various other fields is required besides traditional design subjects, sought both within the universities and also through collaboration with external enterprises.

Insights and Projections for the Future

As design educators, researchers and students, we are learning from institutional partnership collaborations, international collaborations, collaborations with experts, and collaborations for teamwork among students, all reflecting on the qualities of the design education we provide, and shifting the priorities given. These collaborations enrich the educational experiences, allowing partners to learn from one another. We see a body of work involving remote and on-site, national and international, multicultural and multidisciplinary collaboration, with a focus on cooperation in curricula development, course conduct and methodological framework development for studio projects. The future directions for design education research on collaboration in design education seems to point towards the learning experiences provided for students, cognitive processes involved, and how expertise and know-how of collaborating parties contribute to design education and the development of skill sets and mindsets for the future design professionals. We thank all the authors for their contribution to this track.

Indicative References

- Bohemia, E., & Harman, K. (2006). Boundary Crossing: Negotiating Learning Outcomes in Industry Based Student Projects. In W. Aung & C. Crosthwaite & R.V. Espinosa & J. Moscinski & S.-H. Ou & L.M. Sánchez Ruiz (Eds.), *Innovations 2006: World Innovations in Engineering Education and Research* (pp. 179–192). Begell House Publishing.
- Börekçi, N.A.G.Z., Kaygan, P. & Hasdoğan, G. (2016). Concept Development for Vehicle Design Education Projects Carried Out in Collaboration with Industry. *Procedia CIRP*, 50(2016), 751–758. DOI: 10.1016/j.procir.2016.04.109
- Börekçi, N.A.G.Z. & Korkut, F. (2017). Collaborating with External Partners in Industrial Design Education: A Review of Success Factors. In G. Pritchard & N. Lambert (Eds.), *Proceedings of the Learn X Design London 2017 Conference: The Allure of the Digital* (pp. 184–191). Ravensbourne Publications.
- Kaygan, H., Demir, Ö., Korkut, F., & Güngör Boncukçu, I. (2017). Encounters and Shifting Identities: Students’ Experiences of Multi-stakeholder Participatory Design. In E. Bohemia, C. de Bont, & L. Svengren Holm (Eds.), *Conference Proceedings of the Design Management Academy 2017: Research Perspectives on Creative Intersections* (Vol. 5, pp. 1685-1702). The Design Research Society.
- Maxwell Lane, M. & Tegtmeyer, R. (Eds.) (2020). *Collaboration in Design Education: Case Studies and Teaching Methodologies*. Bloomsbury Visual Arts.
- Tucker, R. (Ed.) (2016). *Collaboration and Student Engagement in Design Education*. IGI Global.

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