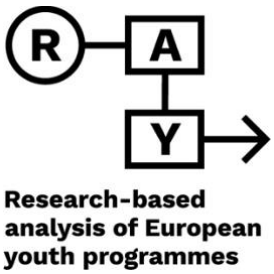

Research-based analysis of European youth programmes

SMIT JINT

ON THE ROLE OF DIGITALISATION IN YOUTH WORK AND NON-FORMAL LEARNING IN THE CONTEXT OF THE EUROPEAN YOUTH PROGRAMMES (RAY-DIGI)

National Case Study Analysis for Flanders (Belgium)

Case studies exploring successful digital youth work approaches, formats, methodologies and settings within the context of the European youth programmes and beyond

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SUMMARY

Digital youth work has been on the European Commission's agenda since 2016, with the establishment of an expert group 'Risks, opportunities and implications of digitalisation for youth, youth work and youth policy'. Digital youth work can be defined as "proactively using or addressing digital media and technology. Digital youth work is not a youth work method – digital youth work can be included in any youth work setting [...]. Digital youth work has the same goals as youth work in general [...]. Digital youth work can happen in face-to-face situations, in online environments or in a mixture of these two. Digital media and technology can be a tool, activity, or content in youth work" (European Commission, 2019).

The COVID-19 pandemic, and the various lockdowns, has compelled youth workers to shift rapidly from youth work to digital youth work. However, little is known about what defines digital youth work best practices, what challenges youth workers experience, or what opportunities they note. Therefore, the RAY DIGI research project examines to what extent European youth work is digitized, what the opportunities and obstacles are within digital youth work and how youth organizations and youth workers can be supported. Within this European project, national case studies take place.

The study is based upon a two-folded approach. First, a quickscan is used to inventory all practices, by way of desk research. Second, by conducting in-depth interviews with the project team and participants, we were able to develop case studies of the good practices.

The four good practices focus on social and digital inclusion and participation of young people. Attention is paid to digital and STEM literacy, however, the focus is not exclusively on learning digital competencies, but on how digital media and technology can be used for other purposes and how the participants position themselves in society. Active, digital citizenship/participation and innovation in society are consequently at the forefront for the four projects. According to the respondents, educational practices need to pay attention to fostering the critical and proactive mindset of participants. Data literacy, especially in relation to online privacy, AI, and ethics, should be prioritized within education, to ensure that young people can find their way in a data-driven society and learn to deal with both the positive and negative impact of data.

Moreover, results show that non-formal education/youth work, due to its playful, and active nature, is a good environment to develop digital competences. The flexibility, versatility and openness of youth work offers the possibility to pay attention and adapt quickly to the environment of young people, allowing for a quick response to new trends or needs, such as the digitization and datafication of society. Therefore, non-formal education could prove to be an excellent partner for formal education when it comes to developing digital competences. Respondents mentioned that youth workers should be able to provide digital support to young people, however, the digital literacy of youth workers seems to be an important issue. The project teams interviewed set up trainings and create materials for youth workers, as they see a big gap between the needs of young people and the abilities of youth workers, who are often insecure about their own digital competences. There is not only a need for training the trainer, but also for knowledge sharing and collaboration to build on each other's expertise.

Lastly, digital youth work should work bottom-up, namely starting from the needs, talents, and input from young people. This means that it's important to do prior research before setting-up activities and to do an effectiveness assessment at the end of the project, to continuously adapt to young people's needs and experiences.

Key words: digital youth work, digital literacy, non-formal education

SAMENVATTING

Digitaal jeugdwerk staat sinds 2016 op de agenda van de Europese Commissie, met de oprichting van een expertgroep 'Risks, opportunities and implications of digitalisation for youth, youth work and youth policy'. Digitaal jeugdwerk kan worden gedefinieerd als "proactively using or addressing digital media and technology. Digital youth work is not a youth work method – digital youth work can be included in any youth work setting [...]. Digital youth work has the same goals as youth work in general [...]. Digital youth work can happen in face-to-face situations, in online environments or in a mixture of these two. Digital media and technology can be a tool, activity, or content in youth work" (European Commission, 2019).

De COVID-19 crisis, en de verschillende lockdowns, heeft jeugdwerkers verplicht om snel over te schakelen van jeugdwerk naar digitaal jeugdwerk. Er is echter weinig bekend over wat beste praktijken binnen digitaal jeugdwerk definieert, welke uitdagingen jeugdwerkers ervaren, of welke opportuniteiten zij zien. Het RAY DIGI onderzoeksproject bekijkt in welke mate het Europese jeugdwerk gedigitaliseerd is, wat de kansen en obstakels zijn binnen het digitaal jeugdwerk en hoe jeugdorganisaties en jeugdwerkers ondersteund kunnen worden.

Het onderzoek is gebaseerd op een tweeledige aanpak. Ten eerste wordt een quickscan gebruikt om alle praktijken te inventariseren, door middel van deskresearch. Ten tweede worden diepgaande case studies van de goede praktijken (N=4) gerealiseerd via diepte interviews met de projectteams en participanten.

