



DELIVERABLE 6.3

EVALUATION RESULTS ROLL-OUT PHASE



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“DOIT – Entrepreneurial skills for young social innovators in an open digital world”

A HORIZON 2020 INNOVATION ACTION

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Summary

Deliverable 6.3 aims at reporting the results from formative and summative evaluation of the three main rollout activities: rollout events with children and facilitator training in the practice partner regions as well as the online Course on iMoox.

The formative evaluation (chapter 2) comprises a series of face-to-face and online sessions and workshops to accompany the ongoing rollout activities by the practice partners. The goal of formative evaluation lies in defining success criteria, monitoring the numbers reached at different stages of the project, discussing mitigation strategies in face of the Corona outbreak crisis and lessons learnt from working with children and facilitators in different settings.

The summative evaluation (chapter 3) reports on final numbers reached both in the rollout events with children and facilitators trained and their basic demographic characteristics. It further indicates the feedback of the trained facilitators as gathered through the online survey.

The last two chapters discuss the lessons learnt from working with diverse groups in diverse settings as well as providing a summary and conclusions.

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List of abbreviations and terms

M	Month
OER	open educational resources
WP	Work package

1 Introduction

This deliverable is dedicated to the evaluation of the DOIT rollout activities following the pilot activities with more than 1,000 children in the different practice partner regions. In the rollout phase, successful formats are extended to a larger audience of interested children in various settings as well as facilitators in so called facilitator trainings in face-to-face events.

The evaluation of the rollout activities has a twofold aim as it has formative and summative character (Bortz & Döring, 2013). For optimally monitoring and supporting ongoing roll-out activities formative evaluation methods have been applied providing at the one hand space for reflection, sharing and exchange between practice partners and on the other hand, closely monitoring the numbers reached and detecting deviations from the targets.

While all roll-out activities were monitored and support was provided throughout, the deliverable especially focuses on two main rollout activities, namely the regional facilitator training and DOIT events for children within the roll-out regions. Evaluation results in respect to the online course (MOOC) will be incorporated in D5.3 Report about DOIT online course for facilitator.

In the framework of the formative evaluation three workshops, online discussions and Face-to-face took place to define success criteria, exchange experiences and to distil lessons learnt. The latter is an explicit goal of this report.

The guiding research questions (Q) for formative and summative evaluation of the rollout activities are:

Q1: Which positive aspects in the rollout activities can be found, what worked well?

Q2: Is there room for improvement? Which aspects did not work well?

Q3: What is the reach of kids per region? What is the age and gender distribution?

Q4: How many facilitators were trained?

Q5: Which lessons learnt can be drawn from the rollout experiences?

While Q 1 and 2 will be the focus of the formative evaluation sessions in chapter 2, Q 3 and 4 will be covered through summative evaluation in chapter 3 Finally, chapter 4 will focus on Q 5.

Instruments used to gather the evaluative data are the following (c.f. Figure 1):

- Documentation and pictures of Workshop during Consortium meeting in Berlin in September 2019 (M24): interactive workshop with room to reflect on both the facilitator training and DOIT events with children in the region. This workshop aims at delivering an overview for all: where do partners stand in terms of planning, first experiences and next steps.
- Documentation of online discussion during online Consortium Meeting (M 30): The workshop was planned as taking part in the framework of the Consortium Meeting in Salzburg but had to be done

online. The focus was again to check the status in terms of numbers reached per pilot partner and to discuss mitigation strategies.

- Documentation of online workshop (M34): The aim was to discuss lessons learnt with diverse target groups, in different settings and geographical locations.
- Evaluation template for Roll-out with children (joint template with WP 5) in Annex
- Evaluation template facilitator training (joint template with WP 5) in Annex
- Online feedback survey for trained facilitators in Annex

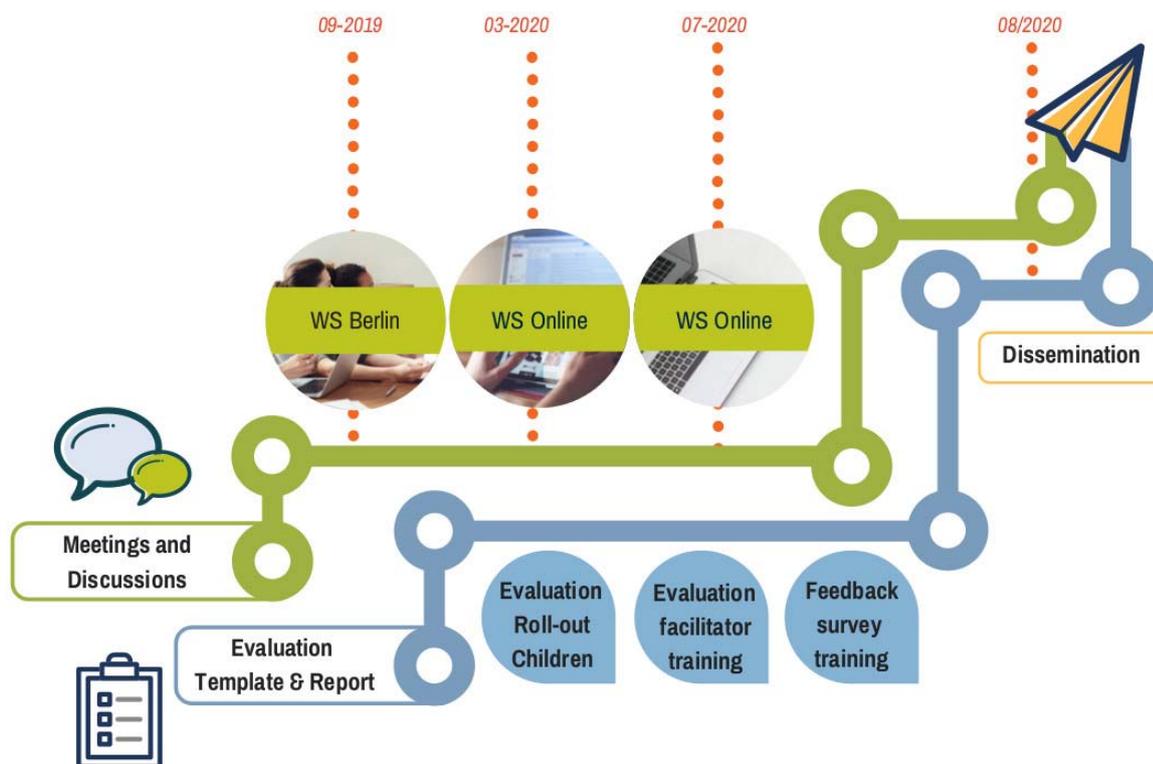


Figure 1: Overview evaluation tools and timeline

While WP5 coordinates all rollout activities, WP 6 has a focus on evaluating them. To better join forces and to avoid overloading the practice partners with reporting, we have developed joint templates for documenting the rollout activities with children and the facilitator training. In order to avoid too many overlaps with the WP 5 deliverables, we defined a distinct focus: This deliverable reports on the evaluative findings, while WP 5 as coordinators of the work performed in WP 5 focus on describing the different activities, detailing the diversity of programmes that took place within WP 5 and mitigation plans.

2 Formative evaluation

Formative evaluation has the aim to monitor progress towards reaching the defined targets and thus to provide evidence for decisions having an impact on ongoing activities¹, e.g. in the sense of risk assessment and mitigation strategies. Furthermore, formative evaluation can be used for quality assurance in running projects, i.e. sharing what works and what does not. In contrast to summative evaluation, that only gives a final evidence, formative evaluation is meant as a supporting instrument throughout the entire project duration at defined points in time.

In DOIT, we held in total three formative evaluation sessions: the first one during the Consortium meeting in Berlin in M24 (26/09/2019); the second was meant to take place during the consortium meeting in Salzburg in M30 (18/03/2020) but had to be substituted with an online discussion because of the Corona outbreak and the due cancellations of all Face-to-face events. Lastly, the third one took place again online, in M34 (01/07/2020).

The following subchapters describe the process as well as the results of each of these formative evaluation sessions.

2.1 Evaluation workshop in M24 Berlin

The workshop took place on the 26th of September 2019 (M24). The aim of the workshop was to gain an overview of the two main rollout activities, i.e. rollout-events with children and facilitator training. Further, we wanted to offer room for reflection and exchange and support learning from other partners. Some partners had already started with the rollout activities even before the official start (M24 for facilitator trainings and M26 for rollout events for children) as opportunities to organise events arose as direct outcomes of the pilots in the regions. The workshop was meant to exchange ideas and experiences between partners who had not started yet and partners who had already made a few experiences. Also in the sense of co-creation the workshop allowed for commonly defining success/evaluation criteria for the rollout activities.

The workshop constituted first of a **socio-metrical exercise** with the aim to deliver an overview of the current status quo of the rollout-activities. Partners were asked the following questions and to position themselves in the workshop room according to the answer that they would give:

1. What is the status of *the rollout activities with children* in your region?

¹ To clarify the difference between summative and formative evaluation, Robert Stake, professor Emeritus of Education at the University of Illinois as cited in Shute, V., J. and Becker, B. J. (2010) says: ‘When the cook tastes the soup, that’s formative; when the guests taste the soup, that’s summative (Shute & Becker, 2010, p. 7).’

Participants were asked to imagine a continuous line across the room. At the one end partners would place themselves, if they had not started at all; in the middle if they had reached about half of the target numbers, and at the other side of the room if they had already completed the rollout activities with children, i.e. reached 400 children in their region. Positions in between these three stages would indicate progress towards the next stage

2. How confident are you that your *roll-out activities with children* will be a success?

Again partners were asked to position themselves on an imagined continuous line that spanned from ‘very confident’ to ‘not confident at all’

3. What is the status of the *facilitator training* in your region?

Same procedure as above but now with focus on facilitator training

4. How confident are you that your *facilitator training* will be a success? (very confident- not confident at all)

Same procedure as above but now with focus on facilitator training

The question regarding the status served to get a comprehensive overview for all. Partners were asked also to remember the status of the others as they were asked in the following exercise to mix groups taking into account the different levels of experience. The question regarding the confidence was posed to identify gaps and hints where partners would need support.

The second exercise was a so-called ‘**brainwalk**’. It consists of three phases. In the first phase partners would walk around silently and write down their own ideas on flip charts with different topics, which were positioned on diverse spots in the room. The topics on the flip charts were:

1. Events/formats for roll-out activities with children
2. Success criteria for roll-out with children
3. Events/formats for facilitator training
4. Success criteria for facilitator training
5. What worked well?
6. What did not work well?

In the second phase, the partners were asked to equally distribute around the six flipcharts with a maximum mix, i.e. partners with no experience with partners with lots of experience. Also members of the same

organisation were asked to split-up. In this phase, partners would discuss the topic, and add additional ideas to the flip-chart.



Figure 2: Impressions from the Brainwalk session

The questions regarding the events and formats were meant to stimulate ideas on how to reach 400 children and 100 facilitators to be trained per pilot region. As the minimum conditions were already defined at the time, suitable formats could be noted down as well. The questions regarding the success criteria were meant to stimulate reflection on how to measure success of the two roll-out activities and how success would be identified. We by intention did not provide them with a definition of success. The questions regarding what worked and what did not work mainly addressed partners with experience in any phase of the roll-out activities, from preparing the activities and finding potentially interested participants to finalising all roll-out activities.

In the third phase, the different groups would present their findings.

Results:

The **socio-metrical exercise** revealed that the progress concerning the roll-out with children ranged from early planning stages to completion of the task. All of the partners had already started with at least planning the roll-out activities with children, e.g. had already identified suitable events or had contacted other organisations to combine events. Surprisingly (in light of the project month and the timing of the task) quite a few partners had already finalised their roll-out activities, thus had reached 400 children in the region already (e.g. Waag, SRFG, EduCentrum, ZSI) (c.f. Figure 3). This was an important insight as partners at an early stage could discuss with ‘advanced’ partners in the following exercise and share their insights and experiences. All of the partners indicated that they felt confident that the roll-out activity would be/was a success. Some felt more confident than others but no one stood at the other end of the spectrum indicating a lack of confidence to reach the goals of the roll-out with children.



Figure 3: Snapshot of status of rollout with children (many have reached the goals already)



Figure 4: Status of facilitator training (most at early planning phase)

In relation to the facilitator training, the exercise clearly showed that the progress was far less advanced. One partner was already very advanced in reaching the planned numbers of 100 trained facilitators per region but most were at the very beginning of the planning phase (see Figure 4). Also the confidence level was a bit lower with this second roll-out activity. Although most partners stood on the right side of the continuous imagined line, indicating that they felt that the facilitator training would rather be a success, some tended to stay towards the middle of this imagined line indicating some concerns. When asked about the concern, one partner said that he feared that even with the training the real impact in the region would be relatively low because he expected that only a few of them would actually incorporate the DOIT approach in their teaching activities.

In the **brainwalk**, first individual ideas and comments were noted down which were then complemented by a mixed group with more and less experiences in the two roll-out activities.

