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Makerspaces as open labs and experimenting communities

Approaches to makerspaces

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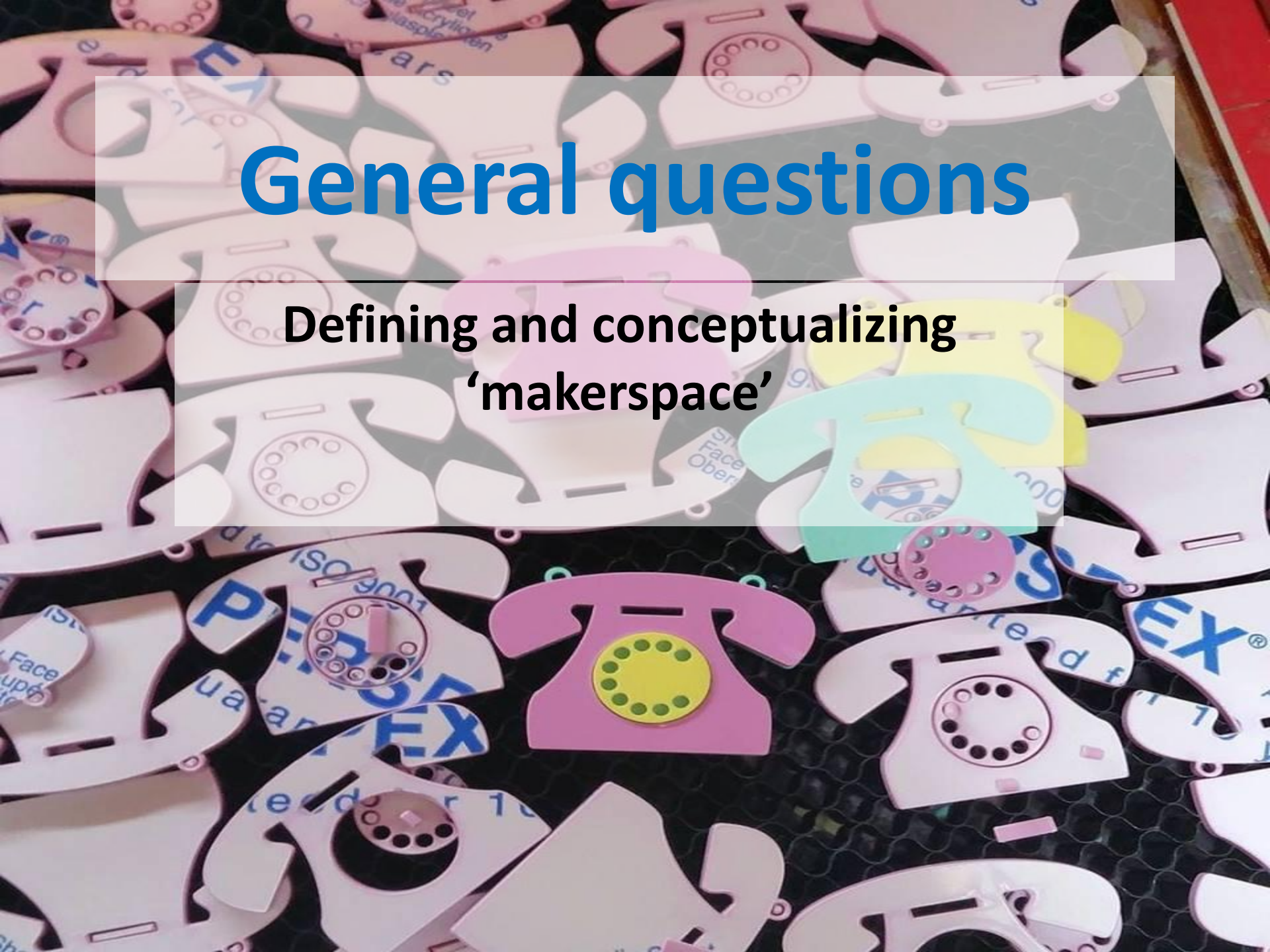
Makerspaces as open labs and experimenting communities

Approaches to makerspaces – work-in-progress -output from secondment at Makers, Sheffield
April 2017

Kjetil Sandvik, University of Copenhagen

- I have spent my first project secondment at the Makers in Sheffield.
- It has been the most inspiring month observing the work of Lisa and James Wallbank and having discussions on ***making*** and what we may consider the core features of a ***makerspace*** to be.
- This has resulted in suggesting that a makerspace just as much as being an actual space where people meet to be ***makeative*** is a specific mind-set – ***makerspaceness*** – that we bring with us and that will code whatever physical space we may inhabit a specific ***makerspaced*** way.
- Some of this thoughts, however preliminary and work-in-progress'ish, have been put down in these powerpoints.



General questions

Defining and conceptualizing ‘makerspace’

Why are makerspaces important?

- What is the question to which the correct answer is a makerspace?
    - James Wallbank

What is a makerspace?

- Also known as hackspace, Fab Lab…
- But with roots in workshop-spaces found in daycare institutions, schools, after/off-school institutions etc.*
- A place where you can **tinker**, hack and make
- Linked to the growth in the D-I-Y, maker movement

- *spaces – equipped with what we today call makerspaces (workshop facilities for wood work, mechanics and music and media production (the latter dating back to the introduction of video cameras and editing systems in the early 1980ies) – for teacher-led or self-organized maker activities.

