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DESIGN RESEARCH INCUBATION: REFLECTIONS ON HOW TO FOSTER DESIGN RESEARCH.

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ABSTRACT | The contribution outlines a research project exploring the supervision of design research. ‘Design Research Incubation’ aimed to foster exchange between different perspectives on design research from regional and disciplinary contexts. It also searches to contextualize design research within more expansive geographical environments of centres and peripheries. These goals were motivated by our observations that the nature of design research in relation to design practice and research in other subjects often confuses students, supervisors, and colleagues. Additionally, interpreting research findings requires an understanding of cultural, demographic, socio-economic and geographical contexts.

The research was a collaboration between the German University in Cairo (GUC) and Anhalt University of Applied Sciences in Dessau (HSA). Both institutions have diverse student and faculty populations. At GUC, design students from various backgrounds in Egypt study with an internationally diverse faculty. Anhalt University offers two English-language design master programs and has research centres in architecture and design.

1. Introduction

The project brought together six design master students from the German University in Cairo (GUC) and their peers at Anhalt University of Applied Sciences in Dessau Germany to discuss their design research projects. Workshops focused on critical reflection, including clarifying research questions and projects, relating theoretical and practical research, and visualising topics and processes.

Observations from these discussions prompted the development of a 'speculative course book' compiling sources to support design research supervision. It includes five modules: 1) Design Research as an ethical position, 2) Design Research as an expedition, 3) Design Research as knowledge circulation, 4) Design Research as context, and 5) Design Research as supervision. The modules are not finalised course descriptions but provide conceptual and practical guidance on engaging with different phases when supervising a design research project. The defined modules may help to enrich environments and processes for conducting and supervising academic design research in most settings, such as master or PhD programs in other regions of the world. At the same time, these modules aim to encourage attention to contextually specific characteristics in different cultural, demographic, socio-economic and geographical environments.

One of the main challenges deals with uncertainty student researchers experience in the design research process. In their studies students have come to rely on following the rulebook and applying design methods, e.g. design thinking, often in a top-down process, which makes them feel safe. As design researchers however they have to resist the urge of applying this top-down rationality, but instead remain open to new findings and emergence. For many this resilience to insecurity is a challenge and needs to be learned (Hall & Hohl, 2023).

The course book invites others to contribute ideas and join ongoing discourse and experimentation in the field. It is a starting point for collecting a broader range of supervision materials and further exploring design research's nature, scope, and methodologies of design practice and research relating to other disciplines. Therefore, we invite interested parties to join us in expanding this peer-to-peer exchange and developing frameworks, strategies, and practices for further design research supervision in different regional and institutional settings.

2. Course Book as a Sourcebook: A Critical and Speculative Compilation of Ideas, Concepts and Tools to Support Design Researchers

During our research project, each of us was supervising design researchers. Anhalt University offers three design master programs. One is the Master of Arts in Integrated Design (MAID), and the other is the more cultural history-oriented Master of Sciences COOP Design Research in cooperation with the Bauhaus Dessau Foundation and Humboldt University in Berlin. Both are conducted in English, while the Master of Arts in Intermedial Design (MID) is mainly in German. Anhalt University also has specialised research centres, such as the Centre for Doctoral Research in Architecture and Design and the Materiability Lab. Most master students in Dessau pursue their postgraduate studies as full-time students. At the GUC, students pursue their Master of Sciences in Design individually under supervision by one of the faculty members. Prior, they complete the so-called premaster year, consisting of semesters nine and ten of their bachelor studies. In Egypt, a bachelor degree requires ten semesters of study, but the curriculum at the GUC adapts a typical German bachelor curriculum of eight semesters. In these semesters nine and ten students complete compulsory studio and theory courses, required for obtaining a bachelor degree. However, those students who wish to can use those courses, which they share with the whole bachelor batch, to prepare for a potential master thesis. These two semesters then become also the first two semesters of a three-semester-long master program. However, in reality, those students who are interested in a master degree usually begin a new research project after the premaster year and spend longer than one semester on completing a thesis. Most of them are also teaching assistants and conduct their research part-time.