The following events and formats were listed by the partners as ideas for reaching children in the roll-out activities:

- Children's city (no adults allowed)
- Open makerspace days
- Makerfaire
- Open day in school
- Summer camp
- mb 21 festival (Germany)
- CCC congress (Chaos communication congress)
- Kids festival
- Pop-up makerspaces in libraries, the city, etc.
- Cultural Bazar
- Other fairs
- Opening with whole school of one new school makerspace with 'save the children'
- Go to places where you find kids → swimming pools, play grounds, etc.
- Children who went through facilitator training; commit to do small activities in local and festival setting
- We built the make.city with 240 children within a four day long 'Maker days for kids' event (SRFG)
- DOIT bags



Figure 5:

Events/formats for rollout with children

As can be seen in the above list and Figure 5, many very concrete ideas for suitable events were gathered, spanning from typical maker events such as Maker Faires to art or kids events. Partners who had already started with the rollout activities with children shared their experiences, also in terms of suitable formats and activities that worked and still met the minimal conditions of the agreed standards for rollout activities, e.g. the DOIT bag, a cloth bag with the DOIT logo on one side and on the other side to be designed and decorated by the children. Although some of the events listed are national it inspired partners to look for equivalents in their own countries.

The following criteria which would show that the rollout with children had been a success, were collected by the practice partners:

- Hands-on experience
 - Fun
 - Inspiring them and show them 'cool' stuff
 - Motivated kids
 - See flipchart 'What works'
-
- Taking something home of which they are proud of
 - Teachers that implement maker activities
 - Inspire 1/400 to do social innovation
 - Getting into the press
 - To be able to direct enthusiasts onward to a training/course/ programme in kids' town (through our partners in NL)

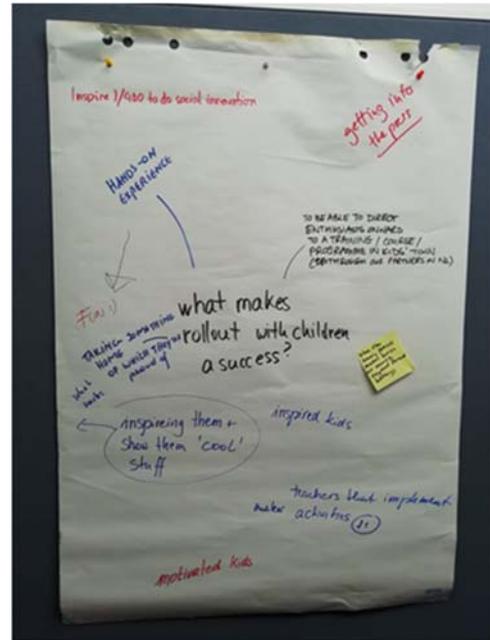
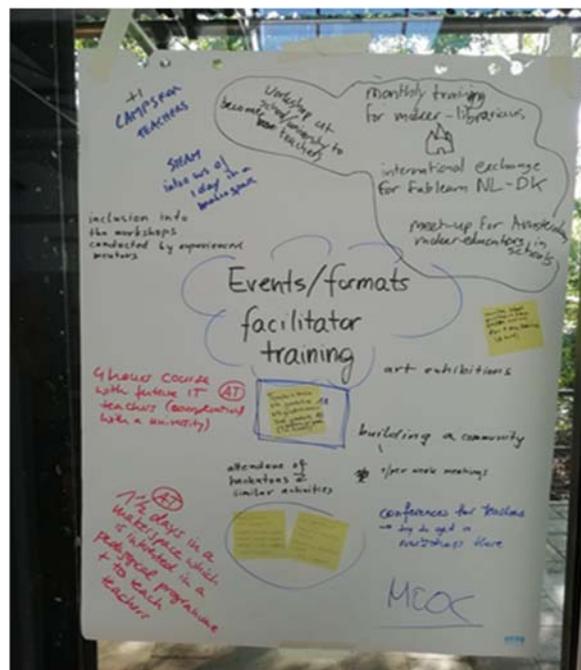


Figure 6: Success criteria for rollout with children

While the first four (five) criteria address the training as such with e.g. hands-on activities, having fun with the result to have motivated kids, the second block of listed criteria deals with wider impacts: teachers who are inspired to sign up for facilitator training or/and implement maker activities after they have 'witnessed' the DOIT rollout activities. Or to inspire one out of 400 to become a social innovator would be a success already according to one partner. How to operationalise this criterion was an interesting discussion in the group.

For the facilitator training, the following events and formats were found suitable:

- Camps for teachers
- STEAM intro workshop of one day in a makerspace
- Inclusion into the workshops conducted by experienced mentors
- Monthly training for maker –librarians
- Workshop at school/university to become teachers
- International exchange for FabLearn NL-DK



- Meet-up for Amsterdam maker educators in schools
- Invite school partners from pilot actions for 1-day training (6 hours)
- Art exhibitions
- 4 hours course with future IT teacher (cooperation with a university) (Austria)
- Teachers train thirteen 6th graders →thirteen 6th graders train ten 3rd graders (4 session or groups in school) *Figure 7: Events/formats for facilitator training*
- Conference for teachers →try to get a workshop there
- MOOC
- 1,5 days in a makerspace which is interested in a pedagogical programme and to reach teachers (Austria)
- Attendance of hackathons and similar activities
- As part of bigger events: STEAM Zagreb week, STEAM Zadar week, Carnet user conference for teachers

Again, similar to the rollout with children, the identified events for potential facilitator training were manifold and very inspiring for the practice partners to hear from others what they planned to do. The events were either imagined to be part of a bigger event, eventually in collaboration with other organisations, such as teacher trainings, conferences for teachers, or STEAM events or stand-alone events for a community that the partner had established good links to. Some partners again followed a peer-learning approach also in their facilitator training where older children are trained to train younger children.

The following would indicate the success of the facilitator training according to the practice partners:

- (usable) inspiration (listed twice)
- They have fun!
- Take-away material (links)
- Hands-on! And interactive (listed several times)
- Open and flexible
- Nice surrounding
- Addressing the target group (teachers) very sensitively and charmingly
- Showing them examples how to integrate
- Link to content to what they do day by day
- Participants get confident to do a workshop on their own
- (similar to previous) Succeeding in (...) participants comfortable to 'do it' in their class (context) even when they feel they are not an expert.
- Comfortable, no fear
- Training in group → confidence building

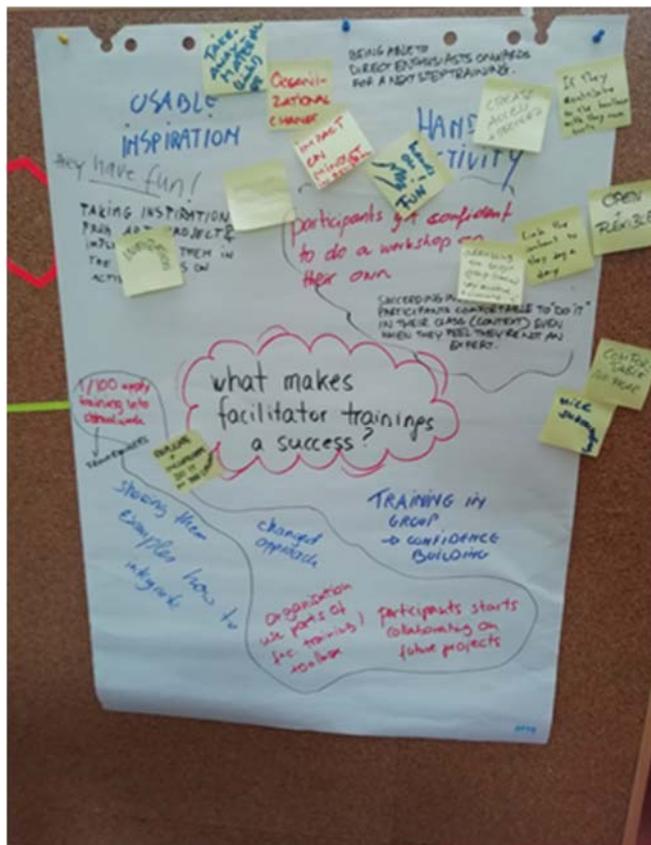


Figure 8: Success criteria for facilitator training

- Organisational change
- Being able to direct enthusiast onwards to a next step training
- Impact on mind-set in general
- Create access and proceed
- If they contribute to the toolbox with their own tools
- 1/100 apply training in school work (-front runners)
- Changed approach
- Organisation uses part of facilitator training, toolbox
- Participants start collaborating on future projects
- Replicate and incorporate DOIT in the classroom

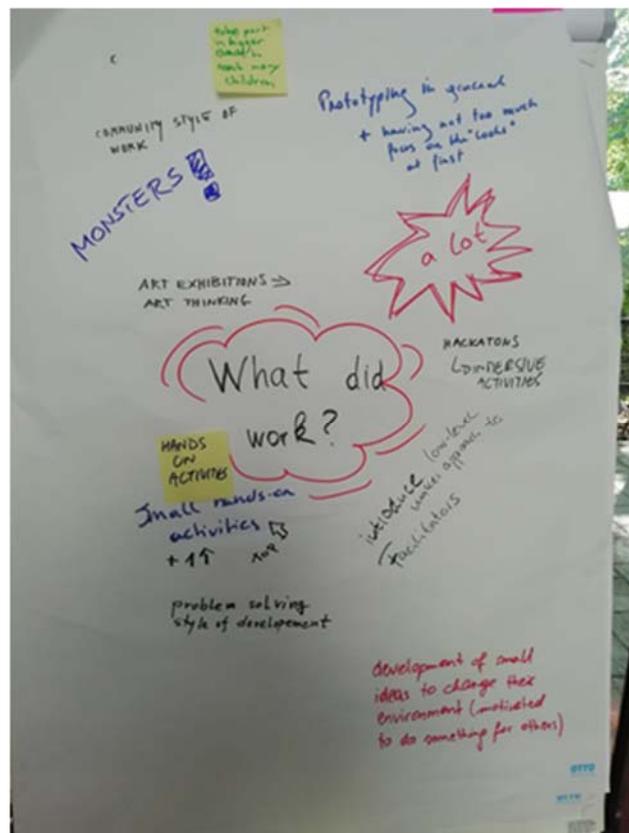
The above list of success criteria for facilitator training can be clustered in two different topics. The criteria in the first block again tackle the training as such and the second block addresses different kinds of direct and indirect broader impact.

In the first block on the training itself, to inspire and to have hands-on activities was deemed as key for success as it was listed several times. Quite many criteria dealt in one or another way with building, trust and empower facilitators to implement their own maker education activities.

In the second block, dealing with the wider impact, some of the criteria dealt with actual implementation and spreading the word and to inspire participants to get further training. Again a rather moderate threshold mentioned by a partner was that if at least one out of 100 applied the training in the school context, he would find this frontrunner a success. This shows very heterogeneous expectations among the practice partners and so does the definition of success. Is it a success only if trained facilitators actually implement a DOIT action or is it already a success when the DOIT core idea and approach have been transported and the DOIT spirit is taken up by facilitators?

The brainwalk further revealed what worked and what did not work so far- from the planning phase to the actual execution in both rollout activities.

- community style of work
- Monsters! ('monsters' are prototypes that explicate and address certain fears such as worries for the environment, see description below)
- Take part in bigger events to reach many children
- A lot has worked (for those who already organised trainings)
- Prototyping in general and having not too much to focus on the "looks" at first
- (Small) Hands on activity
- Problem solving style of development
- Development of small ideas to change their environment (motivated to do something for others)
- Hackathons -> immersive activities
- Introduce low-level maker approach to facilitators



- Art exhibitions -> art thinking work

Figure 9: What did

In general, the practice partners found that a lot had actually worked very well ('a lot'). Some criteria are directed towards rollout with children (first block), some address the facilitator training (third block) and some apply to both (second block).

In respect to the rollout with children, things that have worked so far mentioned by experienced partners was the community style of working where children and facilitators have an equal say and teams gather around project ideas. Also the 'monsters' have worked as a format. These were prototypes by MEPF who have developed 'monsters' with children, which explicate and address certain fears such as worries for the environment (a description of the 'monster' workshop can be found in the DOIT toolbox under: <https://www.doit-europe.net/toolbox#/material/design-your-future-monster>).

The second block, which addresses both activities, mostly underlines the DOIT approach with hands-on activities meant to change the direct environment.

Things that haven't worked in the rollout activities so far listed by the partners were:

- Children activity: the activity was too big/long for the short visit at the booth
- Children activity: getting into the press as DOIT (as contributor to a bigger event)
- Facilitator training: working with too many people > 12 60

Only a few things were listed as many partners, especially in facilitator training, were still operating at a very early stage. As an insight in rollout activities with children, activities have to be well planned, also to be in the timing and reaching as many children as planned. Also attracting press to a booth in the framework of a bigger event, which would have been an added value for reaching wider impact, was challenging.

