
Mechanics and Digital Fabrication: Discovering User-Oriented Design Potentials in the way Children Interact with Artefacts

Asbjørn Skovsende

Author
Vestergade 58, 2. th.
8700 Horsens, Denmark
danishbuddha@gmail.com

Helle Hein

Author
Knebel Bygade 64
8420 Knebel, Denmark
Hell8448@gmail.com

Pernille Troelsen

Author
Agervej 41
3550 Slangerup, Denmark
perletand.2004@gmail.com

Abstract

This student semester project sets out the present potential of children's playful encounter with different artefacts, and the manner in which they manage to collaborate with peers when exploring limits and possibilities within the artefact at hand. Looking into the natural togetherness and engagement of children and combining these perspectives in to a learning-design that support playful participatory design when working with digital fabrication tools in a learning context.

Author Keywords

Didactical intend, togetherness, design process, digital fabrication tools, play mood, playful participation.

Introduction & Background

Many educators find it challenging, to structure or design a learning environment that meets both the political goals and the Learners' needs. During our ethnographic observations we have discovered how learners engage with artefacts, when the teacher is not looking. Our student project is designed for classroom educators to acquire the learner perspective in order to see potentials in digital fabrication that is beyond the initial scope of adult imagination.

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The project so far

Case: How does children and learners, age 5-7, interact with artefacts, and how can these interactions be utilized in digital fabrication of similar artefacts.

Process: Initially we began by doing ethnographic observations, in order to unveil possible design potentials regarding the use of artefacts. Based on these observations and our theoretical knowledge we structured and planned activities for the intended user group.

Activities/outcome: We observed that children and learners, when engaging with artefacts voluntarily always did it in collaboration with peers.

Inspired by Carrols [3] work on Scenario-Based Design we have designed a workshop for 24 learners in their first year of school, where we will give them a mock-up of our design and ask them what possibilities and problems they see.

According to Bengtsen and Qvortrup [1] the “nerve” or “core” of didactics, can be characterized as being the specific intention of any given situation. Whenever learning in all its forms are going on, it is happening because of an initial intend. Someone wanted something to happen a certain way, and therefore they used specific artefacts, actions, dynamics and so on. [1, p. 291-309]

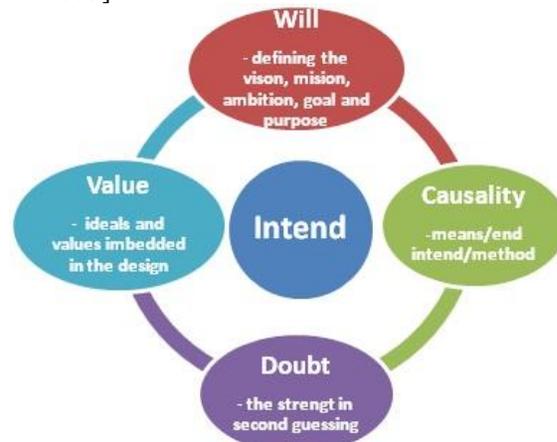


Figure 1. Our interpretation of the didactical intend [1]

No matter what, especially, young children are engaging in, they are doing it with a large focus on togetherness. And in doing so they are entering a form of play mood. Helle Karoff [4] describes play mood as “the state of being where you are distinctly open to new meaning production and where the possibilities exist for that to happen”[4, p. 83]. When designing towards a combined educational design, we are moving towards a context where the teacher’s methods become a question of creating a frame where play, collaboration with other learners and self-activity leads to learning and possible new learning projects.[2, 6]

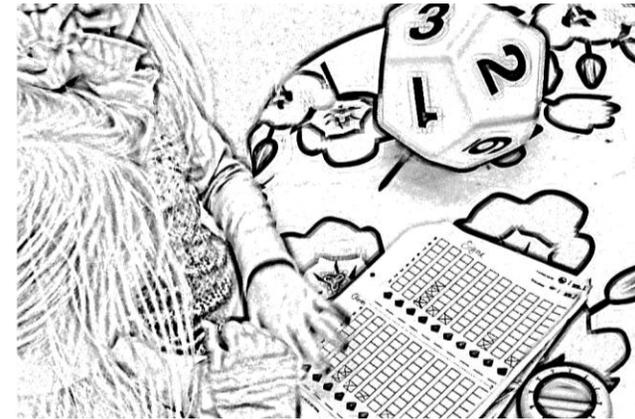


Figure 2. Children learning together – with artefacts.

About the project/demo

We have spent more than 50 hours during the month of April 2014, doing ethnographic observations, looking into how different groups of children and learners aged 5-7 interact with each other and with different artefacts while being; in school, in recess, in preschool, in after school clubs, and at the playground outside the school context. We have chosen this specific age group because they are not yet socialized into the formal setting of an educational situation.

The main topic of our project is playful participatory design with a didactic intend. We believe children’s natural playfulness and togetherness can support digital fabrication. Children make sense of their world through play and we are curious to know, how this finds expression in the approach children have when assessing a new project. We want to see how children structure an assignment and become digital designers using everyday life mechanics, digital and fabrication tools in the process.

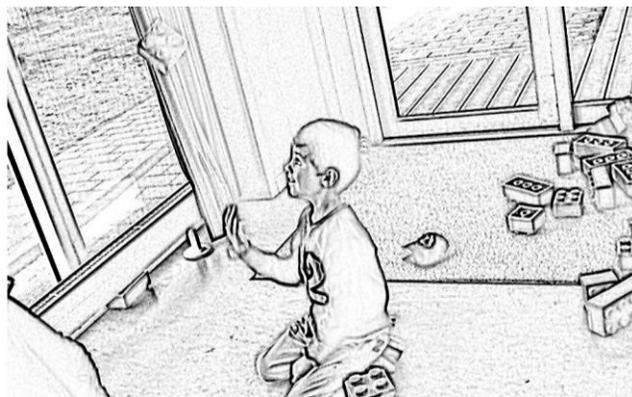


Figure 3. A cube can also fly.

By using the inputs gathered from our workshop we are aiming to make a learning design that supports digital fabrication in various ways. We have no intention of closing our design to one specific fabrication tool or technology on the contrary our learning design will be an open process that will bring digital fabrication into learning spaces. The design supports the natural togetherness among children, which we believe is going to be a core feature for future learners. Learners need to have the availability of various ways of enhancing their learning projects with digital fabrications, not being rigidly fixed by them.

Project presentation and presenters

The project will be presented through a short video-pitch supported by a visual-poster and will be presented by the following Master students of ICT-based educational design at Aarhus University:
 Asbjørn Skovsende - Creative design thinker exploring the boundaries of ICT in learning contexts.
 Helle Hein - Didactic practitioner, exploring how to integrate ICT in school settings in a meaningful manner

that contributes to a positive reformation of learning processes.

Pernille Troelsen - Practitioner of ICT and didactics with a specialized perspective on how digital tools can help include students with special needs in a "normal" class.

Acknowledgements

We would like to thank the following places for allowing us to observe and ultimately contribute to their everyday practice; Molsskolens SFO and Jesper Zachø Bruun, 0.A and 1.A at Veksø Skole and teachers Mona Majland and Henriette Lindknud, children and parents visiting Bygholm Park and playground in Horsens, 0.C at Lærkeskolen and teacher Tine Sandberg, Lærkeskolens SFO (the pre-school group).

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