Fab:UNIverse - Makerspaces, Fab Labs and Lab Managers in Academia

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ABSTRACT

Fab Labs and "Maker" practices have been recognized in research and practice as contexts that facilitate creativity, knowledge sharing and collaboration [4], [10]. Personal digital fabrication is getting increasing attention from various fields like education, engineering, innovation, design, humanitarian aid or regional development [6], [1], [7], [3]. However, integrating Fab Lab environments into academic education is still challenging in practice. In Germany, more than 200 such creative community spaces exist [5]; around 15 of these are associated with universities. Most are initiated and run by single entities such as student groups or university chairs and are not integrated in the universities' overall organizational matters. The federal research project 'FAB101' aims to consolidate organizational and educational knowledge based on experiences in four Fab Labs at German universities [9]. We propose a workshop to share and discuss results, to open up our research to a European community and to encourage collaboration between academic Lab practitioners.

Author Keywords

Fab Lab; Makerspaces; Education; Digital Fabrication; University

ACM Classification Keywords

Social and professional topics Adult education Social and professional topics Computing education: Human-centered computing Empirical studies in collaborative and social computing

INTRODUCTION

Attention for personal digital fabrication in the context of academic work is rising [3] and an increasing number of Makerspaces such as Fab Labs have been opened at or near universities [11]. The Fab Lab model specifically seems interesting to universities because it offers elements of standardization and support structures as well as roots in academia and research infrastructures [2]. Teaching concepts from the Fab Lab network such as the 'Fab Academy' have proven the potential of offering students from all disciplines access to Fab Labs. With regard to didactics, a (Fab) Lab conveys various important learning concepts like teamwork, communication skills, design thinking or knowledge sharing [4, 6].

However, integrating and sustaining such a Lab in an academic context can be challenging and there are gaps in (published) knowledge about such organizations [8]. There is a need for applied research into and more exchange between academic (Fab) Lab stakeholders regarding matters such as governance, infrastructure and didactic considerations.

ACADEMIC FAB LABS IN GERMANY – A FEW FACTS

There currently are 22 academic Fab Labs or Makerspacs in Germany (that we know of), 13 of those participated in our survey, the results are summarized in the following. The first German academic FabLab opened in 2009 (RWTH Aachen) and like the ones that followed in 2011 and 2012, it was integrated into a technical faculty. Among those Labs that opened 2013 and later, four are part of a central university entity like a library or a business incubator. Only recently the first Design Institute opened a Lab (Folkwang University of the Arts, 2017), another one is currently being planned. Two Labs are entirely student led with no or little paid staff; volunteering students, however, play a central role in most Labs. The majority of the Labs is funded partially through university budgets and partially by external research funds and donations. Only two charge a user fee.

FAB:UNIVERSE – LAB MANAGERS UNITE!

Part of the German federal project 'FAB101' is supporting exchange between (Fab) Labs in academic contexts. For 2018 and 2019, this has included hosting the Fab:UNIverse

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workshop founded in 2017 by TH Wildau as the first exchange event specifically for German academic Lab managers. At Fab:UNIverse 2018, such managers from 13 universities came together to discuss and share knowledge on governance, infrastructure, educational and other operative matters. Further Lab-specific details were collected by a brief online survey before the event. 10 of the represented Labs are already active while 3 were in the planning stage.

All participating Labs agreed on several similar challenges they all face and want or need to tackle in the future. Examples include the organizational structure and personnel requirements for Fab Labs as quite novel elements in German academic administration and governance. Another example is generating (project) documentation, storing information and sharing with others in an structured way. Cooperation between different Labs as well as further developments in tools and (infra-)structures may help address such challenges.

FAB:UNIVERSE GOES EUROPE

For FabLearn Europe 2019, we invite Lab managers, practitioners and other stakeholders of academic Fab Labs in Europe for a similar gathering. We will share and discuss learnings from our participatory work in/with four German academic Fab Labs as well as from the Fab:UNIverse community - and we hope you will share your experiences with establishing and sustaining an academic (Fab) Lab with us as well. The workshop will also be an opportunity to discuss more cooperation between European academic (Fab) Lab managers and existing related channels, communities, events or projects.

We also invite all academic (Fab) Lab practitioners to take an international version of the FAB:UNIverse survey on individual Labs mentioned above. The survey will be distributed via e-Mail by the conference organizers.

WORKSHOP PROGRAM

Within the FAB101 research project we have identified four core domains framing academic Fab Labs: Educational concepts, Infrastructure, Collaboration and Governance. We will start our workshop with a presentation and brief discussion of preliminary results from Germany. This will be followed by a more interactive creative session. The goal here will be to collect (more) experiences along the aforementioned domains on an European level as well as to confirm, challenge and complement them. Depending on participants, the following areas could be addressed in the session:

Educational concepts: Courses offered in or with help of a Fab Lab; questions regarding safety & competences, creditation, transdisciplinarity and didactic requirements.

Infrastructure: State of practice vs. MIT Fab Inventory; spatial design; location; size; open source / open hardware; integration with other Labs.

Collaboration & Sharing: Differences in individual projects / Lab Community / public sharing and collaboration; community management; interdisciplinary research & teaching; existing Lab manager communities, events & networks.

Governance: Status and organizational forms of Labs within a university; funding structure; integration into city/region; services; team structure.

The creative activity will be followed by a short discussion and contextualization session as well as a wrap-up.

OUTCOMES

All data from the workshop will be shared directly with the workshop participants after the event. In the longer term, the data will also be considered in an upcoming (openly licensed) handbook from research project FAB101 aimed at helping (public) organizations interested in establishing a Fab Lab.

Complementing the interest in collecting useful data for people creating, managing and sustaining academic Fab Labs, we are also interested in opportunities to connect them. The global FAB-series of conferences certainly is the core event for such connections. However, we believe there should be more opportunities on national and European levels to connect and share meta- and management-knowledge about running (Fab) Labs in and with (public) organizations. We hope FabLearn 2019 can be such an opportunity and also help in identifying and collecting upcoming or existing related opportunities, networks, events and communities.

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