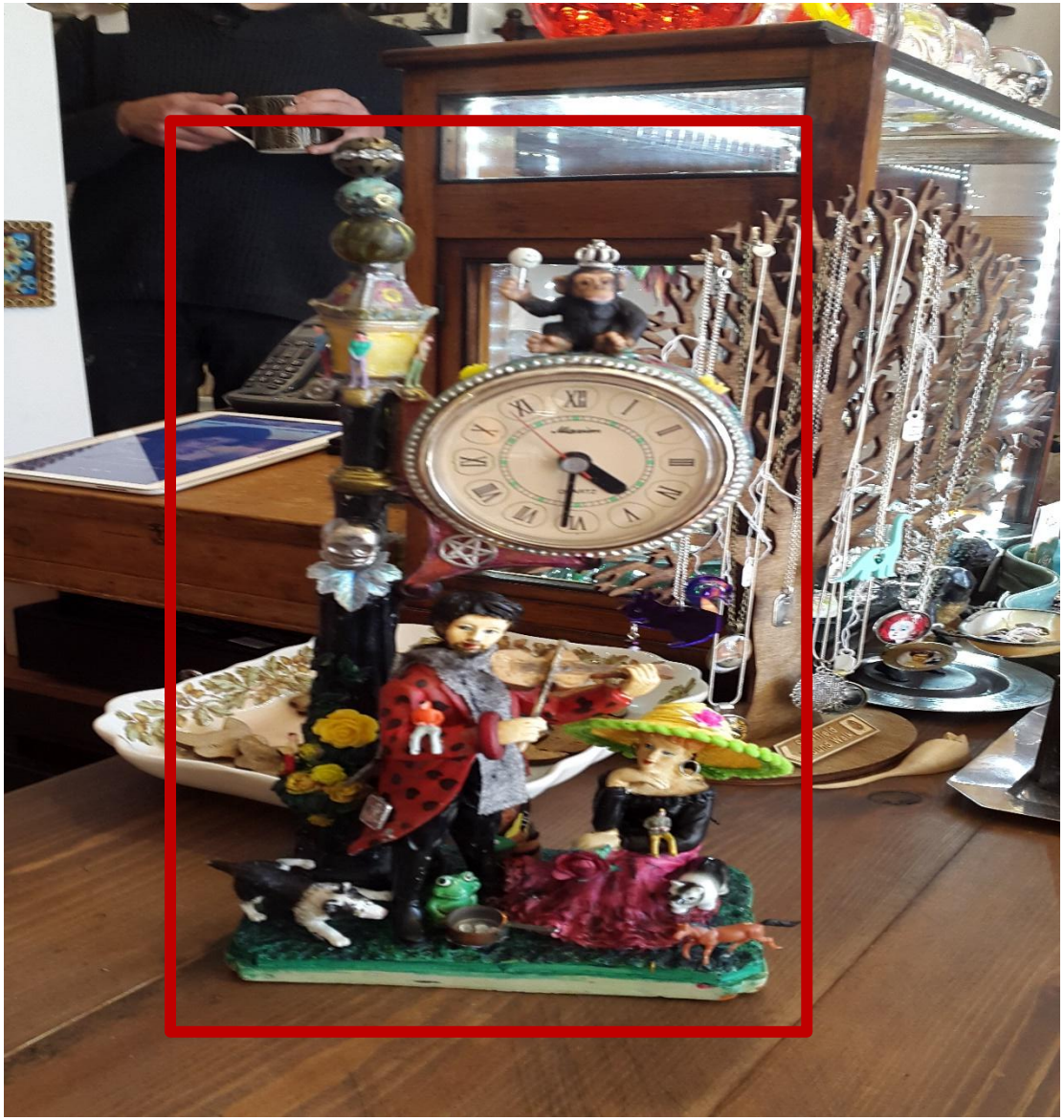
While we can easily imagine someone tinkering with a screw driver and an old toaster, let's also consider how we could tinker with paint and brushes, paper cups and glue, an irrigation system, a 3-D printer, photo editing software (who's spent hours editing a photo book or playing with Photoshop?), and ideas. This last one, ideas, is an extra fun one. Imagine a room full of creative thinkers with some sticky pads and Sharpies, and you get a clear picture of people tinkering with ways to make the world a better place.

The core of makerspaces

- People (collaborating)
- Primary skills:
  - being creative, playful, imaginative, experimenting, seeing possibilities…
- Secondary skills:
  - handling tools and technologies

Old stuff or materials for making…

…the creative approach decides



Being creative

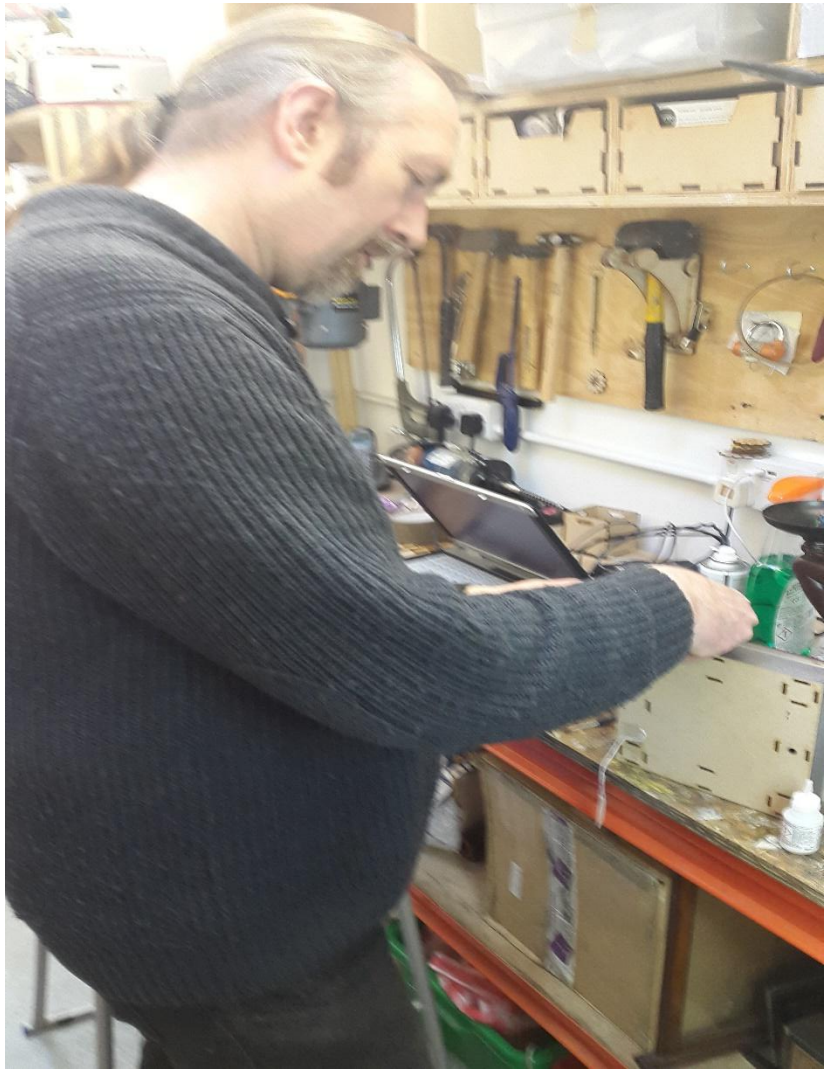
What are the prerequisites for making this?