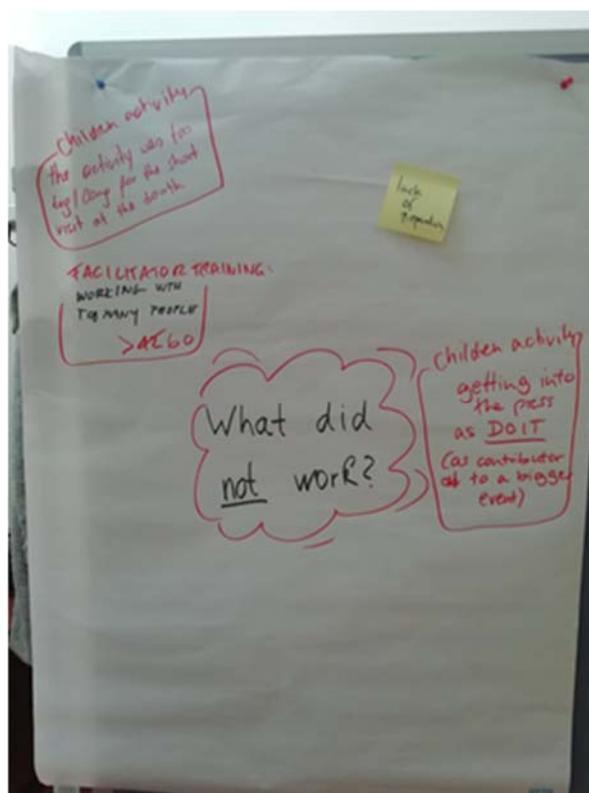


Figure 10: What did not work

In respect to the facilitator training, some partners preferred to work with smaller groups while others found that a bigger group can be trained too if certain conditions are met (overall purpose of event, good embedding in overall programme, focused activities, sufficient number of trainers who assist in the hands-on activities).

Thus, overall the workshop was productive in terms of ideas exchanged and inspirational to partners.

2.2 Online discussion during the Consortium Meeting in M30

Due to the Corona outbreak the Consortium meeting in Salzburg had to be cancelled and instead took place online on the 18th of March 2020, shortened to half a day. Thus, the originally planned workshop on rollout activities and facilitator training was replaced with roughly an hour online discussion during the Consortium Meeting.

It firstly consisted of a tour-de-table among the practice partners who were asked to report on the numbers of children reached and facilitators trained until then. Since we had not received all the completed reports, it was important to firstly get an overview of the numbers reached and then to discuss mitigation strategies in the face of the Corona crisis as many of the planned events had to be cancelled.

The tour-de-table revealed that the targeted number of 4,000 children reached was already met overall by the practice partners although not all had started yet with their rollout activities with children in their region. However, the number of 1,000 facilitators trained was still not being met.

In the second part of the discussion we brainstormed on mitigation strategies. In the following the most important points of discussion and the most promising ideas on how to reach the target numbers nevertheless are listed:

Offer training and rollout activities with children online: Many children due to the lockdown and closing of schools are bored at home. We could use this time to our advantage and reach out through online sessions especially by those partners who had not reached children in their region through rollout activities. However, not all partners are equipped for replacing a hand-on session with an online session. Formats cannot simply be transferred to an online environment but need to be well prepared.

1. Ideas that relate to Corona: One partner had started developing a maker game on Corona which could be used with children at home as well as parents and teachers who still are in schools for children whose parents work in health care. She promised to share all the material and translate it to English.
2. Cancelled events: Partners who had to cancel events shall report also on these events and the expected numbers they would have reached in order to document it as well as the preparation work. Preparation has cost a lot of effort already and postponing events will not always be possible (the documentation of the cancelled events is reported in WP5).

The discussion ended with a summary from the host and an outlook to the next steps (postpone events, prepare for online events replacing cancelled events, share good ideas with other practice partners using the mailing list).

2.3 Online evaluation session in M34

The online session took place on 1st of July 2020 taking advantage of the regular partner call. Additionally to the virtual meeting room (GoTo Meeting), we also prepared an online interactive whiteboard (Padlet) to work interactively like in a “normal” workshop setting.

For framing the workshop the partners were reminded of the goal of the online workshop, i.e. to distill lessons learnt, by reflecting on past DOIT activities, from the DOIT pilots phase 1 and 2, to the rollout activities with children and facilitator training in the different regions.

For an hour the workshop was dedicated to the following three broad categories of lessons learnt:

1. Lessons learnt from working in geographical regions (different countries, urban versus countryside, disadvantaged versus developed neighbourhood)
2. Lessons learnt from working in diverse settings (different topics, in school, outside school)
3. Lessons learnt from working with diverse target groups (children with disabilities, children with disadvantages groups, minorities, working with girls, etc.)

The session was structured as follows:

First, the practice partners were asked to reflect individually and silently on the first category of lessons learnt and to write down their thoughts on sticky notes under the respective topic on the online whiteboard (c.f. Figure 11). After several minutes of individual reflection, in the plenary discussion we aimed for consolidating lessons learnt and to dig deeper with stimulating questions, e.g. Are there any special conditions that have to be considered in your country when implementing a DOIT action? Does the region matter?

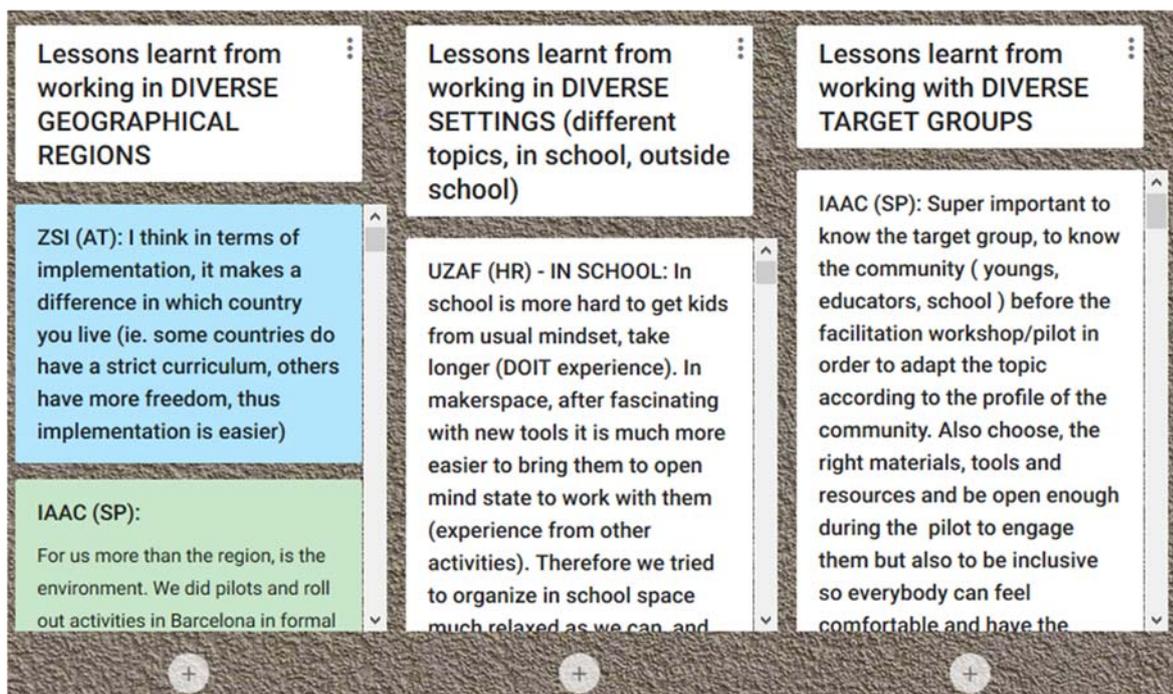


Figure 11: Padlet board with lessons learnt per category

During the discussion a notetaker wrote down additional insights and summarised the main points. The two other categories of lessons learnt were then approached in the same way: first individual reflection and note-taking on sticky notes and then a plenary discussion.

At the end of the workshop the partners were reminded that they would still be able to add thoughts to the online Whiteboard for several days. Especially partners who were not present at the online workshops were encouraged via email to make use of the opportunity to add their individual lessons learnt.

Results:

a) Lessons learnt from working in diverse geographical regions

The practice partners agreed that the country does not matter to a big extent, on the contrary the DOIT approach can be applied universally. However, the local conditions have to be taken into account when designing the action. The country matters after all insofar as that school curricula are rather fixed in some countries with only limited possibility to implement a DOIT action in a school setting. The attitude towards entrepreneurial learning and digital making in some countries is such that these skills are seen as something private/personal. These are not skills that are learned at school, but in leisure time or in the family and therefore there is no need to add to the already fixed curricula.

Also in some countries legal regulations are strict in approaching children with disabilities. In Croatia, for example, it was not possible because of national regulations, to bring children with disabilities to the makerspace. To this end, the practice partner installed a mobile pop-up makerspace at the school.

The region serves also as a local environment in which the action is embedded and to which the action relates to, for instance by addressing local challenges in the problem solving prototyping and furthermore by bringing in local networks and stakeholders, i.e. local businesses, local communities and festivals, etc.

In comparison of urban versus rural regions, partners felt that it was somewhat easier to implement full DOIT actions in suburban and rural areas since the educational offers outside school and educational activities from third parties at school are limited and thus the interest to implement an action is higher. Also makerspaces are more difficult to find in rural areas and thus the DOIT action was regarded as a unique opportunity by the local community. Partners made the experience that in rural areas they would get more coverage in local media and that the local networks worked very well in bringing in additional stakeholders. There was an especially high willingness to help and collaborate to support activities for kids.

Also the immediate neighbourhood in an urban area matters as partners argued. It makes a difference whether participants come from a “well to do” or a disadvantaged neighbourhood. While the actions and DOIT rollout activities with its pedagogical approach of letting children explore and not interfering to much as a facilitator could be implemented very well in the first, it had to be slightly changed in disadvantaged neighbourhood where much more effort had to be dedicated to trust and confidence building before moving on with the programme elements.

b) Lessons learnt from working in different settings

The implementation of a DOIT activity at schools has to be well prepared in advance. The same applies to a facilitator training for teachers, even if it takes place online as a partner argued. Preparation has to start a year or at least a semester earlier as several instances (e.g. local authorities, school rector, teachers) have to be passed before actually working at a school. Implementation in schools needs a lot of planning and it is time sensitive since the school year is mostly fully planned a year in advance.

One important lesson learnt is about the communication and facilitation methodology which was different in formal and non-formal environments. In a school environment the DOIT pedagogical approach clashes somewhat with the traditional teaching at school and therefore the participants have to be introduced to the DOIT concept where failures are acknowledged as a welcome opportunity to learn and where participants are not told what to do but supported to achieve what they decide to do. Even if tools and materials are brought to the school it is still a school environment. For children it is tricky to understand the role of the teachers if they act as facilitators of a DOIT action; and also for teachers it is difficult not to act so much as teachers but as facilitators, e.g. not to tell the children exactly what they should be doing. For children it is difficult to get them out of the

'school behaviour', meaning there is no 'right' or 'wrong' and in this case it is not about getting a good grade but to develop themselves.

Practice partners noted that probably for the above mentioned reasons activities took longer in schools.

In respect to discipline and working attitude the experience of the partners in school compared the outside school settings differed. For some it was much easier to refer to existing rules and culture of behaviour at school, while for others it was an advantage to get the children out of their comfort zone and to establish an own “code of conduct” in their makerspace setting.

In school settings DOIT activities need to be aligned with the curriculum - which is not the case if you do it outside of school. Also in timing the DOIT activity the school schedule has to be taken into account, e.g. fixed breaks, school hours, but also the material to use sometimes is regulated by the school. Bringing snacks is not allowed in some schools. The room concept is also less flexible compared to a makerspace.

An advantage of implementing a DOIT activity at school is the higher attendance. While in general the attendance was constant also in outside school settings, in some actions it was an issue that participants dropped out.

As practice partners argued, in makerspaces, after children got fascinated with new tools it was much easier to bring them to an open mindset and to work with them. Students were more excited, motivated and active outside of their usual environment. A huge difference between a school and an outside school setting is that there is a positive selection in the latter one, i.e. children come voluntarily and thus they do come with good motivation already. However, the downside of this is that the group is not very diverse since extracurricular actions (holiday offers) in urban regions are often initiated by very educationally focused parents. The school offers a broader target group access. Also in outside school settings, doing the recruitment of participants is an extra task when organising a pilot in which reaching the various target groups needs specific attention.

In comparison to a shorter rollout activity with children, a full DOIT action results in richer innovations as the actions can be more framed and more time can be dedicated to the seven elements of approaching a problem, searching for a solution, designing it and so forth. In other words, the length of the activities has an impact on the “quality” of the prototypes and ideas. Also, group work in large scale settings (e.g. faire) can be more complicated sometimes (especially when it's a booth you can drop in/drop out, and when not all participants start and end at the same time).

Another lesson learnt referred to the setup of the space - in every setting- and how important it is to prepare it in a way to be inclusive and engaging. Independently of the setting, especially in large scale rollout activities where you have only “one shot” it is important to choose the right material (for the given time) to guarantee an immediate successful experience for the children.

