Creative Labs Transforming Higher Education

F.J. Kresin, Research Director Waag Society

October 2012, Amsterdam

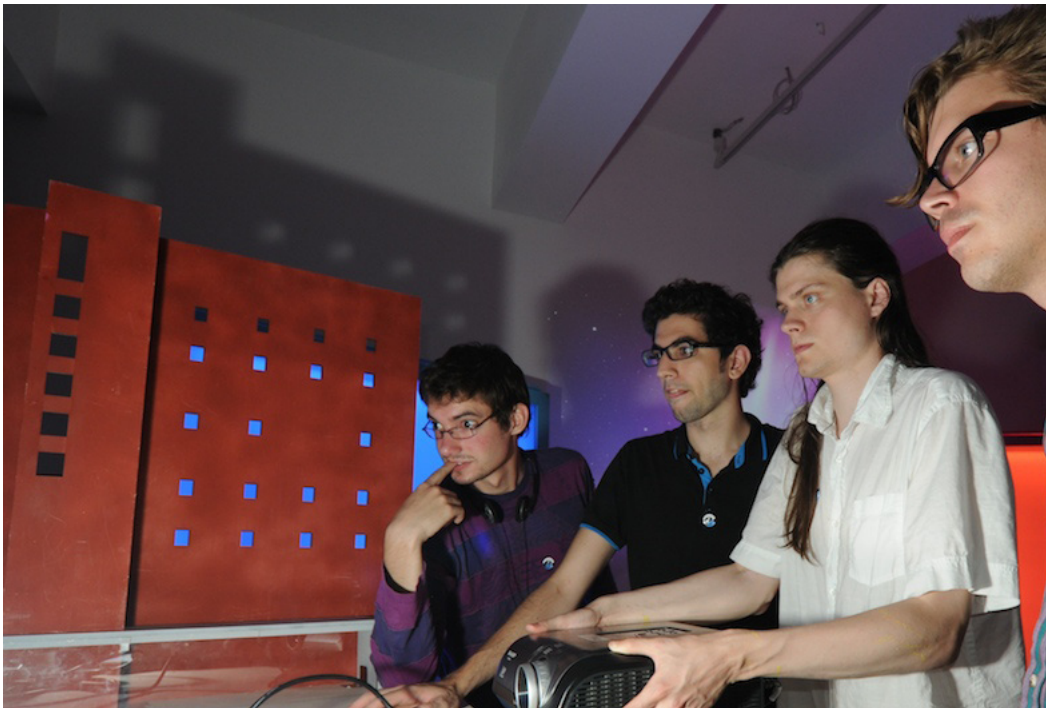
The complex problems that our society faces - economic crises, stable energy provision, sustainable consumption and production, aging population and many others - cannot be approached from a single discipline, or a single point of view anymore [1]. They need the collaboration of many people from diverse backgrounds, that dare to transcend their disciplines to come up with new solutions, as well as hands-on, practical design approaches that enable the participants to co-create and learn together. In short: they demand the practical application of creativity, which we define as the faculty to find new and/or out-of-the-box solutions to a challenge.

This new reality holds a problem for educational institutions that are used to deliver highly qualified mono-disciplinary professionals. Fortunately, there are a considerable number of them that realize this and look for ways to transform their teaching. They promote an approach that is cross-disciplinary and problem oriented. Some of them have set up creative laboratories: playful spaces that enhance the capacity of the participants to collaborate and innovate. For these spaces, we have coined the term Creative Labs: hands-on working spaces that enhance creativity and are used to solve problems and harness opportunities, in novel and effective ways.

Fablabs

Typical examples of Creative Labs are the Fablabs [2]: versatile lab environments, open to the public, that support hands-on development and production processes. They comprise of a powerful set of digital fabrication machines that enable the making of 'almost anything': from models and moulds to complex interactive objects, and anything in between. Fablabs are networked facilities, tied together in a worldwide community that shares knowledge, technical blueprints, and a growing set of practices. The Fablab concept was devised by MIT in Boston [3], and then quickly spread around the globe, attracting a committed crowd, and it has been put to use for many different purposes.

Fablabs enable new ways of learning, problem solving and opportunity taking. They foster practices called design thinking, tinkering, physical computing and rapid prototyping. These methods, that have their origin in the world of product design and architecture, can be put to practice for a wide range of challenges and tasks. Recently, its affordances are discovered by higher education [4]. Not only in the technical sciences, but also in wide ranging areas like economics, informatics, humanities and social sciences.



Creative Labs

But while Fablabs are interesting examples, they are by far not the only kinds of Creative Labs. On several road trips in the Netherlands in 2011 and 2012, a number of practitioners, united in the SURFnet Special Interest Group on Creative Labs [5], have visited lab environments that each have their own take on facilitating creative problem solving. Until now, these are the Amsterdam Fablab [6], LEF Future Center [7], T-Xchange [8], SmartXp Lab [9], HU Concept Space [10], PHILIPS ExperienceLab [11] and several distinct labs at the Industrial Design Faculty of the Technical University of Eindhoven [12]. The trips where intended to foster the exchange of best practices and open questions amongst the participants.