Despite the differing formats and conditions of the master programs at Anhalt University in Dessau and the GUC in Cairo, as supervisors of young design researchers, we found that our experiences overlap. Thematic areas or challenging phases in the research process, e.g. identifying research interests while new design concerns continue to emerge do not differ much for design researchers and supervisors in Cairo and Dessau. Therefore, we defined five modules, which form the basic structure of the publication ‘Design Research Incubation’. The modules take the style of speculative course folders. They are not finalised course descriptions with defined learning outcomes, readings, tools and other materials but try to provide food for thought for engaging conceptually and practically with a design research project during different phases. We extracted the following five modules from our discussions during the project:

1. Design research as ethical position: How to identify values, mindset and principles
2. Design research as expedition: How to immerse into an unknown voyage
3. Design research as knowledge circulation: How to structure, express and communicate research in a thesis
4. Design research as context: How to embrace diverse circumstances in research
5. Design research as supervision: How to be accompanied in the design research process

The book also briefly documents our research visits to Dessau and Cairo because many of the ideas for the modules emerged during the conversations with the master students who participated in this research project. They made us realise that our initially anticipated goal to formulate guidelines for supervising design research was probably not the most helpful outcome due to the manifold topics and their different research requirements.

The modules are a starting point for collecting more helpful material for design research supervision. Moreover, they aim to foster a broader discourse on design research relating to design practice and research in other subjects. What are the nature and the scope of design research projects? How do they differ from the research inherent to every design project regarding users, target groups, market surveys, resources and the like? What implications do such differences have on methodological approaches? How can we debate and explore design research with students embarking on this journey? Other researchers have already discussed these questions (Findeli, et al, 2008). We consider our course book as speculative because we speculate about how to foster design research conceptually and practically in the five modules, which are briefly outlined in the following section.

3. Course Book Modules

3.1 Module 1 – Design Research as an Ethical Position: How to Identify Values, Mindset and Principles

In the design realm, practicality, ingenuity, and empathy guide the process alongside skills acquired during education (Cross, 2006, p.3). However, for emerging academic design researchers, additional emphasis is placed on ethics, critical thinking, and meticulousness. This transition challenges the conviction of designers with the scepticism of academic researchers. The mindset of a researcher calls for critical thinking, self-awareness and humility in order to navigate ambiguity and diverse perspectives. Therefore the following aspects gain importance:

Posture and mindset: Terry Irwin (2015, p.235) argues that “Living in and through transitional times requires a mindset and posture of openness, mindfulness, self-reflection, a willingness to collaborate, and ‘optimistic grumpiness’.” As designers we might be experts, but as academic researchers we are becoming learners again. We might be wrong, and we might make errors. Our perspective is one among many different perspectives.

Practice-based design theory: Design research discussions aim to engage with practice and theory equally, integrating theoretical knowledge into practical contexts and vice-versa. The goal is to foster knowledge of practices within academic institutions while ensuring discussions reflect the diverse domains and communities represented (Hohl et al, 2020).

Ethics and aesthetics: Balancing efficiency and effectiveness by acknowledging the impossibility of perfect objectivity. Second-order cybernetics views the observer as a part of the observed system, where he influences the design and research process. Reflective practitioners consider both efficiency and effectiveness as important, weighted by the values of the ends achieved. They recognise the impact of their values, postures and mindset on expectations and interpretations (von Foerster, 2003).

Gatherings: These encounters provide inclusive spaces for diverse perspectives on design research, encouraging reflection and challenge. Regardless of background or experience level, participants contribute insights from lived experiences. The following rules of engagement in gatherings guide the ethical position of design research, promoting critical reflection, inclusive dialogue, and ethical conduct in academic discourse:

- Gatherings as spaces where teaching, learning, and research intersect, inviting all references and insights from all parts of lived experiences of people with diverse backgrounds and experience levels who participate;
- Respectful disagreement with a generous attitude towards all present;
- Use straightforward language to make the forum accessible to everyone, never assuming that other people know what we know, always avoiding name-dropping, unsubstantiated references to unexplained arguments, and explaining the meaning of jargon if it is necessary;
- Use English as the language of communication while welcoming comments and questions in the language the participants feel comfortable with which experienced members will help to translate;
- Inclusivity, where in case of specific accessibility needs, the organisers will find solutions;
- Respectful treatment of everyone (in presence and online) and the creation of a welcoming environment, for which everyone takes care that the behaviour meets these standards;
- Empathy to the vulnerabilities of others and avoidance of violence through words or images, discussing with experienced members and organisers if there is a need to share potentially disturbing material.