In terms of working with different topics, the partners agreed that it is mostly important for children to choose the topic themselves so that they can identify with the issues, which enhances motivation.

c) Lessons learnt from working with diverse target groups

The experience of the practice partner shows that it is mostly important to know the target group and the community (educators, school) well before the facilitation of a workshop or pilot in order to adapt the topic according to the profile of the community. Also in choosing the right material, tools and resources, the needs of the target group have to be taken into account so that participants feel comfortable and have the space to be themselves. Also the age of the participant matters in preparing all activities and the needed support.

Some partners made the experience that socially disadvantaged children have embraced our methods, tools and processes even more, than those who are highly supported and experienced in education offers. The openness and the chance to “just do it and make and try” sometimes seems less pronounced. Partners noticed a big difference in agency between children with more and less privileged backgrounds. More privileged children are used to being supported and praised for their ideas, designs, work, presentation, this enables them to be more free, less afraid of making mistakes, free to speak, and proud of their achievement. However children from less privileged backgrounds have to be encouraged more as they overall tended to ask for more clear instructions when they did the assignment ‘correctly’. They had higher self-censorship over their ideas and were hesitant to speak up and present. In outside school settings it is more difficult to attract children from disadvantaged neighbourhoods, but as one partner put it: “*But WHEN they come, this approach is great for them! But here they are included, they can move around and have loads of creativity and it brings out the best of them*”. (Organiser and facilitator of a DOIT pilot).

The DOIT approach also seems especially suitable for children with learning disabilities as it allows for individual learning.

Gender balance is easier to get in school environments, especially in less privileged environments. Also children with disabilities are easier to reach in a school setting.

Practice partners noted that the more diverse the target group is, the more facilitators are needed.

3 Summative evaluation

While in general rollout activities were planned to start in M24, some started already earlier taking advantage of arising opportunities resulting from the earlier pilot activities in the different regions or due to large scale events that took place already before the planned start of WP 5 rollout activities.

Due to the Corona outbreak many of the planned events had to be cancelled, some of them were postponed, while a few could not take place altogether, since the postponed events would not fall anymore in the timeframe of the project, especially the larger events, where DOIT actions were just collocated but DOIT has no influence on its exact date. Thus, the following gives a summary of the numbers reached. The data refers to all gathered evaluation forms as filled in until 25th of May 2020 (M32). While the mitigation strategy was discussed several times in online workshops as well as regular partner calls, the reports on the concrete alternative plans were managed by WP 5 in their rollout coordinator and reported in the respective deliverable.

3.1 Rollout for children in regions

A rollout activity with children would typically involve children in a hands-on activity while ideally they would also get an understanding what DOIT is about. Usually it would include tools from the toolbox and apply formats that the practice partner had already experience with.

A rollout activity with children had to fulfil a couple of minimal criteria in order to count as such and was divided in three different categories of audiences. The duration of each child's active engagement should be 8–10 minutes as the minimum (category 1), otherwise the activity counts just as a secondary activity of a lesser engagement (category 2) or, if very little to almost no engagement, it would fall into the category dissemination/communication (category 3); so there are three categories representing three kinds of reaching our target group:

1. those who take part actively in hands-on activities for at least 8–10 minutes
2. those who engage but not through hands-on activities or for shorter activities only: e.g. a child that browsed many success stories or toolbox materials presented, talked to a young facilitator present and asked more about future project activities, or those that maybe interacted with maker tools briefly or quickly drew their idea for a social innovation gadget but did not join in for the longer (workshop) activity (please note that you do not have to plan secondary activities or reach any children in this way)
3. the widest possible reach, including children that simply have the chance to see photos, posters or other communication materials, so those part of your general dissemination reach – this could be the

estimated/average number of children attending the whole larger event per each day (excluding children from cat 1 and 2).

All practice partners together need to reach 4.000 children in total with hands-on, engaging activities that combine making and social innovation and allow the young participants to develop their entrepreneurial competences (e.g. creativity, problem-solving or team work). This means that each region should reach around 400 children in category 1 (in Austria, this is split between the two partner organisations ZSI and SRFG, otherwise 400 children per partner in the other countries). The numbers in category 2 and 3 show the wider reach of the rollout activities.

In total, 20,734 children participated in one way or the other in the different rollout activities. The following table gives an overview of the numbers reached per practice partner and per audience category as per 25th of May 2020.

Table 1: Reach of kids

Partner	Number of children- cat 1 (hands-on activity)	Number of children- cat 2 (interaction without hands-on)	Number of children- cat 3 (dissemination)	Total number
EduC	353	1 074	600	2 027
IAAC	860	20	720	1 600
LUT	93	0	0	93
MEPF	110	15	0	125
Poly	0	0	0	0
SRFG	405	440	0	845
UCSyd	0	0	0	0
UZAF	1 550	10 900	0	12 450
WAAG	400	0	0	400
ZAK	105	1 050	1 650	2 805
ZSI	154	247	0	401
Total	4 030	13 746	2 970	20 746

As the table above shows, the targeted number of involving 4,000 children in rollout activities through short hands-on activities has been reached with 4,030 participating children. Additionally more than 13,500 children have been engaged in secondary rollout activities and almost 3,000 children have been reached through wider dissemination. For two practice partners it was not possible in the timeframe until the breakout of Corona to organise rollout activities with children. In the case of the Danish partners (UCSYD, former CoC) it has to be noted that they have excelled the targeted numbers of participating children in the pilot actions by far and have thus already compensated for partners who were not able to reach the target number in the past pilot activities².

In the case of Poly in Serbia, all already planned rollout activities had to be postponed due to the Corona outbreak until after the summer break and they were still evaluating at the time of writing the option to organise it in the timeframe of the DOIT project until the end of September 2020. Similarly, LUT was planning on more activities in September 2020.

While the primary activities were at the core of the rollout activities with children, also secondary and tertiary activities contribute to the overall reach of the rollout activities (c.f. Figure 12).

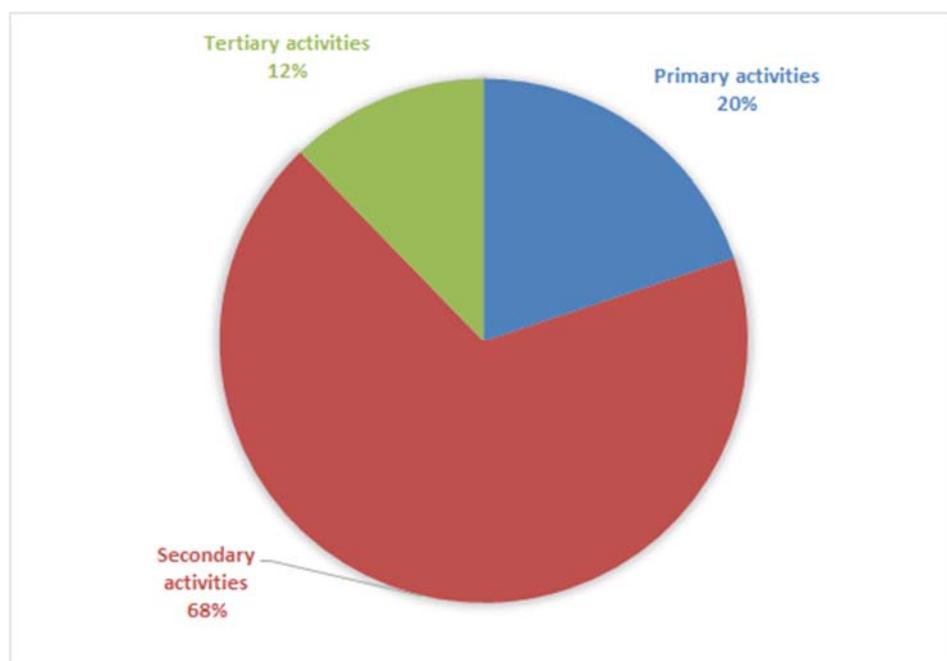


Figure 12: Share of rollout activities with children by category

² Each practice partner was expected to involve 100 children in total in both pilot phases, the Danish partners have implemented the pilots with a total of 220 participating children (!)

However, in the stricter sense only primary activities count as rollout activities with children and thus the following details focus on primary activities only.

As illustrated, there were slightly more younger children between the age of 6 and 10 than children in the older age group between 11 and 16 years participating in the rollout activities. However, in 10% of the cases the age group was not specified.

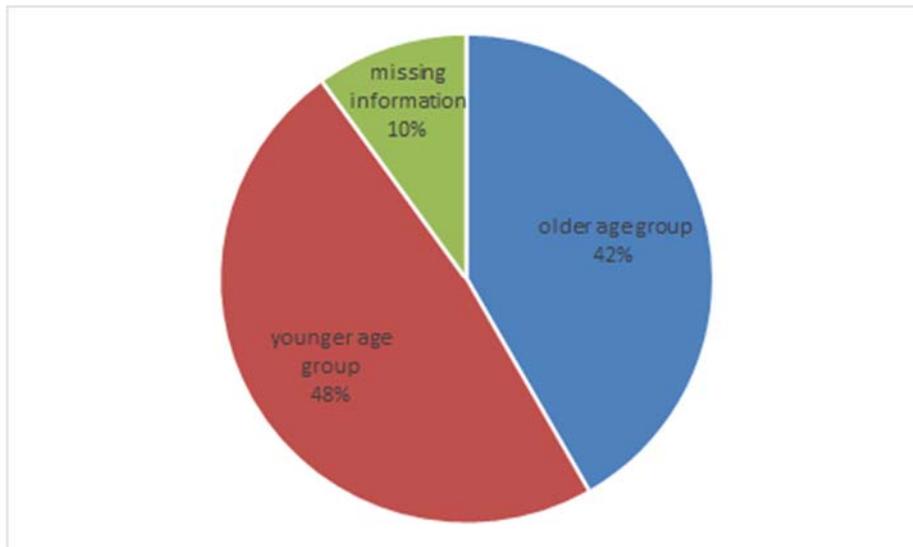


Figure 13: Share of younger and older age group in primary rollout activities

The gender composition of the participating children was fairly balanced with 48% girls and 52% boys.

Also specific target groups engaged in primary rollout activities as the following figure shows. Obviously, the categories below are not mutually exclusive. For instance, a child under 6 might also have a disability at the same time and thus count in both categories.

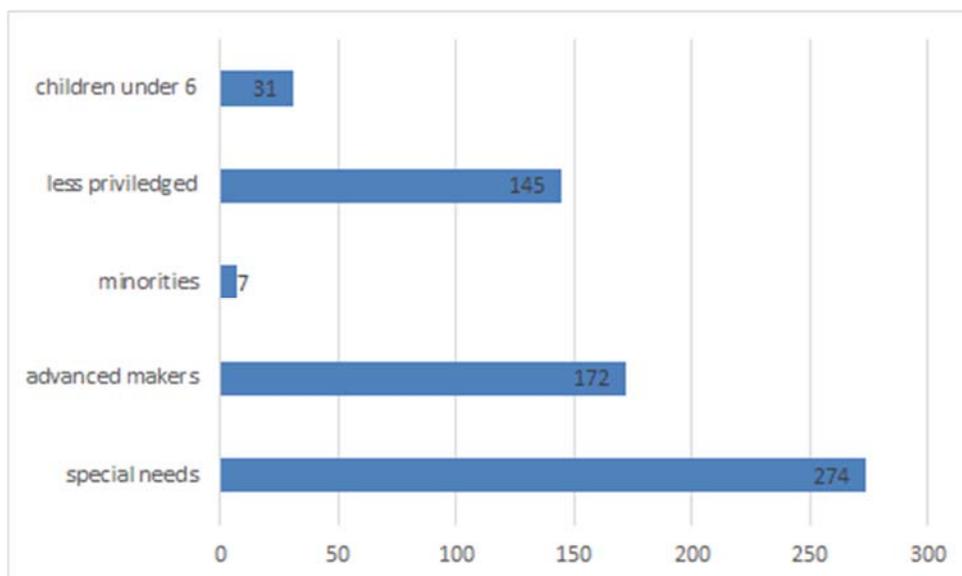


Figure 14: number of specific groups

There was a considerable share of children with disabilities representing 7% of children participating in primary rollout activities: 90 children participated in the Children City in Salzburg, an event where SRFG had a booth and UZAF, which organised several events including 160 children with disabilities.

Interestingly the activities also attracted younger children below the age of 6 years on the one hand with obviously no pre-knowledge and on the other hand advanced maker children.

In average the rollout events were supported by 9 facilitators. However, there is a considerable range from one facilitator for a small event (e.g. LUT organised an online programme with eight participants) up to 80 facilitators for a large event (e.g. SRFG organised Maker Days for kids with 150 children engaged in one day).

In total, 315 facilitators were involved in the rollout activities with children. The share of female facilitators was 55%. A fair number of female facilitators is key in order to provide for female role models and to attract girls as it is known that girls in out-of-school activities are more challenging to attract, which our pilot activities have also shown (c.f. Schön et al., 2020; Sheffield et al., 2017).