De vier good practices richten zich op sociale en digitale inclusie en participatie van jongeren. Er is aandacht voor digitale en STEM-geletterdheid. De focus ligt niet uitsluitend op het aanleren van digitale competenties, maar eveneens op hoe deelnemers zich actief kunnen positioneren in een gedigitaliseerde samenleving. Actief, digitaal burgerschap/participatie en innovatie in de samenleving staan dan ook voorop bij de vier projecten. Volgens de respondenten moet in digitaal jeugdwerk aandacht worden besteed aan het bevorderen van de kritische en proactieve houding van de deelnemers. Datageletterdheid, vooral met betrekking tot online privacy, AI en ethiek, moet volgens de respondenten prioriteit krijgen binnen onderwijs, om ervoor te zorgen dat jongeren hun weg kunnen vinden in een gedataficeerde maatschappij en kunnen leren omgaan met zowel de positieve en negatieve impact van data.

Bovendien blijkt uit de resultaten dat non-formeel onderwijs/jeugdwerk, door de speelse en actieve aard ervan, een goede omgeving is om digitale competenties te ontwikkelen. De flexibiliteit, veelzijdigheid en openheid van jeugdwerk biedt de mogelijkheid om aandacht te besteden aan en voortdurend evoluerende omgeving van jongeren, waardoor snel kan worden ingespeeld op nieuwe trends of behoeften, zoals de digitalisering en dataficatie van de samenleving. Bijgevolg zou niet-formeel onderwijs een uitstekende partner voor het formeel onderwijs kunnen zijn wanneer het gaat over de ontwikkeling van digitale competenties. De respondenten vermelden dat jeugdwerkers digitale ondersteuning zouden moeten kunnen bieden aan jongeren, maar de digitale geletterdheid van jeugdwerkers blijkt een obstakel. De geïnterviewde projectteams zetten trainingen op en creëren materiaal voor jongerenwerkers, omdat zij een grote kloof zien tussen de behoeften van jongeren en de capaciteiten van jeugdwerkers, die vaak onzeker zijn over hun eigen digitale competenties. Er is niet alleen behoefte aan opleiding van de trainer, maar ook aan kennisdeling en samenwerking om op elkaars expertise voort te bouwen.

Ten slotte moet digitaal jeugdwerk bottom-up werken door uit te gaan van de behoeften, talenten en inbreng van jongeren. Dit betekent dat het belangrijk is voorafgaand onderzoek te doen alvorens activiteiten op te zetten en aan het eind van het project een

effectiviteitsevaluatie uit te voeren, om voortdurend aan te passen aan de behoeften en ervaringen van jongeren.

Kernwoorden: digitaal jeugdwerk, digitale geletterdheid, non-formeel leren

1. REPORTING

1.1. KEY INFORMATION

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1.1.1. RESEARCH CONTEXT

This research project is commissioned by JINT, in collaboration with the Department of Youth, Culture and Media, and looks into digital youth work in Flanders-Belgium. The national project falls under the RAY DIGI project, which explores the role of digitalization in youth work and non-formal learning in the context of European youth projects. It investigates the dimensions of digitalization and the progress of digitalization in European youth work. Based on the national results recommendations will be developed further to strengthen and support digital youth work in Europe.

1.1.2. DIGITAL YOUTH WORK - A SEPARATE BRANCH?

Youth work focusses on the development, emancipation, and empowerment of youth. The objectives, age groups, and other aspects may differ per European member states, however, youth work in Europe always wishes to empower youth, offer them a safe space to grow, play and connect, and a bridge function in their lives (European Youth Work Convention, 2020). This bridging function also relates to innovations in their environment, like the importance of the digital world, which is an integral and interwoven part of young people's lives.

In 2017, conclusions around smart youth work were formulated (Council of the European Union, 2017), which referred to the definition of digital youth work drawn up by an expert group. The definition states that digital youth work has the same goals and objectives as youth work in general and the activities can be organised in-person, online, or in a hybrid manner. Digital media/technologies can be used as a tool, activity, or content (Council of the European Union, 2017).

Digital youth work is gaining prominence in the European youth work sector. The European Union put guidelines for smart youth work on the agenda in 2017 and, in 2019, European member states were subsequently asked to include digital youth work in youth work policies, encourage youth workers to engage in digital youth work and commit to digital capacity building of youth workers (Council of the European Union, 2019). In this context, several research projects, including this study, were organised to gather knowledge, share best practices/opportunities, and develop recommendations for policy and the youth sector.

