Educating young social innovators from 6 to 16 in makerspace settings: Case studies of existing approaches and their implications for the European Initiative DOIT

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DOIT-Europe.Net

Entrepreneurial skills
for young social innovators
in an open digital world

Outline

I. Salzburg research and DOIT in a nutshell
II. Research issues
III. Research approach
IV. Preliminary Research results
V. Implications and open issues

I. Salzburg Research in a Nutshell

EARTO IMPACT DELIVERED

FORSCHUNG AUSTRIA

TÜV AUSTRIA ZERTIFIZIERT

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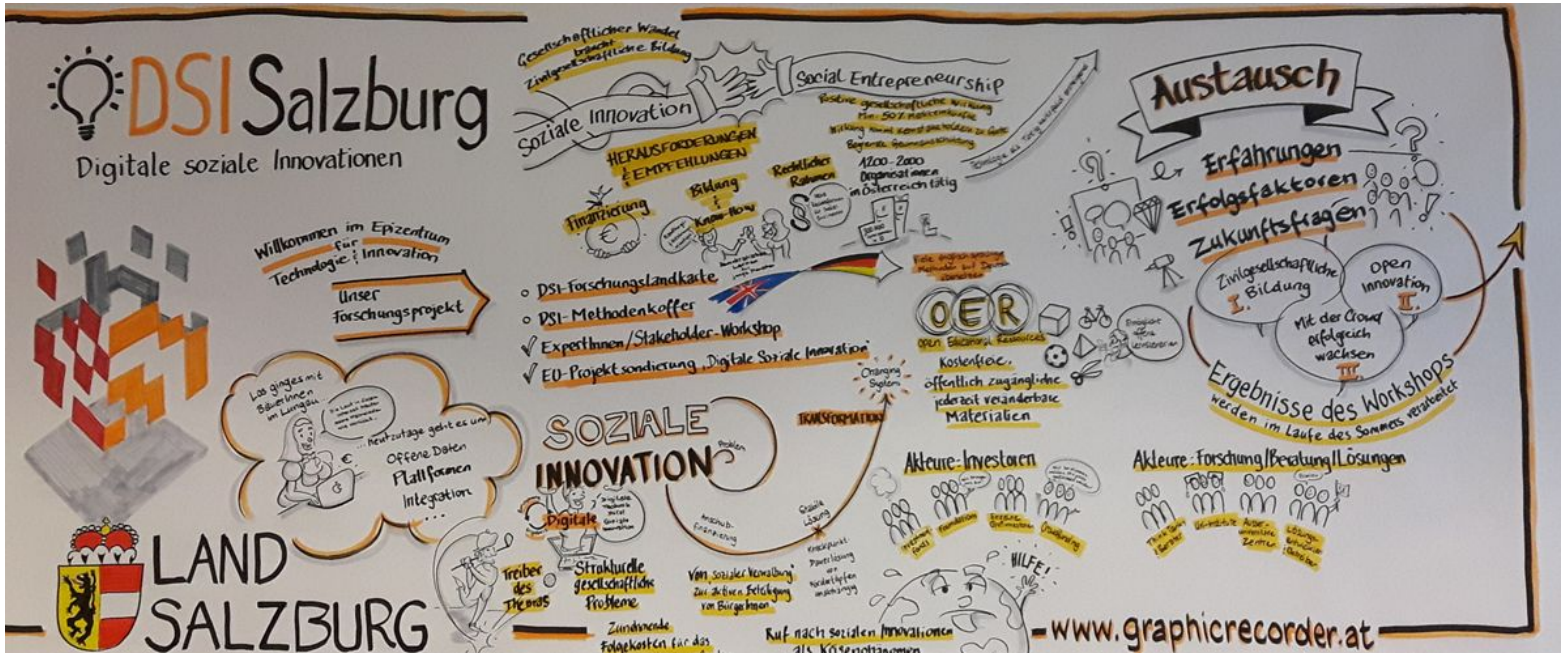
I. Research focus: Digital social innovation



https://ilab.salzburgresearch.at

I. DOIT IN A NUTSHELL

Entrepreneurial skills
for young social innovators
in an open digital world

DOIT develops, pilots, scientifically evaluates and disseminates

- a new learning approach (**DOIT programme**),
- materials (**DOIT toolbox for learners and facilitators**)
- and experiences (**DOIT actions/week**)

for an early entrepreneurship education for children from 6 to 16 years which builds upon social innovations within makerspace settings.