3.2 Module 2 – Design Research as Expedition: How to Immerse into an Unknown Voyage

Aspiring design researchers, such as master students, often enter their projects with preconceived notions of the outcome – a product, a campaign, or even an app. However, this assumption highlights a common misunderstanding: the belief that the research result is predetermined. However, design research diverges from traditional design practice as it involves exploring abstract concepts through practical experimentation and theoretical reflection alike.

Design research encompasses diverse approaches, including investigations about design historical and contemporary practices as well as practice-led inquiry where design work is used as a research method to explore the concerns and questions at hand, e.g. how to bring innovative practice in different design disciplines forward. Research results may not necessarily be final design projects but critical analyses, speculative concepts, or frameworks guiding future design practices. Challenging the notion that design researchers must solely solve problems, the process is more about embracing open-ended exploration. Practice-led research involves continuously asking and expanding the canon of questions, experimenting and offering valuable learning opportunities through successes and failures alike. Embracing the uncertainty and serendipitous discoveries enriches the research journey, leading to novel insights.

In fostering rigour, honesty, and values in research, doctoral-level and master-level inquiry demands critical, reflective, thorough, exhaustive, accurate, systematic, and honest approaches. This rigour emphasises both breadth and depth of understanding and a commitment to questioning assumptions and scrutinising every facet of the research process.

A proposed course on critical thinking in design research aims to equip students with theoretical and practical competencies. Students develop critical thinking skills for innovative design research by exploring diverse research methodologies, perspectives, imagination and storytelling, and engagement with diverse cultural knowledge systems (Escobar, 2017). The course shall encourage students to apply design research methodologies to real-world challenges with a critically reflective mindset. The preliminary syllabus covers fundamental concepts of design research, practical research methodologies, and the application of critical thinking to design projects. Students will engage in critique sessions and presentations, fostering intellectual growth and creative problem-solving skills. The course syllabus serves as a framework, adaptable to meet students' and instructors' evolving needs and interests by facilitating a dynamic learning environment. Three relationships we found to be vital for developing a researcher mindset in design (Fig.1):

1. Making and practice through ideas that are developed and refined;
2. Research questions that emerge from design problems in design practice;
3. Importance of embracing failure and error in practical experimentation for research insights.