Creative approaches

- Creating things from scratch
- Adjusting, adding to, pimping existing things
- Combining, mixing, briccolageing things
- Ripping things apart and reassembling them in new ways (hacking…)
- Repairing things (learning how things work and not just how to work them…)

Technology as friendly helpers

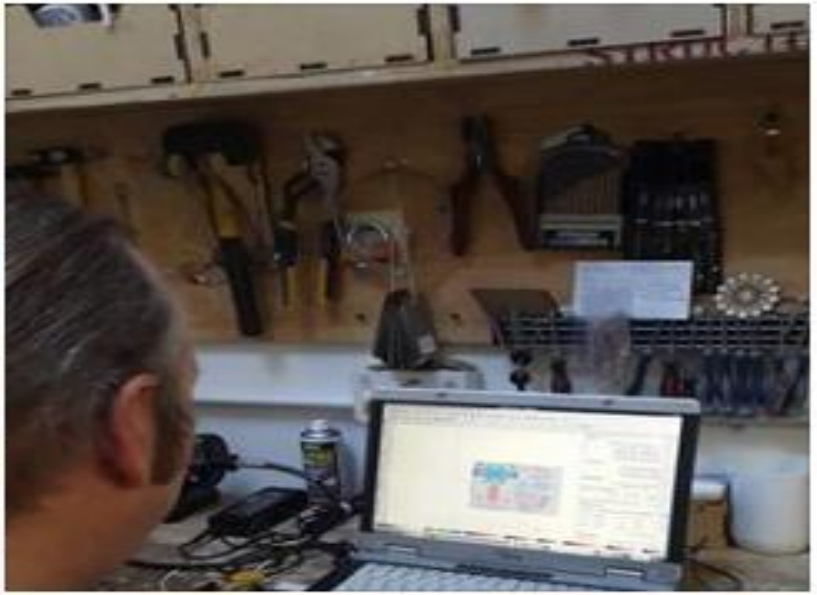
- Technologies such as laser cutters and 3D printers are far to complicated for small children
- But they can – by ways of teacher/pedagogue or tech-experts as interfaces – be turned into friendly helpers
- Communicating with the technology (e.g. the laser cutter): describing what the child wants it to do (e.g. make a cutting of a drawing) → experimenting with how much and how detailed the technology must be informed to do what it is wished to do will urge the child to play with concepts such as shape, texture etc.

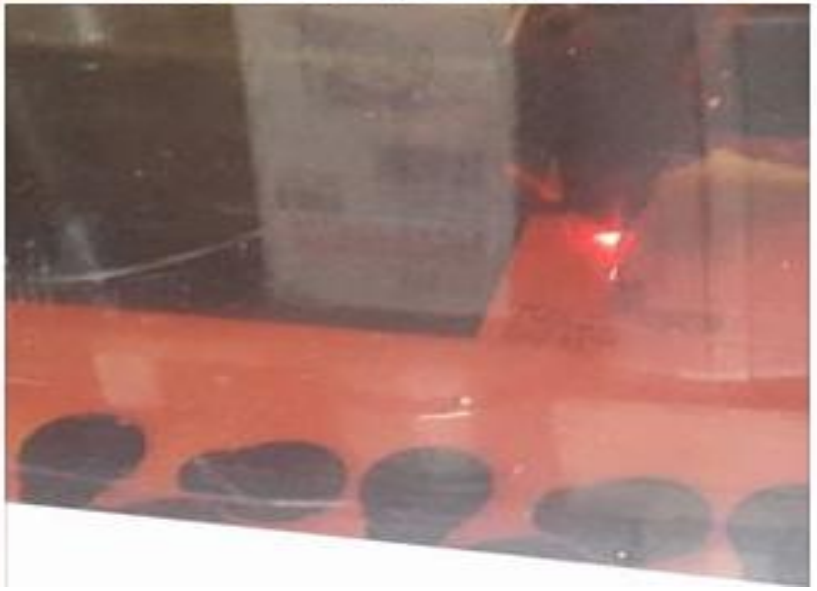


Kjetil Sandvik har tilføjet 3 nye billeder — her: Makers.

48 min. · Sheffield ·

James Wallbank and his marvelous laser cutter - making robots for a friend.





What is a makerspace?

- Makerspace as concrete space
- →making as something special, disconnected, add-on (e.g. STEM as extra-curricular activity with makerspace as its educational device)

OR

- Makerspace as mindset
- →making as the core method in the curricula:
- →learning as creation and play in all educational activities and subjects, be it science, technology, math or history, language, cultural subjects…

What is a makerspace?

- Institutional
- Formalized, fixed formats
- ‘Fablab-ish’
- STEM/STEAM oriented
- Tech-oriented
- Learning goals-focused

OR

- User-centered
- Informal, emergent formats
- ‘first we add people’
- Technology as means not goals
- →technology as friendly helpers
- Not strictly focused on learning goals: LEARNING CANNOT BE AVOIDED

What is a makerspace?

- James Wallbank: I came up with a list of spaces, which might help understand makerspaces - or makerspaceness.
- Some of these are further away from makerspaces. Some are very close indeed. All of these have emerged in discussion around makerspaces.
- It might be interesting to try to find axes or characteristics with which we could sort these spaces into categories. Which involve young people? Which involve education? Which encourage exploration?

