Academic Challenges in HCI Education – The New Media Design Bachelor and Master Programs

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ABSTRACT

This paper discusses the ongoing developments in launching the bachelor program New Media Design at Tilburg University, the Netherlands, after a master program had been launched in 2017. It specifically addresses the challenges its teachers are facing related to achieving an academic teaching level while focusing on a design-oriented curriculum.

Table 1: NMD bachelor courses

Year 1 – Semester 1	
- Communication in Organisations	6 ECTS
- Cognition & Communication	6 ECTS
- Foundations in New Media Design	6 ECTS
- Methodology	6 ECTS
- Research Skills: Survey & Interview	3 ECTS
- Academic Dutch	3 ECTS
Year 1 – Semester 2	
- Communication Theory	6 ECTS
- Statistics	6 ECTS
- Academic English	6 ECTS
- Communication & Persuastion	6 ECTS
- Human-Centered Design	6 ECTS
Year 2 – Semester 1	
- Introduction to Philosophy	6 ECTS
- Research Skills: Experiment	6 ECTS
- Basic Programming	6 ECTS
- Play & Game	6 ECTS
- Creativity & Cognition	6 ECTS
Year 2 – Semester 2	
- Philosophy of Communication	6 ECTS
- Research Skills: Language and Information Technology	6 ECTS
- Storytelling in New Media	6 ECTS
- Interaction Design	6 ECTS
- Aesthetics in Communication	6 ECTS
Year 3 – Semester 1	
- 5 Elective courses (Health Communication, internship or 2nd year courses of other tracks)	6 ECTS each
Year 3 – Semester 2	
- 3 Elective courses (Health Communication, internship or 2nd year courses of other tracks)	6 ECTS each
- Bachelor thesis	12 ECTS

INTRODUCTION

In 2017 a new master called New Media Design (NMD) was launched within the Communication and Information Sciences program at the Tilburg School of Humanities and Digital Sciences, Tilburg University (the Netherlands). Students can enter this master at the start of either the first or the second semester. Today, over 80 students have joined the master and recently the third class of students has started its master. Since the current academic year, the program also offers a bachelor track. Tables 1 and 2 show the curriculum of the New Media Design bachelor and master.

The entire NMD program, including both the bachelor track and the master, is currently organized by six lecturers with diverse HCI backgrounds, including cognitive psychology, (health) communication and information sciences, computer science, and art & creativity science. The New Media Design program's four pillars reflect the teachers' expertise: Human-Centered Design, Creativity & Innovation, Interactive Storytelling and Psychology of Media Interactions.

In this paper we wish to elaborate on the challenges that we encounter in setting up the new bachelor track and further developing the existing master (the latter was described in a previous EduCHI paper [4]). More specifically, we want to contribute to ongoing discussions in HCI education by addressing challenges related to achieving academic levels in our courses and in the program. With academic levels we refer to the difference between scientific research and more practice-oriented design disciplines. In this respect, we not only want to focus on fundamental research in HCI (and related) fields in our program, we also want to approach design as a research-oriented discipline. Following Stappers and Giaccardi's [6] definitions of research and of design, we aim for "the production of knowledge that others can use in other areas" rather than for "the creation of a specific solution to be applied in the world" (para 3), like a design artefact, a prototype or a (new media) product. That is, we position our NMD program in both the tradition of fundamental, scientific HCI, and the tradition of 'research *through* design', educating HCI researchers rather than designers.

CHALLENGES

In this main section of the paper we will elaborate on a number of challenges we are currently dealing with in developing both our bachelor and our master curriculum. With this brief discussion, we hope to open up a constructive debate about the challenges related to offering HCI programs at a university level, especially focusing on going beyond teaching interaction design or UX design skills.

Challenge 1: Generating knowledge in design-led assignments

In all courses in the New Media Design program we use assignments that require students to apply the theoretical knowledge and research skills they have been taught in concrete research and design projects. We aim to stimulate students to see the generation of knowledge as their main focus in these assignments and to enhance their awareness of the production of such knowledge as a way to

Table 2: NMD master courses

Course	ECTS
Human Media Interaction Theory	6 ECTS
Creativity and Innovation	6 ECTS
Interactive Storytelling	6 ECTS
UX Design	6 ECTS
Research Skills: Rapid Prototyping	3 ECTS
Research Skills: Usability & UX Evaluation	3 ECTS
2 Elective courses: - Cognition of Visual Narratives, - Applied Data Visualisation, - Resistance and Persuasion, - Social Media at Work, - Multimodality and Communication	6 ECTS each
Master's Thesis	18 ECTS

advance both science and design. As such, we emphasize that the skills that are required to produce knowledge are transferable not only to scientific domains, but also to design practice. Such an academic focus on knowledge generation is relatively straightforward when assignments concern empirical research projects. However, in assignments involving design projects we find it challenging to stimulate students to go beyond merely practical design outcomes and to generate knowledge as well. One approach we are currently exploring in such assignments is to teach students how they can employ design activities and artefacts to create so-called 'intermediate level knowledge' [3] (e.g. methods, tools, guidelines, design patterns, strong concepts) by making this an explicit assessment criterion of students' design assignments. Also, we explicitly require students to formulate research questions with both societal and scientific relevance. Despite these attempts to continuously emphasize the importance of scientific contributions, it remains a challenge to stimulate students seeing such a contribution as their main focus, rather than design skills and output.