Duration: 10/2017-09/2020

Grant: EU-H2020 Research & Innovation Action: 770063 (2,4 Mio.€)

DOIT's research questions

- How to coach a young person in her / his social innovation learning journey?
- How to stimulate social innovation and entrepreneurial competencies and skills in makerspace settings?
- How to evaluate intertwined and evolving innovation & entrepreneurial competencies and skills?

Project coordination:

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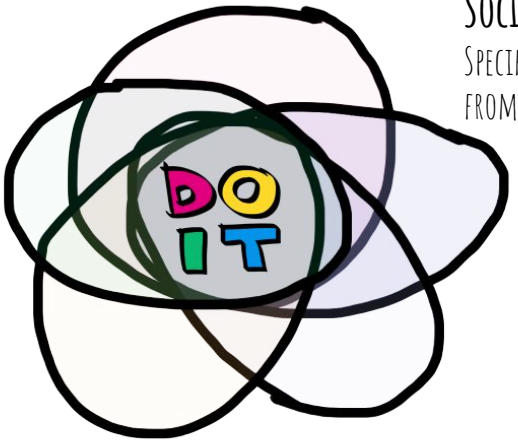
Project partner:

waag society
ZSI
mediale pfade.org
Verein für Medienbildung
Capital of Children
educentrum
Iaac Institute for advanced architecture of Catalonia
LUT Lappeenranta University of Technology
kersnikova
YouthProAktiv
Af

I. Five dimensions of DOIT's approach

Digital and DIY/with others dimension

Technological exploration by maker movement: digital fabrication, maker tools, digital design and prototyping infrastructure



Social innovation dimension

Specific characteristics of social innovation management process; from prompt to scaling-up (DOIT programme)

Entrepreneurial dimension

Social awareness and entrepreneurial self-efficacy + traditional entrepreneurship frameworks

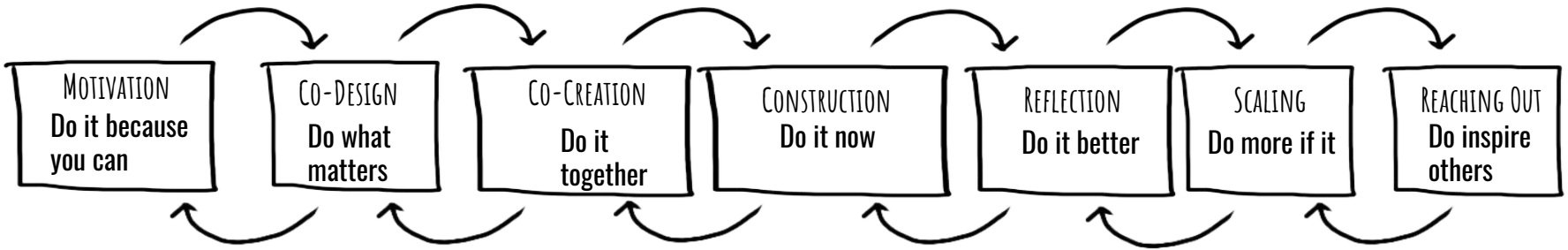
Open innovation dimension

Need-driven and value-driven innovation: participation, co-creation and co-design methods; learning by doing in teams

Educational/pedagogical dimension

relevant learning in schools & beyond, inclusion of SI-facilitator education

I. DOIT Expected results - The DOIT Programme



Selected Results

DOIT toolboxes (for 6-10 years olds, 11-16 years olds)

DOIT toolboxes for facilitators

Validated experiences and recommendations

Online platform for children 14+

III. Early Entrepreneurial and Social Innovation Education

- Entrepreneurial learning: give children skills and interest to shape the world (Lackéus 2015)
- Enable future civilians to shape society, societal processes and developments (Schön et al. 2017)

III. DEFINITION: MAKING AND MAKERSPACE AS ELEMENTS OF EDUCATIONAL APPROACH

- Problem-based and project-based learning
- Learning by construction (Papert & Harel, 1991)
- Typically Focus on digital fabrication
- Digital devices and the Internet as optional tools
- Open educational approach
- Collaboration/intergenerational co-development

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II. RESEARCH ISSUES

- What are existing approaches of educating young social innovators in the special setting of makerspaces?
- What are the characteristics of the approaches?
- Which success criteria, implications and lessons learned can be identified for future projects like DOIT?