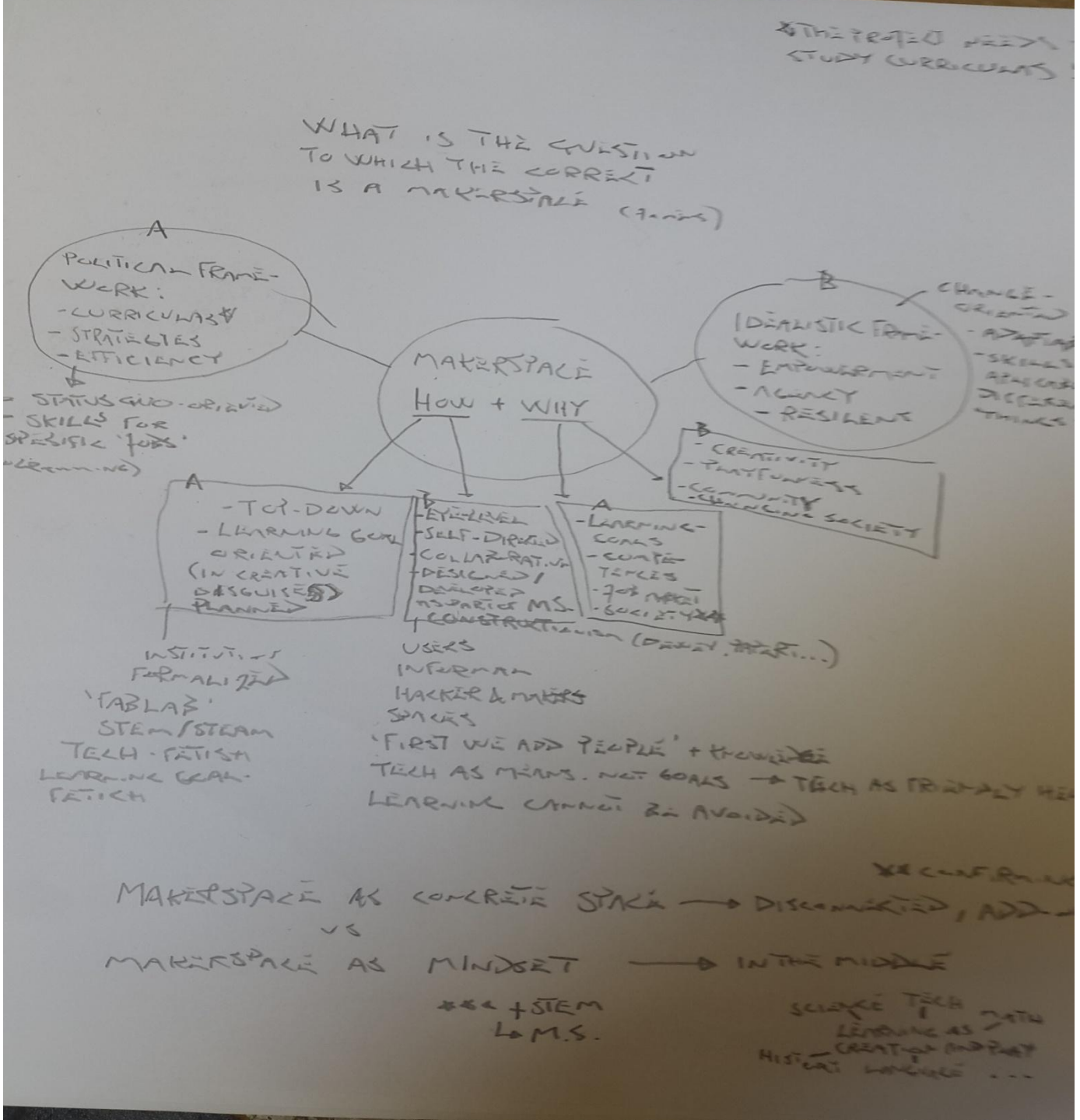
- SCIENCE LAB
- MEETING ROOM
- CLUBHOUSE
- CRAFT WORKSHOP
- SCHOOL
- UNIVERSITY
- FACTORY
- ART STUDIO
- FAB LAB
- REPAIR SHOP
- BUSINESS INCUBATOR
- MEDIA LAB
- LIBRARY
- COMMUNITY CENTRE
- DESIGN STUDIO
- CAFE
- CO-WORKING SPACE
- MAKERSPACE

Makerspace troublesome questions

The dimensions of the makerspace:

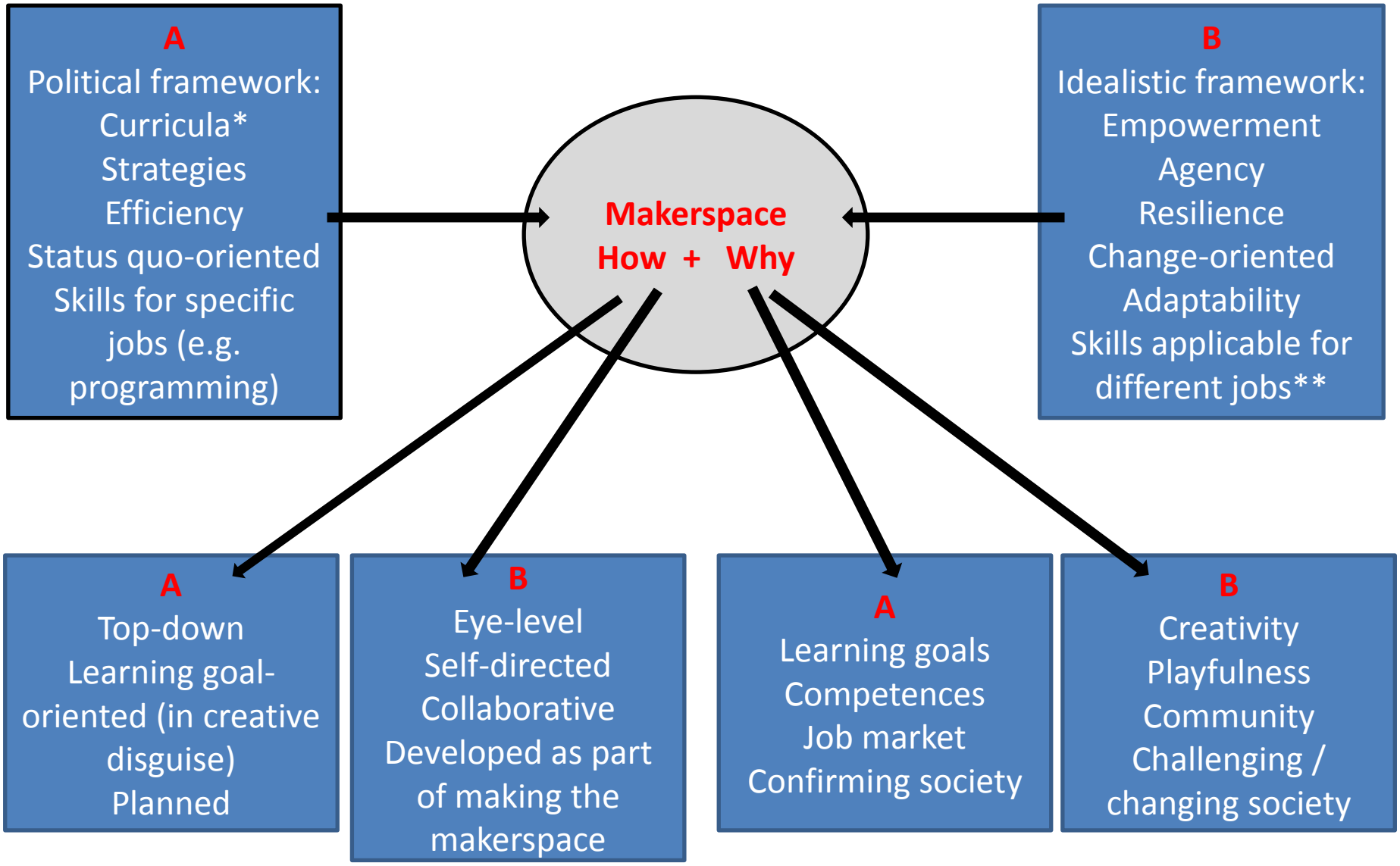
- **Space/place**: Do makerspaces take place or create place/space: conquer and inhabit their own place/space? Are they specific spaces or is making a mindset we bring with us into a space and thereby code the space as a makerspace?
- **Time**: Do making define to fixed amount of time (we will be 'makeative' for one hour) or do making define its own time (the time needed for being 'makeative')?
- **Movement/direction**: Do making define to linear processes (inherent in strict goal oriented design of maker-activities: we should make this or that, we should learn this or that) or does it – as most creative processes – define to multi-linearity, circularity, abruption, diversions, getting momentarily completely lost…?