Challenge 2: Establishing an open-minded, future-proof mindset

Inherently, the HCI-field faces rapid changes in technology. The rise of complex technologies such as artificial intelligence, big data, sensory augmentation and health informatics require a drastically different set of research skills from HCI researchers. The question, however, is how to prepare students to research and design interactions with these future technologies. Many of these technologies are in full development at the moment students are doing their master. Although general HCI research and design methods (e.g. for evaluating the user experience, or the impact of products on behavior) will remain useful, more dedicated methods focusing on designing interactions with such technologies or on involving users in the design of such technologies, do not exist yet. In addition, we are a relatively small group of teachers, who can never be experts in designing interactions with any possible future technology. Educational fields such as computer sciences, programming and digital design face similar challenges, needing to decide which programming languages and design tools to teach while new languages and tools keep emerging at a rapid pace. Technology simply develops too fast to teach students how to deal with them. Although we certainly haven't found our way to overcoming this challenge, we feel that the answer lies in creating a life-long learning mindset rather than teaching students specific research or design skills or tools. For instance, in our master course Rapid Prototyping, we do not teach students to use specific prototyping tools, but we focus on the process of rapid prototyping. We teach students how to use prototyping as a tool in exploring and researching interaction designs and new interaction styles. They can use any type of prototyping method or tool they want in this course. Our challenge in this respect is to teach students to develop an open-minded, self-confident attitude towards a future in which they will have to continue to learn and experiment with new and unknown directions, critically assessing both benefits and drawbacks of technological advancements, and evaluating the possible impact of such advancements on both design of new media products and on society.

Challenge 3: Establishing a mindset acknowledging design skills as a research tool

The students who have until now participated in our master program have different backgrounds, and we have noticed that they start the program with a variety of expectations. Students with a background in applied sciences (who often have technical and/or design skills) start the New Media Design program aiming for more in-depth theoretical knowledge and research skills, while students with a background in communication (or related) sciences feel they already have theoretical knowledge and research skills, and are drawn to the idea of a future in design. As explained above, our aim is to train HCI researchers rather than HCI designers. First and foremost, our graduates should have strong research skills that they can employ to further both the HCI research field and HCI design practice. That is not to say that we do not teach students any design skills. However, we position such design skills (e.g. rapid prototyping, translating insights to design concepts, …) as skills of a good HCI researcher rather than as professional design skills (e.g. cf. Buxton's [1] view on the role of sketching in the UX design process). As such, we seek ways to build awareness among students that research skills are highly relevant skills that are transferable to design practice as well.

Challenge 4: Creating awareness of social responsibility and impact

Besides the four pillars of our NMD program introduced earlier, and our focus on training researchers rather than designers, another central focus in our program is social design. Following ongoing debates in the HCI domain regarding the challenge to balance individual users' needs and wants with stakes on a societal level (e.g. [2,5,7]) we want our students to learn to do research through design for socially relevant purposes and to be aware of their social responsibility. We aim to teach them to be responsible about the impact of what they design and to do research to assess whether they actually achieve the impact they aim for. In order to do this, students are required to reflect on both the scientific and societal relevance of each assignment they engage in. In addition, in the near future, NMD students will be able to follow a philosophy course focusing on the ethics of technology. Despite these efforts, it remains a challenge to achieve a mindset in our students of developing the reflex to always consider their social responsibility and impact in their work, even if we do not explicitly make that part of their assignments.

CONCLUSIONS

Reflecting on our New Media Design program while writing this paper, we have come to realize that the challenges we face seem related to the multifaceted mindset we hope our students will adopt. For a large part this mindset is based on the four pillars of the NMD program, but perhaps most importantly we aim for our graduates to be future-oriented, societally driven HCI researchers with a strong set of research skills (including research through design) who are looking forward to contributing to HCI as a field of science. Teaching mindsets as program learning outcomes is challenging and difficult to assess. By sharing and discussing the challenges we face with the HCI education community at EduCHI, we hope to both contribute to more scientific HCI education practices and to gain inspiration for further developing our own program.

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