III. Research approach - case study analysis

- Criteria of case selection
  - 4 cases
  - German speaking
  - Makerspace setting
  - Children and youth oriented
  - Providing handbooks/toolboxes
  - Topics: societal problems
  - Based on design thinking process
- Dimensions
  - General description of background and ambitions
  - Structure and time plan of the project
  - Role of social innovation and its support in the project
  - Role of making and makerspace settings
  - Implementation in current educational system
  - Results and lessons learned
- Sources
  - Structured Interviews
  - Desktop research
  - Handbooks and toolboxes

Make Your School
Eure Ideenwerkstatt

wilma
WIR LERNEN DURCH MACHEN

"Baut eure Zukunft"

JUGEND HACKT
Mit Code die Welt verbessern

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IV. Case Study 1 - Make Your School, DE

http://www.makeyourschool.de

What?	Hackdays (creative workshops for 2 to 3 days, using digital and technical tools)
Topics?	Finding solutions for current problems in school environment
How?	Project team visit schools, support from teachers
Where?	Extracurricular events in schools across Germany
For whom?	25 to 50 children from the 8th grade upwards
How often?	Once a school year during school hours

The project started in 2016 and is organised by Wissenschaft im Dialog and financially supported by the Klaus Tschira Stiftung.
More information: http://www.makeyourschool.de

IV. Case Study 2 - Baut Eure Zukunft (Build Your Future), DE

www.baut-eure-zukunft.eu/

What?	Innovative education project-toolboxes for creative workshops	Two day competition Hackday
Topics?	Mobbing, future anxiety, violence	Sustainable Development Goals (UN)
How?	Facilitator download toolbox and work on it	Project team and volunteers support in makerspace
Where?	Schools, youth facilities in Germany	Makerspace in Berlin
For whom?	Children from 14 to 16 (8th to 10th grade)	10 teams chosen by a jury from the submitted projects
How often?	Not restricted, anytime	Once a year, during summer holidays

The project started in 2017 as a joint initiative of Social Impact, Deutsche Bank and Deutsche Bank Stiftung. More information: www.baut-eure-zukunft.eu/

IV. Case Study 3 - Jugend Hackt (Youth Hacks), DE

JUGEND HACKT

Mit Code die Welt verbessern

www.jugendhackt.org/

What?	2 to 3 days Hackathons under the motto “Improving the world with code”
Topics?	Sustainable Development Goals (UN)
How?	Project team sets up makerspace in an out of school setting, support by volunteers
Where?	Several cities across Germany, Austria, Switzerland and Asia
For whom?	For children from 12 to 18, interested in programming
How often?	Several times a year per city/region

Since 2013, the Hackathons are organized by the Open Knowledge Foundation and Medialepfade.org. More information: www.jugendhackt.org

IV. Case Study 4 - WILMA (We Learn Through Making), AT

www.w-ort.at/wilma/

WHAT?	One day creative workshops
TOPICS?	Sustainable Development Goals (UN)
HOW?	Organised by WILMA, rented location for set up makerspace
WHERE?	Out of school setting, Lustenau (AT)
FOR WHO?	Children from 9 to 10 (4th grade)
WHEN?	Once a year

So far, the workshops organized by WILMA and supported by Impulse Stiftung and the initiative “Tuoscht mit”, was held in 2017 and 2018. More information: www.w-ort.at/wilma

IV. SUMMARY AND OVERVIEW

	Case study 1	Case study 2	Case study 3	Case study 4
Setting of the workshops	School, extracurricular	School, youth facilities	Out of school (target group interested in hacking)	Out of school (target group school children)
Age of the children	14+	14-16	12-18	9-10
Duration of the workshops	2-3 days	6 hours	3 days	1 day
Materials	Toolboxes with digital and analog tools	Toolboxes with worksheets to download	Workshops in build up makerspace	Workshops in build up makerspace
Results (Prototypes)	Functionality is recognizable	Paper prototype	Executable software or hardware	Functionality is recognizable

V. Implications

- Success of programmes is indicator for importance of Social Innovation and Entrepreneurship Education (SEI)
- Especially while developing social innovations within their direct surroundings, kids are highly motivated
- Different settings need different approaches (e.g. out of school, in school)
- Workshops can differ greatly in duration and provision of materials
- Implementation in school settings can initiate organizational learning
- Target group needs to be reached through different channels

Join our DOIT research network!

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V. Open Issues

- How to measure and evaluate intertwined and evolving innovation & entrepreneurial competencies and skills?
- How to train facilitators to e.g. guarantee an long-term implementation of SEI approaches and broaden the SI mindset?
- How to implement the projects and prototypes developed in the initiatives?
- How to enhance a change of the learning mindset and foster organisational learning?
- How to ensure the existence of the projects for the long term (e.g. financially)?

DOIT's next steps

- Regional and online pilots to test material and approach
- Evaluation of pilots and publishing results
- Generate Hard facts for an evidence based approach

Experiences?
Similar approaches?
Ideas?
Cooperations?