Model sketching during conversations with James Wallbank



Finished model
- for now…

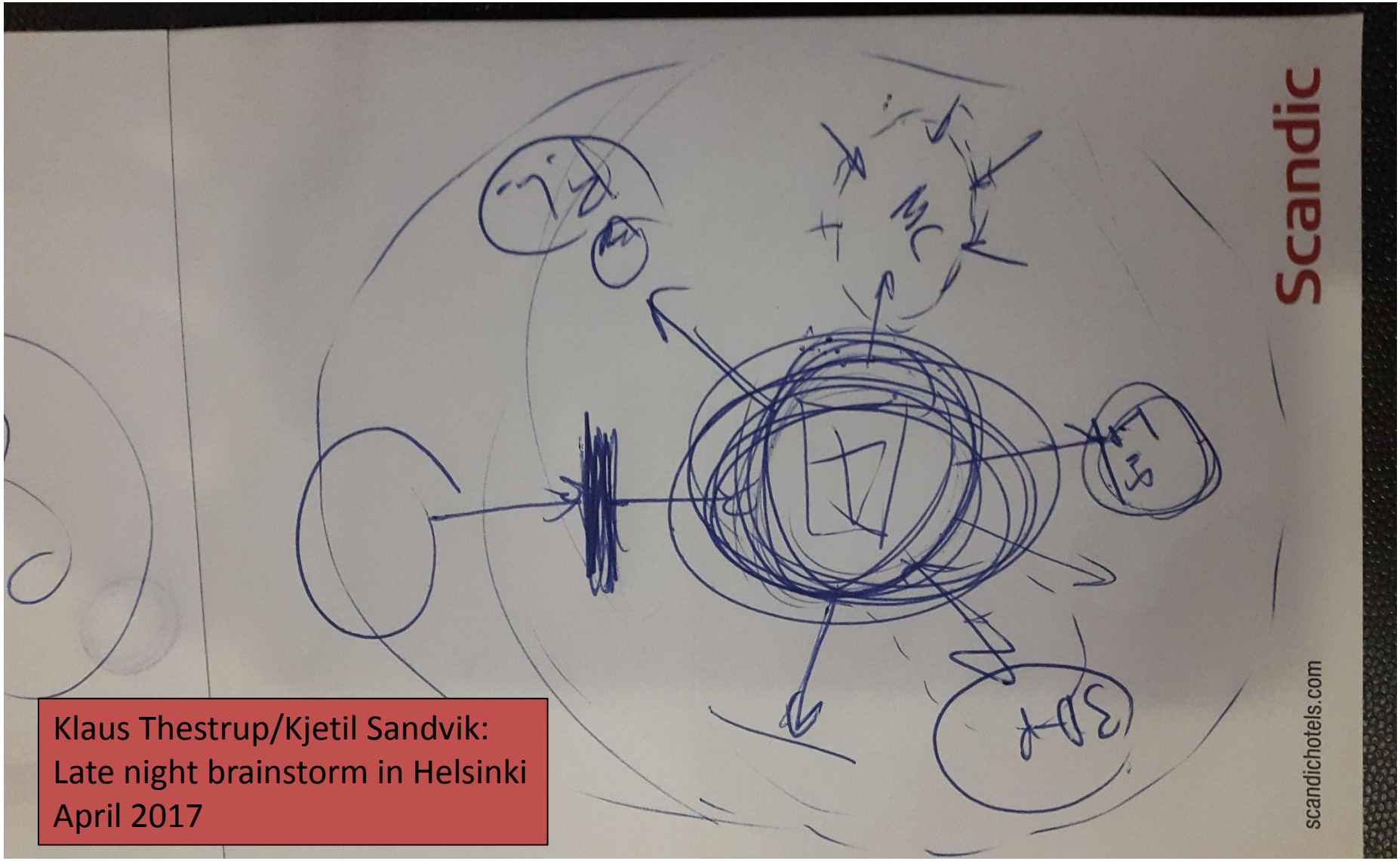
*the project will benefit from studying curricula in the various project countries



**Skills for the future

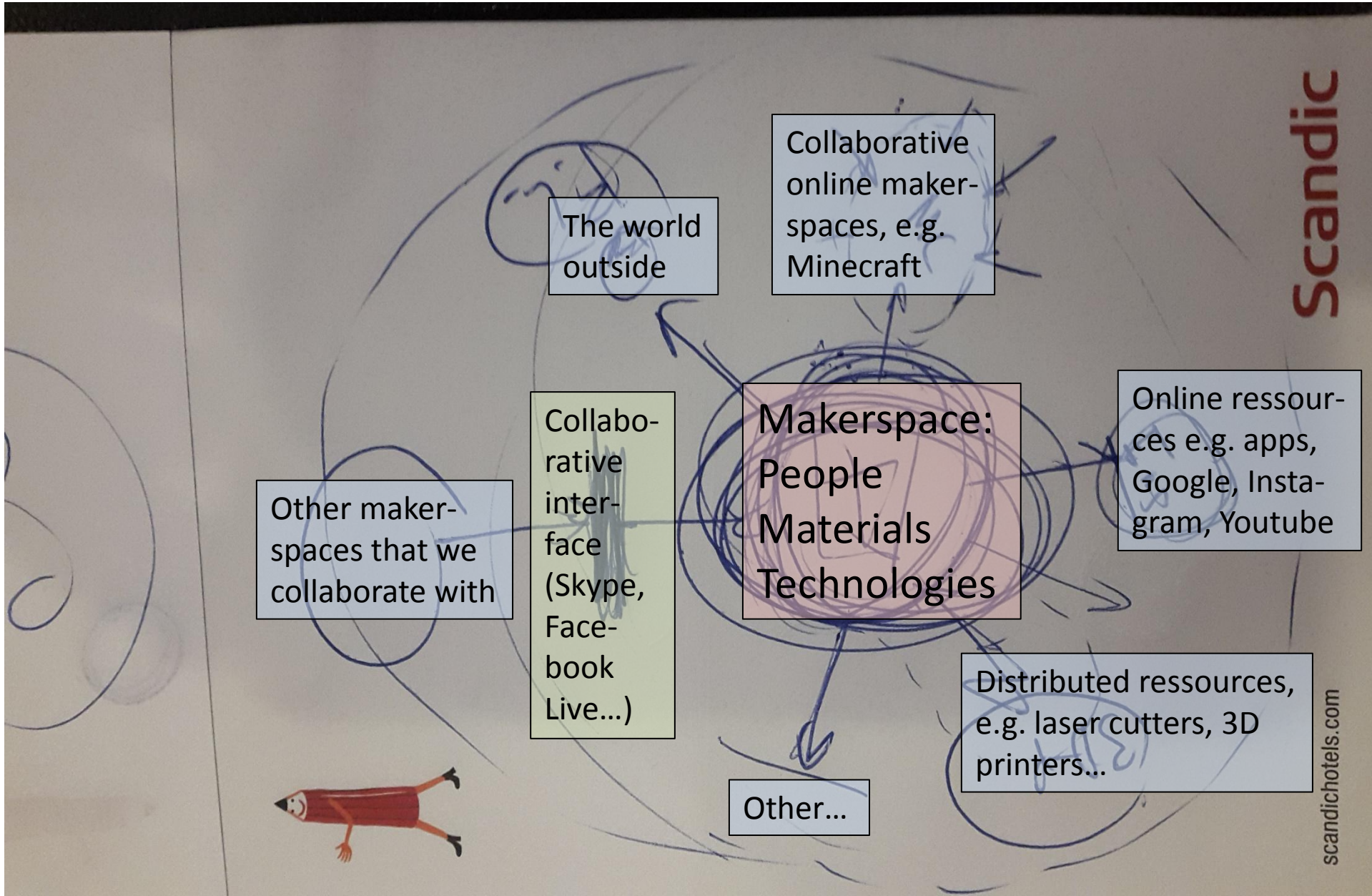
- World Economic Forum predicts that half of the jobs we know today, will disappear within the next 20 years.
- The majority of children starting in school today will as grownups work in jobs that do not exist yet and the jobs we already know will change fundamentally.