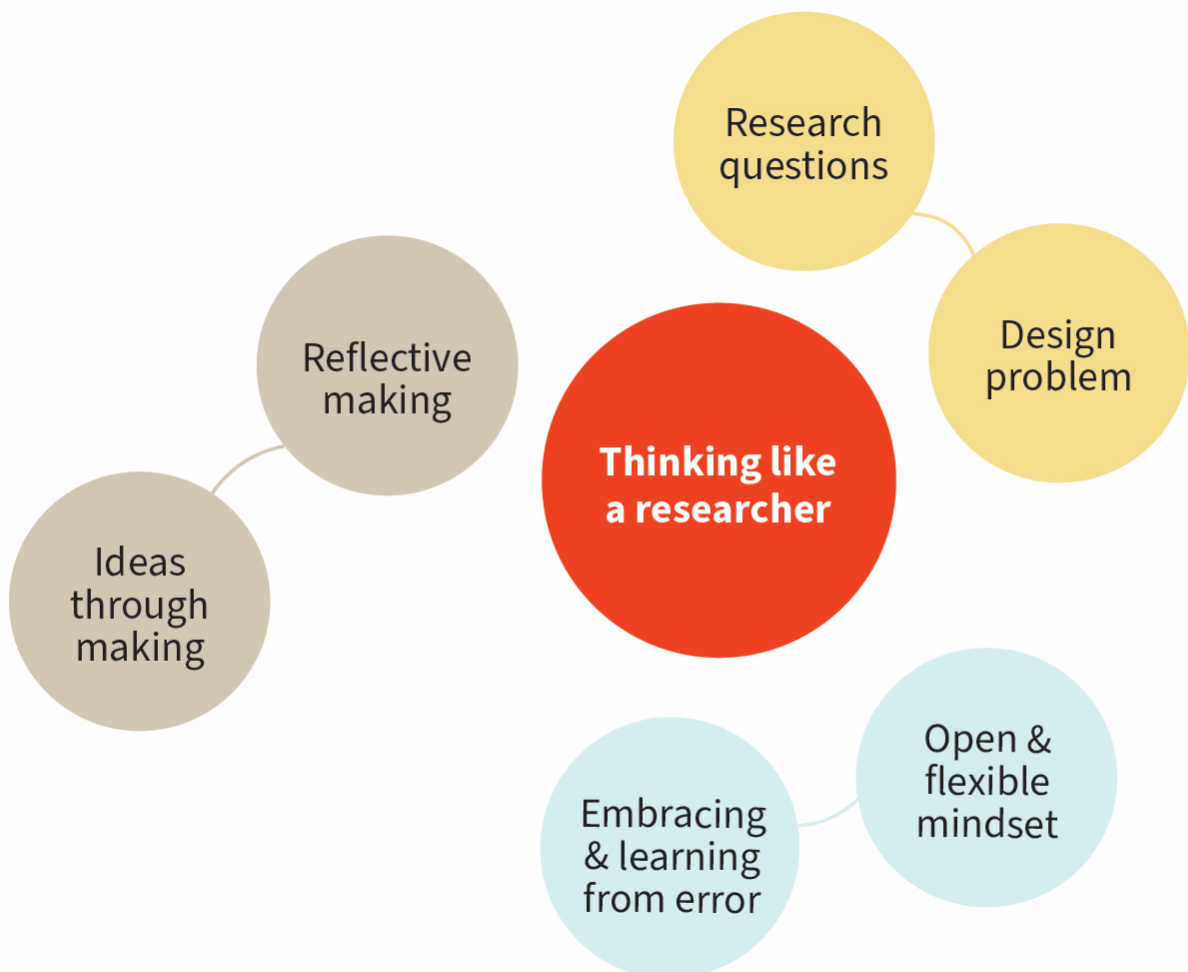


Figure 1. Mindset of a researcher. Developed by the authors during the research project.

3.3 Module 3 – Design Research as Knowledge Circulation: How to Structure, Express and Communicate Your Research in a Thesis

Design researchers, especially new ones, often conduct their research with much consideration. They define a research methodology, collect data accordingly, and try to make sense of their insights. They experience the highs (when making exciting discoveries) and lows (when being lost and confronted with more questions than answers) like many other researchers.

Writing a thesis about their research process and results is challenging for most design researchers. They never got used to writing. Structuring and writing texts have usually not been at the core of their previous studies. Unlike students and professionals of other academic disciplines, designers do not usually write much apart from small descriptions in project presentations and documentations.

However, the ability to communicate design research projects is vital (Fig. 2). We think it would be beneficial to design a course that focuses mainly on academic writing skills for designers, including hands-on exercises and developing competencies in using up-to-date digital tools. A course description could look like this:

Course description: Reflective writing and communication

Effective communication is vital for design researchers to share their insights and findings. However, many designers face difficulties structuring and expressing their research in a thesis format. This course addresses this gap by equipping students with practical knowledge and insights in reflective writing and communication. Students will learn how to apply language effectively, ensuring correctness, clarity, engagement, and delivery. Additionally, they will gain proficiency in standard academic writing rules, language styles, and citation formats. Emphasis is placed on utilising digital tools for writing, particularly for non-native English speakers.



Figure 2. Impression from the workshop in Dessau, 2023: gatherings and discussions on communicating design research projects.

3.4 Module 4 – Design Research as Context: How to Embrace Diverse Circumstances in Your Research

Design research necessitates understanding context, which we define as the circumstances surrounding an event or idea. This contextual awareness is crucial as it influences the thematic focus, research methodology, and outcomes of design research endeavours. Various factors, such as geographical

location, cultural norms, and socio-economic conditions, significantly impact research processes and conclusions.