Additionally, the events were supported by 77 external facilitators who had not been involved in the DOIT project until then and had been trained for the rollout events specifically. This allowed the practice partners to contribute to large scale events as well.

In some of the rollout events with children also other external stakeholders contributed with input, feedback or facilitation of parts of the event. The following stakeholders were listed by the partners: Fab lab professionals and makers, urban district representatives, rectors and vice-rectors of educational institutions, educational staff and students from a school of design as well as other schools and universities, coaches, social

entrepreneurs, colleagues from local initiatives, Stakeholder from Ministry of Education, and family members such as parents and grandparents.

3.2 Facilitator training in regions

A facilitator training is meant for future facilitators of similar actions inspired by our DOIT activities. These could be teachers, primary or secondary school teachers, professional entrepreneurship trainers, parents, makers, educational multipliers, researchers, young people under the age of 21 (as peer facilitators) and youth workers.

To count as such the training has to have a minimum of 120 minutes training, optimally 4 h or longer. The learning goals were defined as: Participants know the DOIT programme and its steps, are aware of the toolbox and what to find there, experienced tools and the DOIT learning approach as a combination of maker education, social innovation as well early entrepreneurial education. As minimal content, the DOIT learning approach had to be explained as well as at least two tools from the toolbox used.

Similar to the rollout activities, some of the facilitator trainings took place already before the planned start in M26 (September 2019). As the workshop during the Consortium meeting showed several partners had already started organising training events and some were already quite advanced in reaching the numbers (100 per practice partner; in Austria SRFG and ZSI shared the number to reach; 1,000 in total). However notably there was a slower start and even half a year later, in M30 in the online discussion it became clear that the numbers were still not reached (in contrast to the rollout activities with children). Several of the planned activities had to be cancelled due to the Corona outbreak.

The following table gives an overview of the numbers reached per practice partner and per audience category (as per 25th of May 2020).

Table 3: Numbers of trained facilitators

Partner	Primary school teachers	Secondary school teachers	Entrepreneurship trainer	Makers	Educational multipliers	Researchers	Young people below 21 years	Youth workers	Others	Total number
EduC	97	72	1	-	-	4	4	27	8	211
IAAC	10	20	4	371	-	4	8	10	21	102
LUT	-	11	9	-	-	33	7	2	10	72
MEPF	17	21	-	-	-	-	1	-	-	39
Poly	32	12	1	22	-	3	17	-	18	105
SRFG/ZSI	1	9	-	11	19	5	-	2	81	128
UCSyd	-	-	-	-	30	-	50	-	-	80
UZAF	38	10	-	-	-	-	-	-	-	73
WAAG	15	16	1	4	1	-	-	-	1	57
ZAK	-	-	-	-	-	-	5	-	-	73
Total	260	171	16	74	50	49	37	41	154	940

The table shows that the target number of 1,000 trained facilitators has almost been reached with 60 trained facilitators missing. However, some of the already planned training events had to be cancelled due to the Corona outbreak and were either postponed or the efforts were used to attract potential facilitators to the DOIT-MOOC online course.

It was not always possible for the partners to specify to which target group the trained facilitators belonged. Thus, while the total number is accurate, the information in the columns in the middle of the table referring to the professions of the facilitators such a primary teachers, secondary school teachers could not always be provided. Thus, the total number is not a sum of these specific columns, on the contrary it provides additional details on the facilitators in most cases and shows the diversity in terms of their background. Also, it has to be noted that ZSI and SRFG carried out joint events.

The following figure shows the professional background of 852 trained facilitators (the professional background was not revealed in all trained facilitators).

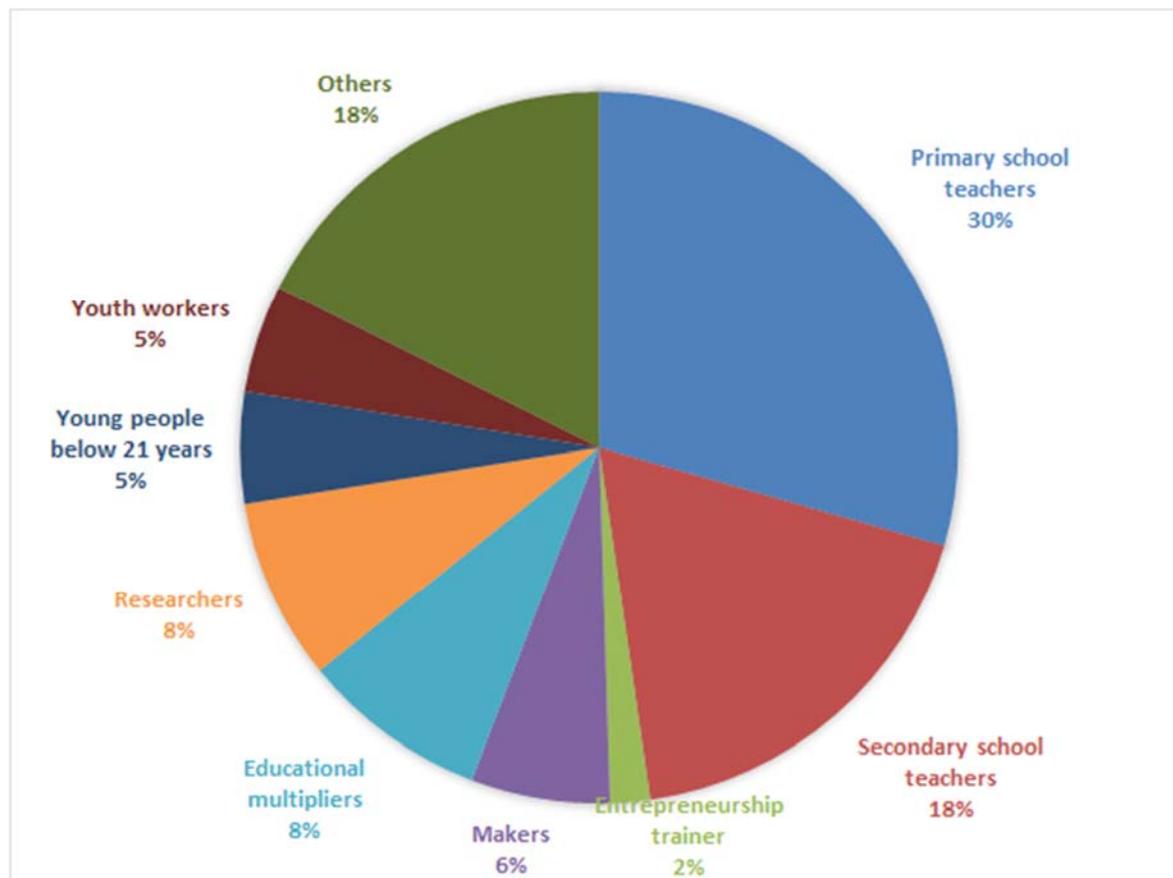


Figure 15: Share of trained facilitators by professional background

As can be seen in the figure above, almost half of the trained facilitators work as educational staff, either in primary or secondary education. About 8% count as educational multipliers. Young people under the age of 21 who were trained following a peer-to-peer approach constitute around 5% overall. Researchers represent about 8%, makers sum up to 6% and youth workers to 5%.

Some details were provided also in the ‘Other’ category. It comprises unemployed people, library staff, policy makers, university students and more specifically teacher students and informatics teacher training students, journalists, lawyers, and engineers.

3.2.1 Facilitators’ feedback

We developed an online feedback survey (c.f. Annex) to send out the participants of the facilitator training right after the event. Sometimes it was also already filled in towards the end of the training. The survey was suggested

to the practice partner as an option to collect feedback from the participants but partners who already had feedback procedures in place did not have to replace those but were asked to report on the feedback of the participants in the documentation of the training. However, due to the fact that the facilitator survey was not obligatory it was filled only by a rather small fraction of the overall trained facilitators. As the analysis shows it was used only in Denmark and in Austria. Thus the following results refer only to facilitators trained in the two countries and it is not representative for the overall sample.

The survey consists of six questions in relation to the training and additional demographic questions and the general setting of the training (location, country).

The following analysis of the feedback survey is based on 36 responses. As the results show it was used only in Austria (41.7%) and in Denmark (58.3 % of the overall responses).

About 50% of the respondents declared themselves as female, 47% as male and the remaining 3% preferred not to say.

1. To what extent was attending this training worth your time?

36 responses

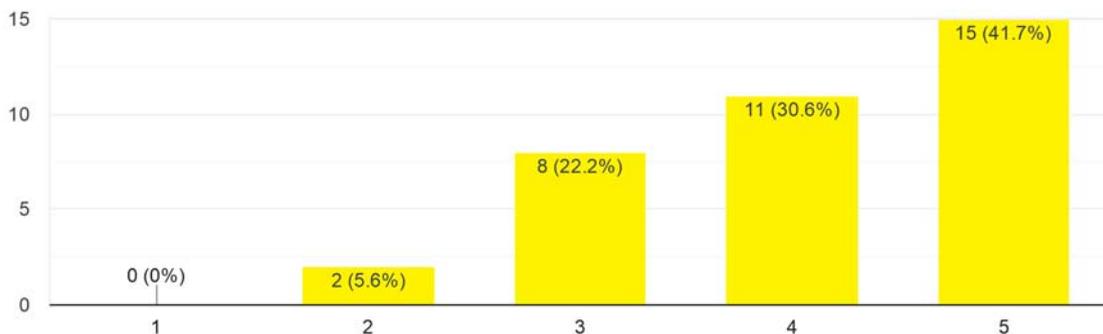


Figure 16: Answers to question 1 (Likert scale from 1-not at all to 5-extremely). To what extent was attending the training worth your time?

The figure shows that of all respondents more than 70% (4 and 5 together) found the facilitator training very much worth the time.

2. How would you rate each of the following?

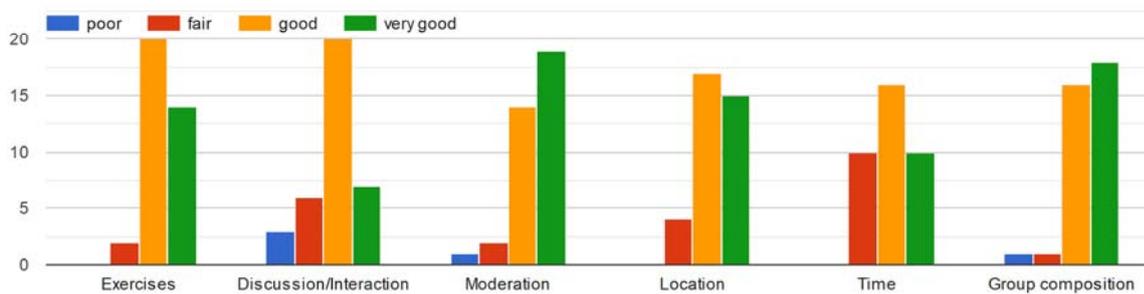


Figure 17: Answers to question 2: How would your rate each of the following?

As the figure 17 shows, all elements of the facilitator training were rated rather positively.

The exercises used in the facilitator training were rated in average with a score of 3.3, i.e. between good and very good. Only 2 respondents found the exercises fair and no single one rated them as poor.

Discussion and interaction as one of the core elements of the training were also rated quite positively with an average of 2.8, i.e. towards good. Thus, the answers here had a bigger range: 3 found it poor, 6 as fair and still the majority of the remaining 27 respondents rated it as good and very good. The negative answers obviously detect a gap and a potential hint for improvement, thus the training should include more time for discussions and interaction.

The majority again liked the moderation of the training with an average of 3.4 (i.e. between good and very good) and 33 respondents who rated the moderation as good and very good. Only a few did not like the moderation of the training, i.e. two found it fair and one found it poor. The negative rating is however minimal (below 10% of the overall respondents) in order to call for being addressed.

Also the location was rated as good and very good with an average of 3.3. Four people found the location poor, but the remaining 33 people liked the location.

An average rating for the ‘time’ and timing of the training was 3, i.e. good. Of all respondents 10 found it fair, the remaining 26 found it good and very good.

The group composition as indicator for group dynamics was criticised by very few, one found it poor and one found it fair, while the majority found it good and very good with an average of 3.4.

Thus, of all ratings the only negative aspect that calls for more attention is the interaction and discussion element that 9 out of 36 found critical.

When asked whether they would be planning to use the information gained in this training, 50% said yes, and 50% said no. However, as the following figure shows, an overwhelming majority of more than 94% claimed they would be using the tools and resources presented in the training. The ones who imagined using the overall information were mostly teacher training students who wanted to use the information.

8. Are you planning to use the DOIT tools and resources presented in this training?

36 responses

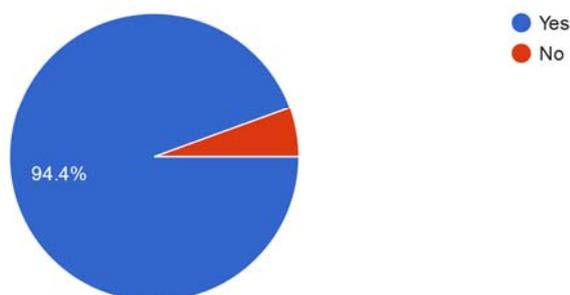


Figure 18: Answers to question 8: Are you planning to use the DOIT tools and resources presented in this training?