Based on these visits, we have identified six aspects of Creative Labs that shed some light on what makes them effective. They are: infrastructure, organisation, people, methods, themes and networks. On each of those we have come up with preliminary insights that might be interesting to educational institutions that wish to implement a Creative Lab on their premises.

Infrastructure

On the infrastructure level, all labs have there own physical space that is distinct from their surroundings. Much effort is spent to make these spaces into something both visually and functionally attractive, lively and playful. Some labs have pieces of hard-to-get-to equipment (cf. the Fablabs) that make them interesting by nature to people who need access to those. Most of them are in some sense flexible, and make it easy to change their layout, dimensions or even the atmosphere.

Organisation

All labs we visited are part of a larger of a larger institution or organisation that provide (part of) the funding for it, as well as bring in (part of) the users and use cases. Since they are rather new, this helps them to be sustainable in the absence of proper business models. It gives them a clear direction and purpose since the lab should then support the goals of the donor institution. However, this can also hinder their further development because of lack of freedom and agility.

People

Most labs foster a dedicated lab manager that acts as the main proponent and ambassador for the lab. He or she is in charge of the facilities and their planning, looks after the users, helps them where needed and connects them to others. Sometimes they are the ones that embody the vision and long term strategy; this is helpful to further development. The users are mostly diverse in their backgrounds and capabilities and multi-disciplinary collaboration is stimulated. When the lab is connected to a university, students are the main, and sometimes the only users. Where this is avoided, the lab tends to be more effective. Some labs work with "artists in residence" that come to the lab for few weeks of months to finish a project. The more generic labs tend to work with moderators that are trained to facilitate problem solving in groups.

Methods

Most labs share an aptitude for a design philosophy called Design Thinking [13]. Design Thinking promotes the use of design practices and attitudes to come up with solutions to problems, and with wholly new propositions and opportunities. It entails collaborative practices of making, tinkering, sketching, drawing, and materializing in response to design challenges. Design Thinking [14] holds that by working with your hands, bypassing rational thinking, intuition is stimulated that can lead to breakthroughs. The most important in Design Thinking is the 'design stance' or attitude. It calls for hands-on collaboration in multi-disciplinary groups and an open atmosphere of sharing, playfulness and curiosity. Combined with knowledge of, and access to, design and production technology, the range of outcomes becomes huge.

Themes

The themes we encountered are wide ranging. Some labs have a focus on a specific technology, while others concern themselves with a specific domain. Examples are gaming, consumer electronics, infrastructures, fashion and health care. Yet others are explicitly multi-purpose, concerning themselves with the method of problem solving more than anything else. The benefits of both approaches are obvious: the more focussed, the more investment there is in specific expertise and equipment which makes them unique; while the more generic are rather interchangeable and more dependent on the people-centric qualities of the moderators.

Networks

Most labs are highly networked in terms of partners and customers, holding several tens of institutional relations. These might be technology or research partners, educational institutions, individual artists, businesses, government institutions, NGO's and/or funders. This networked nature is paramount to the lab's success as a hub for problem solving. At their best, they function as neutral, safe spaces where parties come together to develop out-of-the-box solutions. They tend to cater to a geographic region, usually a large city or province, unless their focus is unique and widely known.

Conclusion

The field trips in 2011 and 2012 have shed some light on the different aspects that make up a well functioning Creative Lab. We have outlined the preliminary findings on the six identified aspects and will go on exploring. But even at this early stage we conclude that the powerful technology and methods of Creative Labs can be potent sources for education to tap in to. Creative Labs can prepare the students for a world that demands them to think outside of their disciplines, and come up with answers to pressing, multi-faceted problems. They will extend their networks because of the collaboration that is inherent in work in the labs. And since working in this novel way proves to be a very pleasurable and worthwhile experience, it will strengthen their motivation and make them better students.

waag.org/creativelabs

Notes

[1] Thackera, John (2005). In the Bubble: Designing in a Complex World. Cambridge, Mass: MIT Press. ISBN-13: 978-0262201575
[2] Gershenfeld, Neil A. (2005). Fab: the coming revolution on your desktop—from personal computers to personal fabrication. New York: Basic Books. ISBN 0-465-02745-8.
[3] http://fab.cba.mit.edu/
[4] http://www.slideshare.net/kresin/fablabs-in-higher-education
[5] https://www.surfspace.nl/sig/8-creative-labs/16-intro-bij-de-sig-creative-labs/
[6] http://fablab.waag.org/
[7] http://www.rijkswaterstaat.nl/over_ons/lef_future_center/
[8] http://www.txchange.nl/
[9] http://www.utwente.nl/ctit/about/smartxp_living_lab.doc/
[10] http://www.conceptspace.nl/
[11] http://www.research.philips.com/focused/experiencelab.html
[12] http://www.tue.nl/universiteit/kolom-2/faculteiten/industrial-design/
[13] Brown, Tim (2008). Design Thinking. Harvard Business Review June 2008 p84-92.
[14] Van Dijk, D, Kresin, FJ et al. (2011) Users as Designers. Amsterdam: Waag Society. ISBN 978.90.806452.0.2

waag society

Piet Heinkade 181 a
1019 HC Amsterdam

waag.org
@waag