Design topics may initially appear universal but require consideration of diverse contextual factors. For example, waste management strategies differ between Cairo and Berlin, Egypt and Germany, and other places, or between rural and urban areas. Similarly, cultural attitudes towards consent and data collection methods vary. For example, Egyptian students face problems when they ask informants to sign consent agreements as informants become suspicious of the researcher and less willing to share information freely. Accessibility to research locations and power imbalances caused by demographic and socio-economic differences between researchers and participants affect many research processes. Moreover, context extends beyond tangible factors to encompass differing worldviews and knowledge systems. Clarifying understandings and avoiding assumptions are vital when engaging with participants from diverse backgrounds. In feminist theory, context is an intrinsic component of situated practice, highlighting the interconnectedness of circumstances within a specific situation:

“We do need an earthwide network of connections, including the ability partially to translate knowledges among very different – and power-differentiated – communities. We need the power of modern critical theories of how meanings and bodies get made, not in order to deny meanings and bodies but in order to build meanings and bodies that have a chance for life.” (Haraway, 1988, p.580)

On a different level, looking at feminist theory also offers a valuable perspective on the ‘context’ of young design researchers. Following Donna Haraway, only “situations” exist, including the circumstances creating the situated practice. According to feminist sociologist Adele Clarke, context does not exist outside the actual situation but is a component of a specifically situated world: “The conditions of the situation are in the situation. There is no such thing as ‘context’” (Clarke, 2005, p.72). The diagram of a situation mapping presents all conditions influencing a master student’s situation besides the thesis project (Fig. 3).

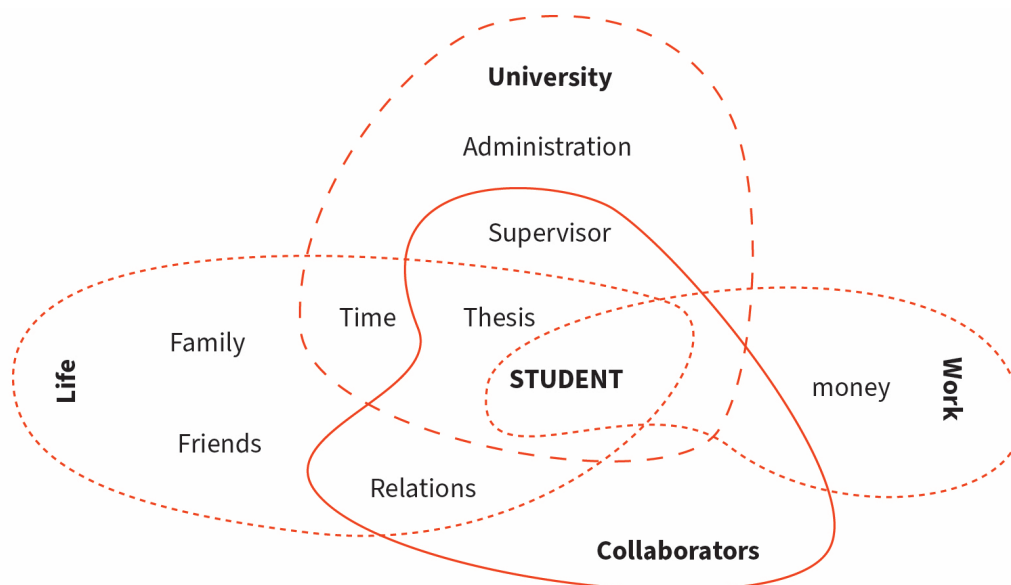


Figure 3. Situation mapping of doing a thesis.

Transitioning from design practice to academic research can evoke vulnerability and uncertainty. Accustomed to confidence in the creative process, designers may struggle with doubt and scepticism in research. Furthermore, designing is a research-driven process, blurring the distinction between the role of the designer and the researcher. In conclusion, embracing diverse circumstances is integral to effective design research. By acknowledging and navigating contextual complexities, researchers can generate nuanced insights and contribute meaningfully to their different fields of interest.

3.5 Module 5 – Design Research as Supervision: How to Accompany a Design Research Process

This module briefly outlines our view of design research supervision at the master and doctoral levels. We discuss the roles and responsibilities of the supervised learner and the supervisor.

Supervisor: In our view, a supervisor is a ‘guide on the side’. It is not the supervisor’s thesis project. He or she tries to support the learners in finding their way, thus taking ownership of their research and learning process. Supervisors guide through recommendations, giving information, and communicating reliably, regularly, constructively, and clearly. We also strongly support the idea that those who supervise thesis projects have regular exchanges with other supervisors, sharing their observations, knowledge and experiences and recommend offering workshops for supervisors about supervision responsibilities.