The questionnaire also included some open questions. The given answers had to be translated back to English in order to be analysed as many respondents preferred to answer in their national languages.

When asked what they liked most about the training, they mentioned the hands-on experience, and the good mix between theory and practice. Creating an own prototype and to get to know the pedagogical approach and methods was an asset. Furthermore, having fun and learning at the same time was another aspect that the participants particularly enjoyed. The trained facilitators appreciated that the training offered a range of activities, tools and methods to choose from and to apply it to their own working environment. The collaborative aspect and the group dynamics were found very positive.

Only a few negative aspects were noted down in the open text field in the feedback survey. A few found it exhausting or difficult to follow and some were distracted by the noise of other groups. Also thought not sufficient time had been provided for the training.

The feedback gathered by the other practice partners and reported in the evaluation form draws a similar picture. Most participants were excited about the training and the practice partners were astonished by their creativity and their shown flexibility. A few partners reported that there were fewer spots than requested available in the training: *“We have received over 200 applications within 5 days of advertising. There is a great public interest in getting involved in projects like DOIT and in general projects working with young children. Although most participants were either educators or makers, quite a few non expected specialists came to learn*

and offer their expertise”(Poly). “The training went very well and the participants were always motivated and actively asked questions and gave their opinions. It was very interesting and exciting to see that the participants already thought about how to use some tools in their own work”(SRFG).

Some of the hands-on activities also helped to break the barrier between different kinds of participants: For instance, the soldering exercise was extremely well received and broke the barrier between the educators and makers.

Most trained facilitators expressed the wish to apply the DOIT approach in practice and found the training very useful with its hands-on exercises and hints to the toolbox and additional material. To further support the transfer to their own practice, some training comprised roleplay. As SRFG describes, although the roleplay was something unusual for the participants, they got good insights into what issues they might face.

4 Lessons learned

In the following the lessons learnt are summarised for both the rollout activities with children and the facilitator training. They are based on the evaluations forms filled in by the practice partners and are further complemented with findings from the three formative evaluation sessions. When examples or citations refer to the insights of a specific practice partner, the name of the organisation is added in brackets.

The lessons learnt are clustered into different topics.

4.1 Rollout with children

For the rollout with children lessons learnt comprises the following four topics: working with different target groups, facilitators, different topics & activities, diverse geographical regions and different settings, and practical issues and logistics. When direct citations of evaluative forms and examples are included the respective practice partner is added in brackets.

Working with different target groups

- In general, it is really important to know the target group and the community (educators, school) before the facilitation of a workshop or pilot in order to adapt the topic according to the profile of the community.
- Children below the age of 6: Also very young children engaged in DOIT activities, which shows that the DOIT approach can be adapted even to children as young as Kindergarten children.

- **Children with disabilities:** A considerable share of children with special needs participated in the rollout activities. Similar to the experiences in the pilots, rollout activities seemed a good tool for integration where children with and without special needs collaborate. The DOIT approach also seems especially suitable for children with learning disabilities as it allows for individual learning.
- **Girls:** The rollout events with children had almost an equal share of female participants. Especially in an out-of-school setting it is known that girls are more challenging to attract. A contributing factor is certainly that female facilitators act as role models and that the invitation to the events are designed in a gender sensitive way.
- **Specific target groups:** The DOIT approach supports a learning culture that differs from the traditional school culture (e.g. errors are a welcome opportunity for learning, learning takes place hands-on, learning is about solving problems and out-out oriented) and thus constitutes an attractive alternative for children who regularly underperform in school settings such as children from minorities and disadvantaged neighbourhood.
- **Children from less privileged backgrounds:** children from less privileged backgrounds have to be encouraged more as they overall tended to ask for more clear instructions when they did the assignment 'correctly', they had higher self-censorship over their ideas, they were hesitant to speak up and present. In outside school settings it is more difficult to attract children from disadvantaged neighbourhoods.

Facilitators

- **Number of facilitators:** There is no right answer to the question of how many facilitators should support a rollout event with children. It depends on the setting (small scale or large scale event, what kind of event, how many children are expected at the same time, size of booth, etc.), which has to be considered when planning.
- The more diverse the target group is, the more facilitators are needed.
- Facilitators should have complementary skills matching all requirements of the event and the planned activities.
- Female share of facilitators is important in order to attract girls.
- External facilitators allow to organise large scale events where many facilitators are required but they have to be well prepared, especially if they are not acquainted with the DOIT approach.
- It is important to adhere to the facilitator role as it was conceived in the overall pedagogical approach also in the rather short interaction of a rollout event. Facilitators act as supporters and offer a little help on *“how to get there”*(MEPF)
- Facilitators should be attentive to skills of participants: *“It’s important to consider their starting conditions (prior knowledge) – for some children handling a mouse and clicking was a first challenge,*

others had previous programming experience – hence their missions were adapted’ (ZSI). This is even more important in short interactions where there is not much time for development and has to be taken into account in the design of the activity.

- Also parents can act as co-facilitators but it has to be made sure that they do not do the work for their children. Some partners made good experiences in designing activities for both. E.g. a “combination of activity for children with parents worked well, especially on the weekend” (WAAG).

Different topics & activities

- For the primary activities it was important to design an activity that was short and hands-on but nevertheless to get it completed so that children would not leave with half done things.
 - E.g. personalising eco-friendly tote bag (EduC)
- Activities which are inspiring and make them reflect and curious to follow up:
 - E.g. Working with re-use of (electronic) waste is very catchy and inspiring – tackling the creativity, but also for a critical reflection on environmental issues and a focus on technology-based solutions (MEPF)
- Activities that encourage participation and that reflect the diversity of skills of the participants
 - e.g. designing the DOIT super hero with its special powers (e.g. SRFG)
- Activities in interaction with neighborhood stimulate the social cohesion and empower the citizens to be an active part of the situation
 - e.g. students, families and teachers collaborate in the creation of light and shadow kinetic stories, reusing materials, developing their creativity and providing solutions to the challenges posed by using recycled materials to accompany the educational community of the Sant Martí Poble Nou school in the design and manufacture of an artistic installation for the OFF Llum Festival in Barcelona (IAAC)
- Activities that result in something tangible that they can take home
 - E.g. Children were very happy they could take some of the things they made home (WAAG)
- Activities that support the realisation of their own ideas
 - E.g. Ideas that are not considered as THEIR problems are not taken up by small kids (ZSI)
- Offer diversity of activities which makes sure everyone can do something he/she likes (WAAG)
- Take into account the setting (e.g. location, timeframe, how do participants join and leave) when designing the activity
 - E.g. Developing a game takes a specific amount at time and it was difficult to work with changing groups (SRFG)
- Design activities that allow to work on own pace, so that children are able to finish what they do and do not have to leave earlier

- E.g. The workshops didn't have a beginning or an end, it was on a walk-in base, so children could work at their own pace (WAAG).
- Find a good balance between different kinds of activities.
 - E.g. We should have more time for discussion, some children like to talk about possible solutions and others prefer the hands-on part. So we are balancing somewhere in between (ZAK).



Figure 19: interaction with VR (UZAF)

Diverse geographical regions

- The DOIT approach and activities can be applied universally. However, the local conditions have to be taken into account when designing the action.
- The country does matter only insofar as there might be national regulations on working with schools and strict school curricula (e.g. some curricula are fixed and no option to implement DOIT at school as an add-on activity; sometimes not allowed to bring pupils to a makerspace). Also the attitude towards entrepreneurial learning and digital making in a country might be different, whether it is regarded as something that should be taught at school or outside school.
- The region serves also as a local environment in which the action is embedded and to which the action relates to, for instance by addressing local challenges and furthermore by bringing in local networks and stakeholders.
- Implementing DOIT actions in rural areas offers several advantages: since the educational offers outside school and educational activities from third parties at school are limited and thus the interest

to implement an action is higher; makerspaces are less likely in rural areas, thus DOIT activities are regarded as a unique opportunity by the local community.

- Also the immediate neighbourhood matters: It makes a difference whether participants come from a “well to do” or a disadvantaged neighbourhood. While the actions and DOIT rollout activities with its pedagogical approach of letting children explore and not interfering too much as a facilitator could be implemented very well in the first case, it had to be slightly changed in disadvantaged neighbourhood where much more effort had to be dedicated to trust and confidence building before moving on with the programme elements.

Different settings

- In comparison to a shorter rollout activity with children, a full DOIT action results in richer innovations as the actions can be more framed and more time can be dedicated to the seven elements of approaching a problem, searching for a solution, designing it and so forth.
- Group work in large scale settings (e.g. faire) can be more complicated sometimes (especially when it's a booth you can drop in/drop out).
- The implementation of a DOIT activity at school has to be well prepared in advance. The same applies to a facilitator training for teachers, even if it takes place online as a partner argued. Implementation in schools needs a lot of planning and it is time sensitive since the school year is mostly fully planned in the year before already.
- One important lesson learnt is about the communication and facilitation methodology which was different in formal and non-formal environments. In a school environment the DOIT pedagogical approach clashes somewhat with the traditional teaching at school and therefore the participants have to be introduced to the DOIT concept in advance.
- In school settings, DOIT activities need to be aligned with the curriculum. Also in terms of timing the DOIT activity the school schedule has to be taken into account, e.g. fixed breaks, school hours, but also the material to use sometimes is regulated by the school. The room concept is also less flexible compared to a makerspace.
- A huge difference between a school and an outside school setting is that there is a positive selection in the latter one, i.e. children come voluntarily and thus they do come with a high motivation already. However, the downside of this is that the group is not very diverse since extracurricular actions (holiday offers) in urban regions are often initiated by very educationally focused parents. The school offers a broader target group access. Also in outside school settings, doing the recruitment of participants is an extra task when organising a pilot in which reaching the various target groups needs specific attention.

Practical issues and logistics

- Large events: a booth where many people come by but without too much distraction e.g. in a corner is ideal.
- Take into account weather conditions if outside
- Advertise event in different channels (some events did attract fewer people than expected)
- Preparation of logistics such as preparing all the recycling material can take time →start early
- Provide for enough chairs at large events (some participants had to stand up all the time)
- Make the booth or space attractive and inviting
- Sufficient space at the booth: hands-on activities require more space: *“A huge table and well filled boxes with material invited the participants (young and old) to just start doing something”*(MEPF)
- Provide for good and reliable tools (which are safe to use without too much supervision)
- Provide enough material (it happened that some ran out while the event was still ongoing)
- Clear off the table once in a while *“it is helpful to restructure and clear once a while to offer space for newcomers!”*(MEPF)
- Calculate the duration of the activity and how to manage changing groups
- Display works that children have done: children are proud if their prototypes are displayed and it attracts the curiosity of visitors. In case you need to re-use parts of the prototype: never deconstruct any prototype in front of the child that produced it.



Figure 20: Attractive workstation (WAAG)

4.2 Facilitator training

For the facilitator training lessons learnt comprise the following four topics: content, material and tools, setting, group dynamics, and cross-fertilisation & learning transfer for trained facilitators.

Content

- Training events worked very well if it was adapted to the local community and typically consisted of a theory part, a discussion and reflection part and a hands-on part. The training, very much like the DOIT actions, should encourage creativity and teamwork among the trainees.
- A warm-up challenge like the marshmallow challenge is necessary for non-makers to show the maker spirit and to give them a first experience (EduC). Icebreakers or Warm-ups can be described as exercises one normally runs right before the main proceedings to help participants relax and ease people into a group activity or learning situation. Warm-ups go very well with design thinking because they support many of its attributes, such as being curious and having an open mindset as well as being mindful of and collaborating with other people (IAAC) e.g. fast portraits.
- Provide a good mix of theory and hands-on: “Starting with hands on exercises and diving straight in works very well” (EduC).
- Theory should contain at the least the following elements in order to fully understand the DOIT approach: General concepts of the DOIT project, its methodology and the different phases of a DOIT Action.
- In some more detail, the introduction to the methodology should explain the maker pedagogy and skills and competencies developed by the three main DOIT Principles: entrepreneurial learning, social innovation, and making. Also to deliver an understanding of the different facilitator role is key (moving away from the ‘classical’ teaching towards facilitating the process).
- The theoretical part ideally also comprises the most outstanding evaluation results in order to make the potential benefits for the participants concrete and tangible: *“At this point it was important to show them the evaluation results, but several questions were raised already before on how that would support the children in different aspects or how to implement this in practice (like creativity, curriculum implementation, ...)”*(SRFG)
- Room for discussion and reflection was important. Issues that were raised comprised for example the following: *“How can open source technologies, maker education practices and open design be used by local communities to address local problems”*(IAAC); *“what type of activity favours the development of certain competencies or skills? Which ones have more impact on the community? What experiences do you find most attractive by age?”* (IAAC). *“How can the materials be used for their own purposes?”* (SRFG)
- Sharing of examples from our experience in working with children and sharing of lessons learnt and recommendations should be part of the facilitator training.