Makerspace model

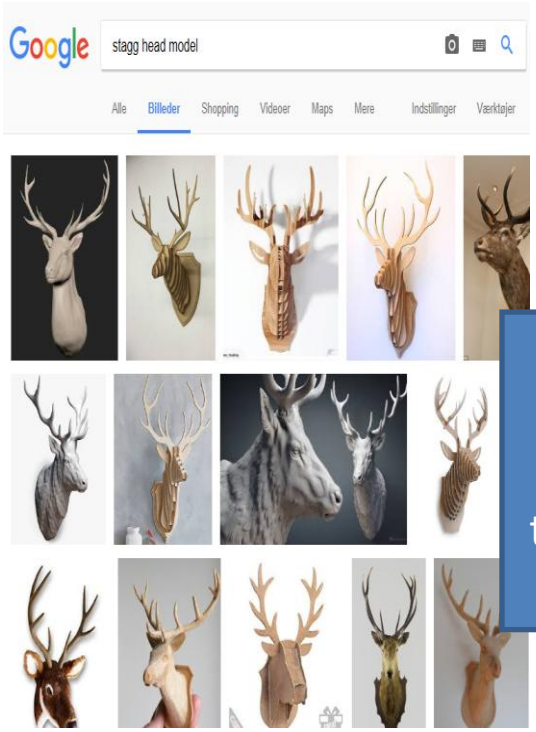


Klaus Thestrup/Kjetil Sandvik:
Late night brainstorm in Helsinki
April 2017

Makerspace model unfolded



Playing and learning with/through (digital) technologies as separate activities or integrated in the playing and learning environment as such



Creative process: from finding inspiration online to laser-cut stagg's head

Having fun: just like sharing a book, playing on the computer can be a lovely close time together.

Learning how to behave on the computer or online: playing together for 10, 15 or 20 minutes and then going to do something else interesting shows children that there are lots of laughs and fun to be had off line as well. Variety is the spice of life for young children.

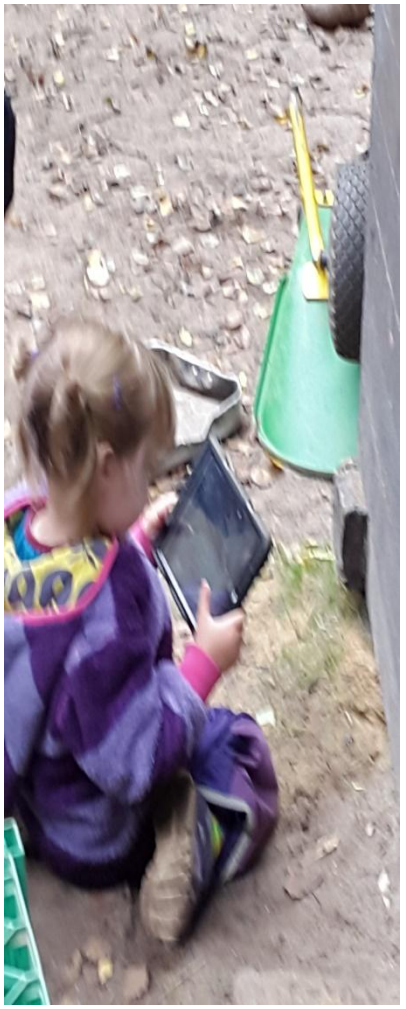
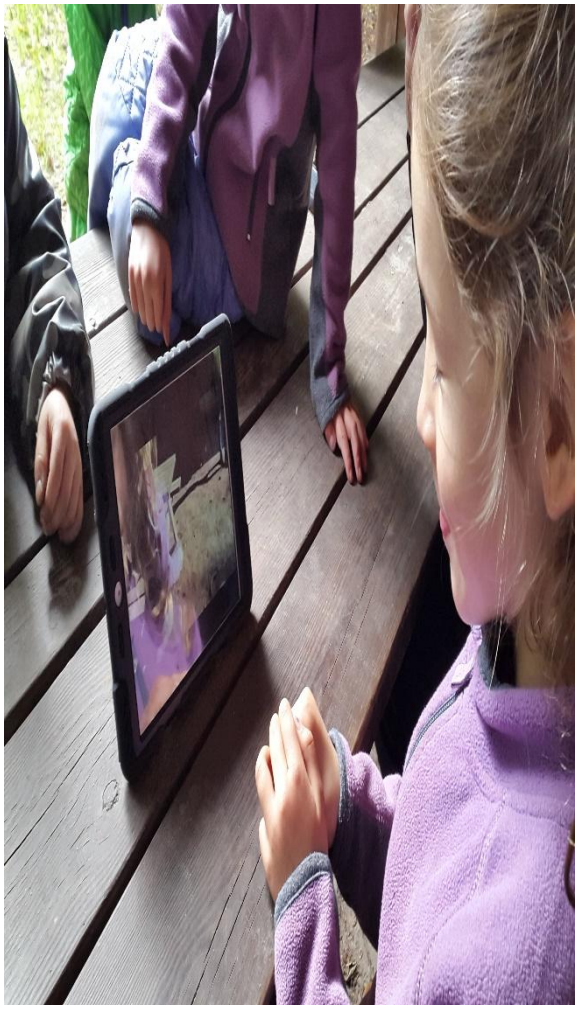
Our children really enjoy learning and playing together on the interactive whiteboard and computer.