Learner: What can the supervised student expect from their supervisor?

At the first meeting:

- Information about roles, expectations and timescale, the relationship between project work and written thesis, theory and practice, assessment criteria, ethics, honesty, and consequences of cheating and plagiarism;
- Agreement on the frequency of meetings, possibly more frequent in the early research stages.

During the process:

- Time for regular meetings and tutorials;
- Relevant and constructive feedback;
- Timely responses to email enquiries.

From the supervised design researcher/learner the following is expected:

- Responsibility for their research process;
- Honest communication with their supervisor;
- Motivation and reliability;
- Preparation for tutorial meetings;
- Reaction to feedback from supervisors;
- Own decisions regarding the research project and discussions about those decisions;
- Establishment of practical and theoretical knowledge to build on;
- Management of own work plan, including goals and pace of work;
- Clear communication that includes worries and doubts;
- Acceptance of advice;
- Proactivity in sending agreed outputs on time.

One critical message supervisors can communicate to young design researchers is that finding answers to questions can be limiting. Research that opens up more questions and hence inspires further research can be classified as successful research (Fig. 4).



Figure 4. From answers to questions to wonder and curiosity in research (adapted from Wesch, M., 2014).

In school, students learn that knowledge is about how to answer correctly. In graduate studies, young researchers might learn how to ask questions, have discussions and realise that beyond the syllabus, knowledge is steeped in ambiguity and controversy, that there are different perspectives, and that there may be many possible answers, perhaps none of them entirely satisfying.

As reflective practitioners (Schön, 1984) and researchers, those researchers also learn how to reflect, question and be sceptical. As researchers, it is here where they might find new avenues for research worth exploring. However, they must suspend their desire for certainty and learn to embrace ambiguity, uncertainty, and curiosity, and as such trust that through the research process new insights will emerge. They must become more interested in questions than answers, as questions, observations, and critical thinking may drive their research and learning. It may conflict with their learned stance of seeking answers instead of seeking questions. Sometimes, unlearning is the most promising road forward.

At the beginning of an academic design research expedition usually comes the proposal that outlines the research interest and its methodological approach, which is not an easy task. In order to support design researchers at the starting point of their expedition, the following worksheets have provided supportive guidance since they were first introduced to prospective GUC master students (Table 1).

Table 1. Support for framing a design research topic.

01. What design research topic do you propose?		
Guiding questions:		Open questions and comments:
What is it that you are interested in?	How did you become interested?	What are you still insecure about?
What do you want to investigate?	From your personal experiences?	
What are your questions?	From your academic experiences?	
What challenges do you observe?	From your professional experiences?	
02. What is the character of your research?		
What makes your research design research?		Open questions and comments:
What distinguishes your research from research in other disciplines?		What are you still insecure about?
Are you researching design practice, historical or philosophical design aspects or design by others?		
Are you researching through design by exploring through practical design experiments)?		
Are you researching for design (improved design practices)?		

03. What is the story of your topic?

Problem statement:

Tell a story of how and why you became interested in exploring this topic.

Open questions and
comments:What are you still insecure
about?

04. What are your research questions and your purpose statement?

Narrow down your primary research question(s): Purpose statement:

Based on your responses above, state what you
want to explore in question form here!

Try to make it as focused and specific as you can.

What are your questions?

Turn your question into a purpose
statement, which conveys the same
information as the research
question(s) Example: 'The purpose
of the study is to ...'State why your research is significant and
to whom?Open questions and
comments:What are you still insecure
about?

05. What is your methodological research approach?

Anticipate your research

Research changes in the process, but it is good to anticipate how you will find out
what you are interested in — even if you might not implement it exactly like this.

Describe how you think of conducting your research!

Which research methods do you have in mind?

Open questions and
comments:What are you still insecure
about?

06. How would you visualise your research process?

Sketch and map different aspects of your research:

Interest

Methods

Involved research partners

Locations

Open questions and
comments:What are you still insecure
about?

07. Which terminology do you need to familiarise yourself with and define?

Clarify terminology:

Which terms belonging to the field of your research interest are unclear to you?

Which ones are ambiguous?

Define them for your research based on dictionary definitions or literature specifications!

Open questions and
comments:What are you still insecure
about?