- Hands-on: it was important to include hands-on work, small exercises for future facilitators to make their own experiences already in the framework of the training. This allows for concrete experimentation with different tools and materials.

Material and tools

- Show people you don't need expensive tools or materials to get into making and STEAM (EduC)
- Hint to further material and toolbox and showing different tools: The diversity of tools allows you to work on many different topics (IAAC)
- Nice surrounding and inviting work stations are important so that trainees feel welcome and comfortable.
- Focus on the need to adjust facilitation to specific age group (Poly)
- Provide different types of materials



Figure 21: No need for expensive tools or materials to get into making (EduC)

Setting

- Workshop style with interactive parts which allow for work in smaller groups and input in plenary format
- Breaks are necessary and have to be planned. *“In the training we do not take any breaks to rest. 2.5 hours of workshop in a row, even if they are adults, are too much to maintain a high level of attention for all participants”*(IAAC)
- Good timing is key: Make realistic estimations of the single activities within the training with still space to adapt flexibly. Lack of time was one of the main concerns of the facilitator training in many practice regions.
- Start preparing early especially if the training shall be part of a teacher education training as it takes some time to get into the further training programmes for teachers.
- Online: A few events took place online with related advantages and disadvantages. Certainly a challenge are the hands-on sessions, while presenting and discussing is fairly easy. Obviously, an online session has to be differently organized than a face2face workshop. The input from DOIT was mostly the presentation of the project itself, the toolbox, the implication for the practice (including examples) and the presentation of the evaluation with implications for the teaching. Also, we observe a certain online meeting fatigue. Some do not find the time and energy to participate yet in another one. Also for some it is challenging, with kids at home, to stay in a meeting for more than an hour.

Cross-fertilisation & learning transfer for trained facilitators

- Sharing the workshop with another partner of the consortium enriches the training, both for the participants and the trainers (IAAC did a co-facilitation with WAAG)
- In order to transfer to the own educational programme it is key to offer room for reflection how to realise the DOIT action in the own practice: *“The teachers have a big need for discussing the adoption of the format and tools for their specific and individual school setting – concerning subjects, grade and target group”*(MEPF). Also the concrete planning of a "Mini DOIT Action" within the training can support the transfer to the own practice (SRFG): *“From the challenge, idea development, initial sketches for prototypes and their construction to the final presentation and feedback round, everything was included”*. Or in case of UCSYD: *“Students designed a journey map for their workshop and centred the work around the DOIT Action Design guide. They ended up with their own DOIT workshop which they facilitated for 36 primary school children under the supervision of two educators from UCSYD”*. The student-trainers worked with a model of training that were based on an exemplary workshop with build in reflection periods and focus on both the DOIT Programme, making and the facilitator role (UCSYD)

- UCSYD: The students were very focused because of the fact that they were going directly into the real world with their workshop
- It is important to link the DOIT content to what they do in their day-to-day practice in order to be transferred after the training
- For teachers, ideally links to the curriculum are discussed and established during the training.

5 Summary and Conclusion

The deliverable describes in detail the formative and summative evaluation of two main rollout activities: the rollout events with children and the facilitator training and distills lessons learnt from working in diverse settings, locations, regions and with diverse target groups.

In the following a brief summary on each of these activities is provided followed by conclusions and main lessons learnt.

Overall more than the target number of 4,000 children engaged in primary rollout activities have been reached, although some of the partners were not able to schedule events with children due to the Corona outbreak. In addition to the 4,030 children who directly engaged with DOIT in one of the rollout events, more than 13,000 children were reached through secondary and about 3,000 through tertiary activities, i.e. dissemination, summing up to a total of 20,746 reached children overall in the rollout activities.

Girls and boys were equally attracted to the rollout activities, which is not a matter of course as maker activities in out-of-school settings tend to attract more boys than girls. Having female facilitators in place might have helped to get girls engaged in rollout activities. Additionally partners through their pilot activities had already experience in advertising DOIT events in a gender sensitive manner. The two age groups, the younger between 6 and 10 years olds, and the older between 11 and 16 years olds, were almost equally represented. Interestingly also children in Kindergarten age, below the age of 6, participated in some rollout activities. The activities were able to reach out also to some disadvantaged groups such as children with disabilities, minorities and children with less privileged backgrounds.

In total, 940 facilitators were trained, not entirely meeting the target number of 1,000. Compared to the rollout activities, the facilitator training in the different practice regions had a slower start and was thus more affected by the Corona crisis than the rollout events with children. When the Corona crisis broke out, many already scheduled trainings had to be cancelled or had to be carried out online (which was not always possible). The facilitator training attracted people with diverse backgrounds. Educational staff represented the biggest share

but also makers, researchers, policy makers and other educational multipliers, youth workers and young people below the age of 21 participated in the many facilitator training events.

The different training events were rated quite positively by the participants. They particularly favoured the hands-on sessions and appreciated a good balance between theory and practice. Most stated they would use DOIT tools in the future and some made concrete plans for entire DOIT actions in their own practice. Only very few critical aspects were mentioned such as not having enough time and being distracted by other groups working in the same room.

Lessons learnt based on the experiences with rollout activities by the practice partners in the different regions have been gathered. Some of these lessons learnt are specific to the rollout events with children and the facilitator training as these settings demand for different necessities compared to full DOIT actions. Some aspects however do equally apply to both, to a full DOIT action (as we did in the pilot activities) as well as to rather short interactions in large scale events. In a rather short interaction it is for instance not possible to implement all seven elements of the DOIT action but nevertheless it is important to transport the key elements of the DOIT approach, i.e. that it is about creating for the greater good (e.g. also in terms of materials - upcycling) and hands-on learning where “failing forward” is absolutely welcome as we appreciate to learn from mistakes and where children are developing their own ideas (with support from the facilitator).

The list of lessons learnt matches to a great extent the success criteria as noted down by the practice partners in the first formative evaluation workshop, such as participants enjoying bringing home something tangible as a concrete output of their learning experience.

Lessons learnt in relation to the rollout events with children comprise working with different target groups: different age groups, specific groups such as disadvantaged children and working with girls. Also a number of lessons learnt refer to the facilitator role. A striking difference between pilot activities and rollout events is the kind of interactions that are implemented. The practice partners have experienced which activities work particularly well in rollout events. They must meet certain criteria such as an interaction that is short and hands-on, that takes into account diverse abilities among the participants and which triggers creativity and reflection. Additional lessons learnt result from the practical handling of the setting- from setting up an attractive and inviting booth to advertising the event in different channels. Rollout events worked particularly well in some regions when they were embedded into the local ecosystem, close to the school and work with private and public organisations.

Main lessons learnt in respect to facilitator training comprise the content, materials and tool to use, and the setting of the facilitator training as well as cross-fertilisation and learning transfer for trained facilitators. Contentwise it proved to work very well, to apply a good balance between theory input and hands-on activities and to still leave room for discussion and reflection. Interaction and discussion is a core element of the training! Also as one of the participants at a IAAC training put it: *“Share work, share feelings, share success”*. In terms

of tools and materials, showing that there is no need for expensive equipment in order to get started was a crucial lesson learnt. Working with common material including upcycling materials in the facilitator training favours the interest of the participants because it lowers the threshold as they can easily apply it in their own environment. Discussing on how to implement and ideally concretely planning an own mini DOIT action during the training already helps to transfer learning to their own working environment.

As far as the geographical spread concerns, no apparent differences were noted. In other words, it is not important whether a rollout activity takes place in Spain or in Croatia as the DOIT approach is universal and the basic concept has to be adapted in any case to the local conditions. The local setting, the infrastructure available, the needs of the participating children and the capacity of facilitators supporting them have to be taken into account no matter where the DOIT action takes place. Seemingly it is more the region within a country that makes a difference. Whether a workshop takes place in a disadvantaged neighbourhood or a privileged area does make a difference. Also whether the workshop takes place in a rural area where makerspaces are rarely to be found and an urban area, where makerspaces, Maker Faires and other similar events can be visited, makes a difference. The DOIT approach is equally applicable in cultures totally different from the European one (IAAC organised a facilitator training in Taiwan).

In conclusion we can say that the DOIT approach is flexible in the sense that it can be adapted to different settings (large scale, small scale, in school, outside school, different target groups). However, in order to transport all core pillars longer, more extensive actions are necessary as the experiences of the partners have shown that in shorter rollout activities only the core messages can be transported. Only in longer activities such as full DOIT action all key elements can be applied resulting in richer innovations at the end.

6 Literature and Sources

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7 Annex

7.1 Reporting and Evaluation: Roll-out activities for children

Please fill in the complete and separate documentation for each roll-out activity!

We recommend you fill in and submit this form within 2 weeks of the end of each new event/activity. Send the filled-in form by email to doit@youthproaktiv.org (YPA, WP5 lead) and unterfrauner@zsi.at (Elisabeth, ZSI, WP6 lead), who will use the information for reporting purposes.

(You can find requirements and guidelines for roll-out activities for children on the following Confluence page: [Planning of roll-out activities for children](#))

Name of Practice Partner: _____

Roll-out activity

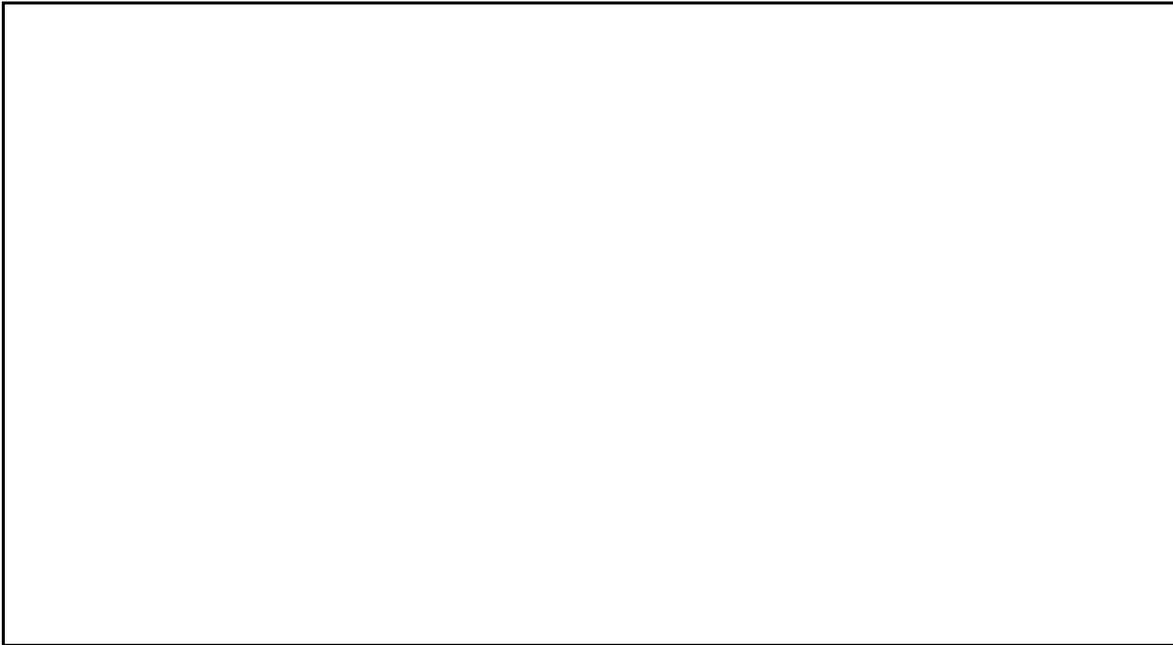
Topic/title: _____

Date: _____ Duration: _____

Place (*name of venue, town*): _____

Type of setting (*e.g. in school, out of school, makerspace*): _____

Short description of **main participatory activity** (hands-on, combining STEAM/making, social innovation and basic entrepreneurial learning, min. duration of engagement 8–10 minutes): *(please describe briefly the nature of the roll-out activity, aim of activity, methods applied)*



Short description of any **secondary activities** (shorter duration and/or less hands-on) or ways in which participants (could) have engaged to a lesser extent, if there were any, as well as short description of purely **communication and dissemination activities** and how participants had the chance to become familiar with DOIT and its activities (e.g. displayed posters, slideshows of photos from DOIT pilots, leaflets and other handouts for children to take...):



If you used any tools from the DOIT Toolbox, mention them here:

--

Reach of children and young people through main participatory activity

(The number can be an estimation)

Number of children and young people in total:

Number of 6-10 year olds:

Number of 11-16 year olds:

Number of girls:

Children with special needs:

Advanced makers:

Other distinct category, if applicable (e.g. minorities, less privileged, children under 6...) (specify + number):

Reach of children and young people through secondary activities *(if any)*

(The number can be an estimation)

Number of children and young people in total:

Number of 6-10 year olds:

Number of 11-16 year olds:

Number of girls:

Children with special needs:

Advanced makers:

Other distinct category, if applicable (e.g. minorities, less privileged, children under 6...) (specify + number):

Total reach of children and young people (in general, including through dissemination)

(The number can be a rough estimation and should also include those mentioned under main and secondary activities)

Number of children and young people in total:

Number of 6-10 year olds:

Number of 11-16 year olds:

Number of girls:

Children with special needs:

Advanced makers:

Other distinct category, if applicable (e.g. minorities, less privileged, children under 6...) (specify + number):

Facilitators

Number of facilitators:

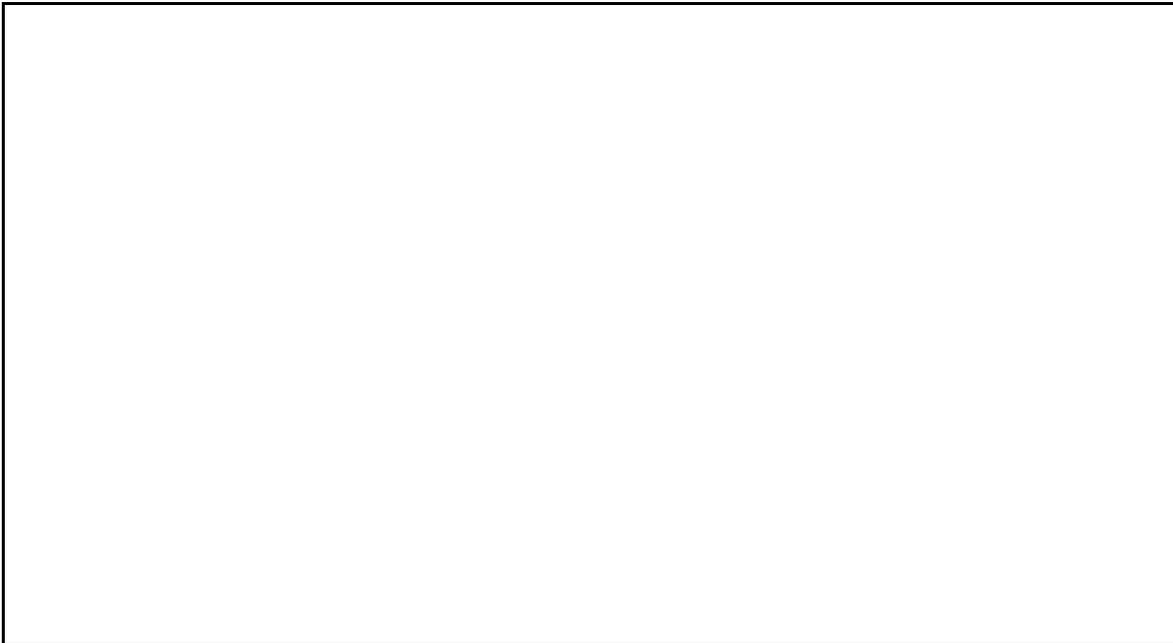
Female facilitators:

External facilitators trained through activity, if any:

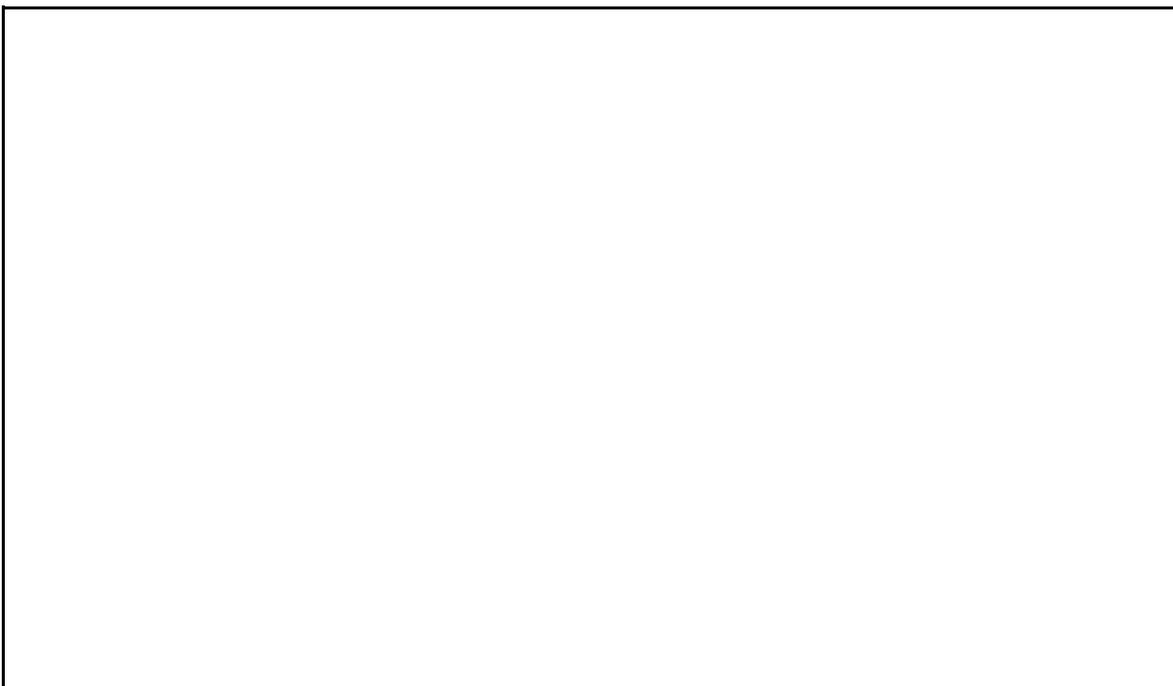
Other participating stakeholders and their roles: *(e.g. social entrepreneur, municipality, teachers, parents, etc.)*

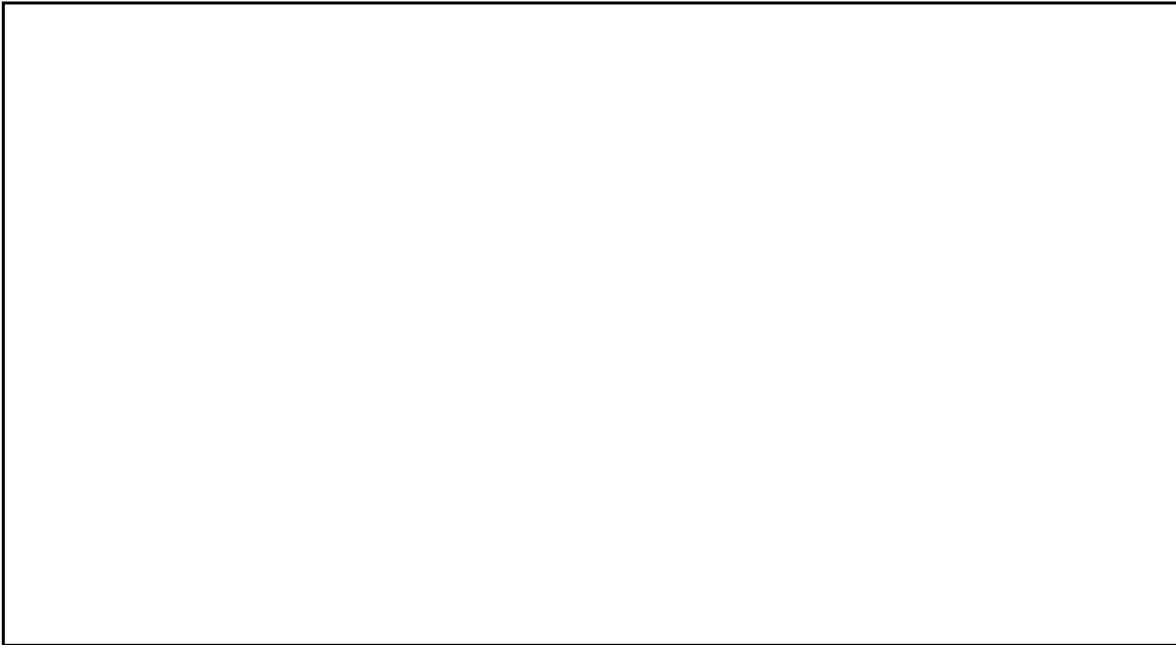
Reflections and observations

Which **positive** aspects of your roll-out activity did you note? *(e.g. What worked well?)*

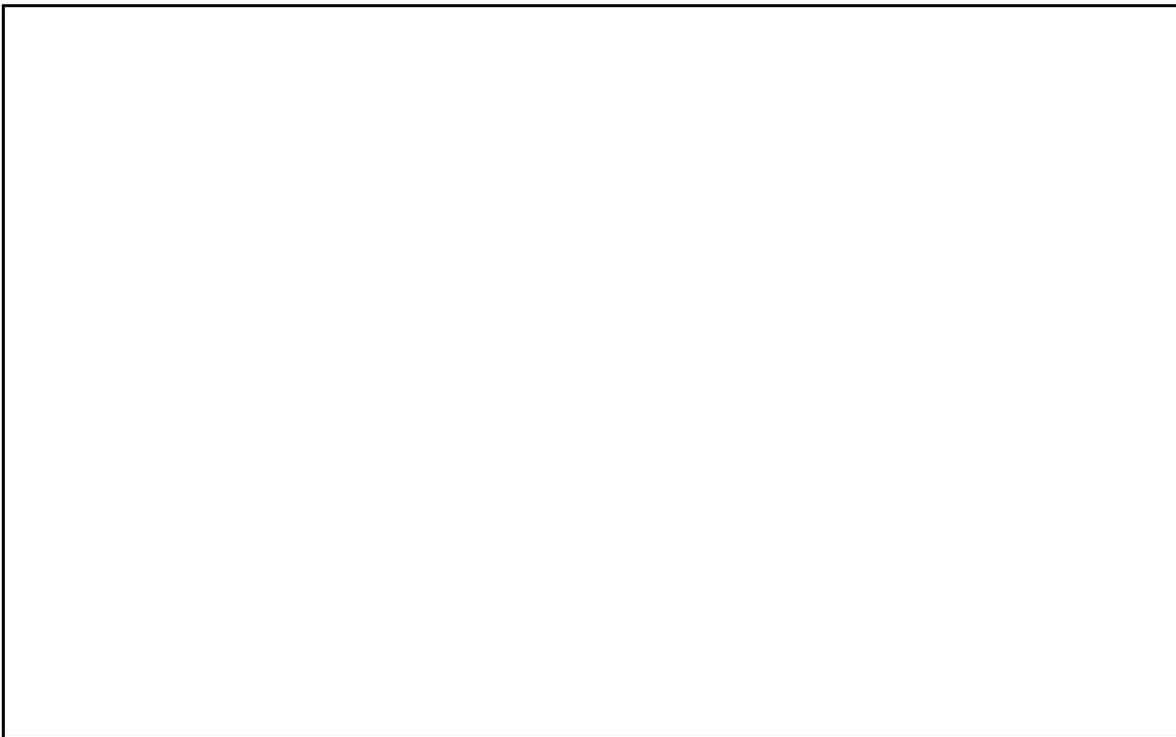


What **room for improvement** did you note? *(e.g. What would you do differently next time? What did not work very well?)*





Here is room for any other observations and comments you would like to share...



Other sources

Have you done any other evaluation of your roll-out activity? If so, please send it to us.

Documentation

Please insert here (at least 4) pictures taken during the activity or a link to a Dropbox folder or similar where they can be downloaded! *(Note: Please share only those pictures where you have a signed consent form or those where people cannot be identified.)*

Please make sure that you also communicate the event beforehand and afterwards through DOIT website and DOIT social media. (If you need help, please contact WP7 lead ESI.) You are furthermore asked to report these activities briefly in the [Report on Dissemination and Communication Activities](#).)

7.2 Feedback questionnaire: facilitator training

City:

Country:

Date:

Please take 10 minutes to evaluate today's training.

1. Are you:

female

male

other

2. To what extent was attending this workshop worth your time?

not at all

slightly

moderate

very

extremely

3. How would you rate each of the following?

-	- poor	- fair	- good	- Very good
- Exercises	- 1	- 2	- 3	- 4
- Discussion/Interaction	- 1	- 2	- 3	- 4
- Moderation	- 1	- 2	- 3	- 4
- Location	- 1	- 2	- 3	- 4
- Time	- 1	- 2	- 3	- 4
- Group composition	- 1	- 2	- 3	- 4

4. What did you like most about this training? Why?

5. What did you like least about this training? Why?

6. Which tool(s) presented did you like best? Why?

7. Which tool(s) presented did you like least? Why?

8. Are you planning to use the information gained in this training?

Yes

No

If yes, how?

9. Are you planning to use the DOIT tools and resources presented in this training?

Yes

No

If yes, how?

10. My general comments and suggestions:

Thank you for your time!

Please return this questionnaire to your trainers!

Project consortium



salzburgresearch



waag society



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ZENTRUM FÜR SOZIALE INNOVATION
CENTRE FOR SOCIAL INNOVATION



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Capital of Children



POLYHEDRA
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Af



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Iaac

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advanced
architecture
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