≠

OR

Digital media/technologies as just another toy in the toy-box and just another pedagogical tool in the toolbox



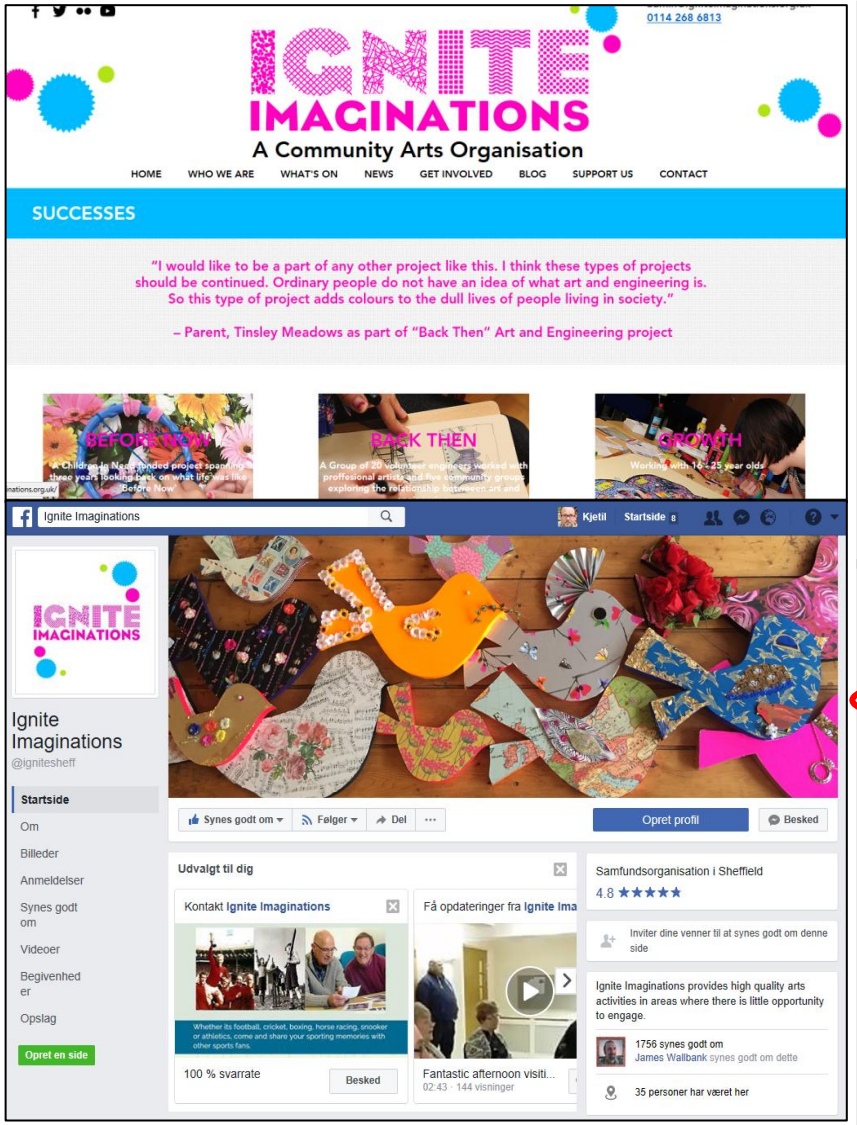



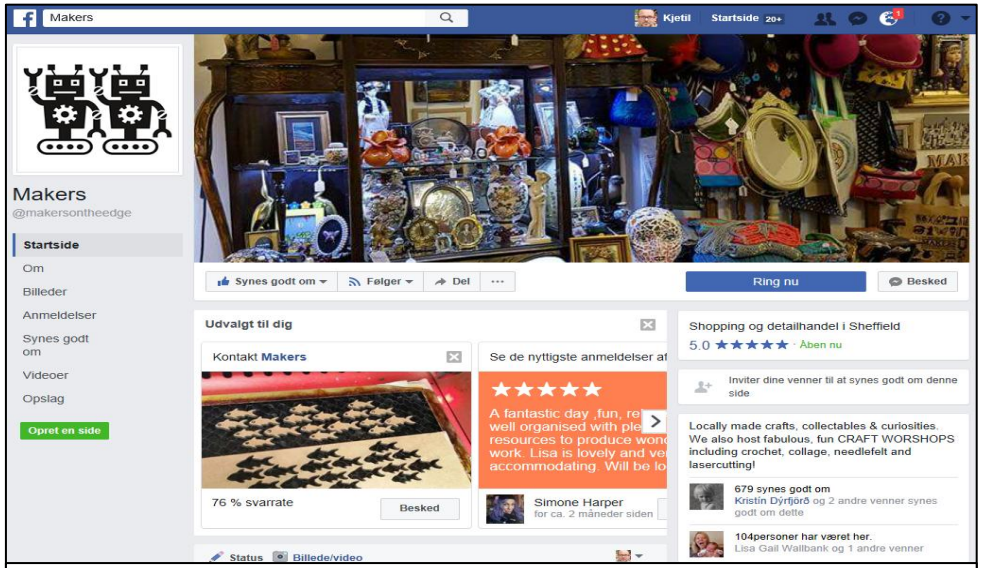
The Sheffield-project

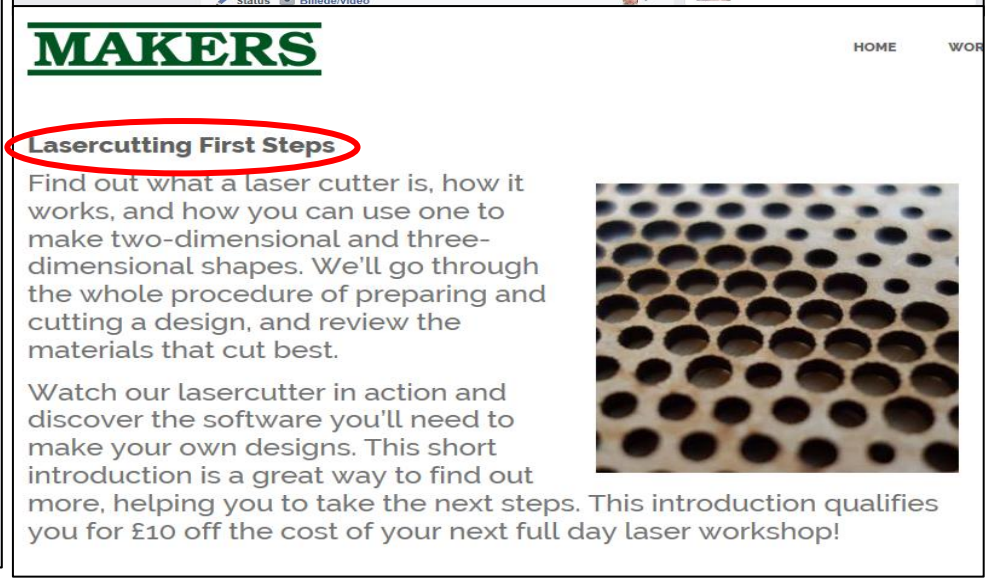
- **co-creation of new** pedagogies and learning environments, including the **development of digital tools and solutions** that offer children avenues for **digital learning**.
- The digital literacy and creative skills of young children will be developed through **participation in makerspaces** in **formal educational settings**.
- the project will involve a **range of approaches to making**, including e-textiles, play with conductive play dough and paint, the design and creation of 3D printed artefacts and e-books, and the creation of objects for Virtual Reality play.
- The activities will foster the development of **digital literacy** and **creativity**, and will enable the integration of knowledge across areas including literacy, science, technology and the creative arts.