(Based on worksheets prepared in 2022 by G. Kulick using a preliminary worksheet set developed by R. Sadik in 2013)

4. Reflections: What We Think is Needed for a Better Design Research Supervision Ecosystem

So, what can we do as supervisors to mitigate the confusing situation experienced by practitioner-researchers, pay attention to cultural, socio-economic and other differences and as such also negotiate the tension between centre–periphery when it comes to applying research methods and ethics in design? Summarising this paper, our common experiences across different cultural and institutional environments regarding design research and the supervision of design research include (but are not limited to):

For the young design researchers:

- The difficulty of trusting an open-ended research process instead of pretending to already know the outcome at the beginning of the research process, which would feel safer;
- The confusion about the role of design practice in design research and the resulting negotiations of this relationship in each design research project;
- The challenge of writing an academic thesis while not being familiar with this process from undergraduate studies.

For the supervisors:

- The difficulty of defining a supervision structure that delegates responsibility to the researcher while assuring him or her that they can get guidance from their supervisor when needed;
- The situation that research topics are so diverse that a supervisor cannot always have detailed knowledge about each topic.

There were also differing experiences: while at Anhalt University master students study in one of three structured master programs, at the GUC the master students study on their own and consult individually with their supervisor.

What both young researchers at master and PhD levels as well as supervisors experience as fruitful is a regular exchange, sharing their research progress and receiving and providing input from and to each other.

Through our exercises with the GUC and Anhalt University master students, and the exchange with them, our colleagues, and ourselves, we identified a few points that require attention when supervising design research projects. The following list is not static but an invitation to develop a ‘community of practice’ (Wenger et al., 2002) between design research supervisors and design researchers in more institutions. As a side note, a ‘community of practice’ requires 1) a domain consisting of shared particular expertise and interest areas (not just any loose network of people), 2) a community sharing activities related to the domain regularly, and c) a practice, which is more than sharing viewpoints and theories, but means to work together actively (Wenger, et al, 2002; Wenger-Trayner & Wenger-Trayner, 2015).

What do we need then to develop such a community of practice around design research supervision?

1. An understanding that the knowledge of what design research comprises is not a static knowledge base but changes alongside the emergence of topics, theories, research methods, tools and methodologies;
2. Opportunities through collaboration and exchange with fellow supervisors and researchers inside our institutions and other institutions, for developing and creating access to resources that support design researchers and their supervisors;
3. A culture of critical reflection and exchange with colleagues that we must continue to research, supervise and foster;
4. The ability and the will to learn how to listen with the intent to understand and communicate often and with clarity;
5. Curriculum strategies at the undergraduate level, that convey the essential role of critical reflection in successfully learning how to design for current and contextual design concerns;
6. Prerequisites that enable us to implement our ideas for such a more dynamic research environment, including the creation of programs, extracurricular platforms and events such as conferences and symposia, focusing on supervision strategies for design research.

What we find important is to mention that this need for a community of practice of design research supervision differs from other design research communities, of which already many exist, insofar as the focus is on supervision strategies.

Some of these strategies or parts of them have already been attempted. For example at the GUC a master course is currently not part of the curriculum but a master colloquium has been implemented in fall 2022 and spring 2023 informally for those students who participated in this project. Much of the learnings discussed in this paper stem from this experiment, which is currently on hold but will continue following the positive feedback, possibly as a formal integration into the curriculum. Within this colloquium, some of the suggestions above will be implemented. What has worked well so far were the regular presentations of the master students to their peers and for those who just joined and identified topics questions in were helpful (Table 1).

At Anhalt University master students already experience assignments and research tasks that focus on a critically reflective practice in their regular theory courses. Students, among others, are encouraged to keep a reflective journal that is used at the end of every seminar. In it, they reflect on their learning and role in the seminar, and how they could have acted differently. This allows them, over time, to realise the value of reflective practice and this record creates an awareness of their emerging skills, confidence and growth.

However, to foster design research and design research supervision further, in our daily work at our institutions and in transcultural networks, we must stay curious and updated and actively participate in shaping the field with fellow supervisors and research candidates. Therefore, we hope that we will be able to continue with our shared project, try out some of our modules, refine them and develop more tools, methods and supervision strategies, ideally with fellow design research supervisors from other universities joining us.

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