  - From the MakEy website, my emphasizes

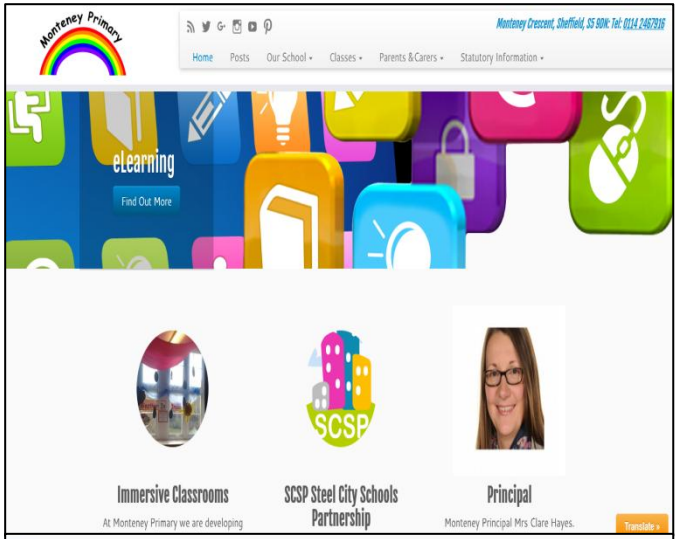
Industry-partners: what are their roles

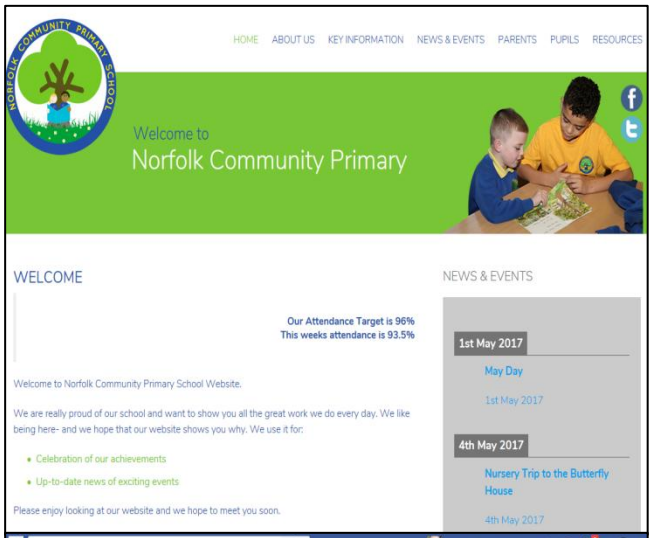


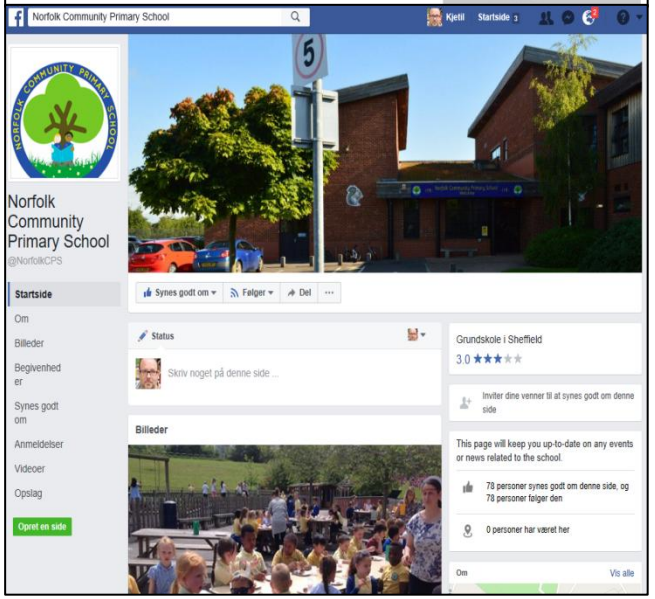




Institutions: how can they be co-creative







Where can the Sheffield and the Aarhus project meet?

- Creation of new practices* is central to both projects
  - In Aarhus the project is not only about formal educational setting, but about the possibilities for learning through play and creativity
- Using a variety of media/technologies is part of both project
  - In Aarhus: no ambition of designing new technology, but appropriating existing (and open-sourced freeware) technologies (benefit: cheap both concerning design and support, easy replaceable, cross-connectable instead of stand-alones)
- Cross-disciplinarity!!!
  - In Aarhus there is no basic difference between the participants: research team consists of academics, pedagogues, workshop designers and devisers, and most of all: of children!**
- *Central question concerning the core logic of a makerspace: is its primarily goal to make things or to be making?
- **How do we engage the various participants in creating new practices and environment – the very makerspace which can be used by the institutions? How do we create a communal understanding of what making and makerspaces are, how can we develop a 'maker mindset' (MAKERSPACENESS) together with the teachers/pedagogues – and together with the children?

Center for Research in Early Childhood Education

Our Practice

Early childhood is defined as birth to eight, and early childhood education is defined as happening in and across many spaces – preschools, schools, homes, communities, clubs, hospitals, on- and off- line, forest schools, playgrounds and the outdoor spaces.

Key themes that are explored in our work include:

- Learning, pedagogy, curriculum, assessment
- Play – traditional and digital: blending on-line and off-lineplay
- Children's lives, perspectives and experiences
- Professionalism and professional knowledge

In each of these themes, our research creates pathways for impact and engagement where we work with many different groups, communities and organisations.

Corresponds with the objectives in the Danish project

https://www.sheffield.ac.uk/education/research/crec

On the importance of being playful…

- The question may not be how to learn to be playful but how to learn not to be not-playful.
  - Kjetil Sandvik