From this definition, we understand that digital youth work includes all youth work that involves and/or discusses digital media and technology and supports the personal development of youth. Based on this definition, we distinguish four types and multiple subtypes of digital youth work, based on how an activity is organised in relation to the temporal and spatial dimension:

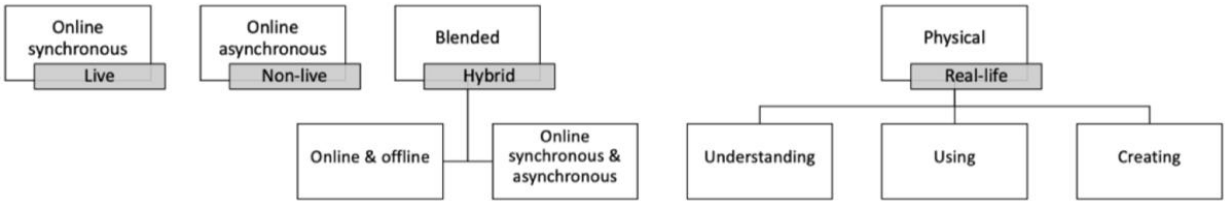

Figure 1: Types of digital youth work (Vermeire et al., 2022a)

The four types can be set up based on three different educational approaches, as described in the digital youth work definition, namely:

- Instrument;
- Content;
- Activity.

This report includes a summary of the research findings. Firstly, it looks at the place and meaning of youth work and digital youth work. Secondly, it provides brief overview of the general state of digital youth work in Europe. Thirdly, the report investigates the case study results, contextualised with citations of respondents. Lastly, the report offers a comparative analysis and a short conclusion, including recommendations.

1.1.3. DIGITAL YOUTH WORK IN EUROPE

This chapter briefly discusses the general findings within European digital youth work research. We briefly discuss three main themes: 1/ the COVID-19 crisis and the rise of digital youth work, 2/ the competences and support of youth workers and 3/ learning through digital youth work.

1.1.3.1. COVID-19 AND DIGITALISATION

The COVID-19 pandemic caused a huge growth spurt within the youth sector when it comes to digital competences and attention to digital themes. Before the pandemic, few organizations actively organised digital youth work:

> "A lot of organizations set up online activities in response to the lockdown as an alternative to their day-to-day operations. [...] Youth workers have been Inventive and taught themselves certain digital competences that they did not have before so that they could offer a qualitative offer online" (Vermeire et al., 2022a, p.70).

In addition, the definition of digital youth work was not well-spread, with the majority of youth workers understanding it to mean 'working with young people online'. This is of course partly explained because the youth workers were introduced to the topic when they had to translate their on-site activities to an online setting (Vermeire et al., 2022a; Skill IT, 2020; Lauha & Nõlvak, 2019).

However, as European and national research shows (Vermeire et al., 2022a), quite a few organizations already recognised the importance of digital media/technology within youth work before the pandemic made online youth work mandatory. This recognition and focus include three of the four cases in this study. The interviewed organizations have years of experience with physical/on-site digital youth work. The preponderance of digitally experienced organizations is atypical, provided that most youth organizations were only recently introduced to digital youth work and tend to organise online activities/use online tools/platforms as an instrument to reach their target group (Vermeire et al., 2022a), but offers an interesting, new perspective for this study.

1.1.3.2. COMPETENCES AND SUPPORT FOR YOUTH WORKERS

Within the different European research projects, we see common findings regarding the capacity building of youth workers. Youth workers note that they do not feel sufficiently confident to deal with the evolutions of digital society. More specifically, they wonder: how do you transfer skills related to digital and media literacy? And how do you do this when you are unsure of your ability?

Youth workers appear to be innovative and flexible, but they currently lack training in digitalization and the digital lives of young people. Several supporting organizations[1] are trying to address this gap between the needs of youth and the capacities of youth workers, but their offer is often short-term and ad hoc, can be expensive, and they do not necessarily make sense for every youth organization. As a result, organizations working with young people from socially vulnerable situations, in particular, lack learning opportunities. Both on a Flemish and European level, there is a strong need for more capacity building, but also for knowledge sharing and collaboration. Collaboration and knowledge sharing (within and outside of the youth sector) appear to be success factors for good practices (Vermeire et al., 2022a; Skill IT, 2020).

In addition, European research studies examine whether youth workers are properly supported to be able to set up digital activities. This is often not the case, pointing to a lack of funding, access to infrastructure, and guidelines on how to deal with the digital societal evolution and digital youth work. This is because policies not yet or only recently adapted to digital youth work, depending on the member state. Consequently, we see here two of the European Commission's recommendations reflected, i.e. capacity building of youth workers and an elaborated policy on digital youth work (Vermeire et al., 2022a; Skill IT, 2020; Șerban et al., 2020).

Researchers agree on a strong need for digital strategy and guidelines at European, national, and organizational levels. This concerns not only the use of smartphones and presence on social media, but also which types of digital youth work (can) be organized, a deontological code for online activities, which digital competences are required/being focussed on, and so on (Vermeire et al., 2022a; Skill IT, 2020; Șerban et al., 2020; Lauha & Nõlvak, 2019).

1.1.3.3. DIGITAL YOUTH WORK AS A FORM OF LEARNING

Moreover, we see a strong influence of digital youth work on the learning process of young people. Youth work provides a safe, informal and often playful setting that is highly effective in terms of stimulating certain competences, due to the positive effects of active learning and peer-to-peer support. Also, it is a particularly effective learning environment for particular target groups, like vulnerable youngsters, which is also discussed in this report (Vermeire et al., 2022b).

The European Council Report 'Social inclusion, digitalization and young people' (Șerban et al., 2020) argues that it is not only youth workers who need 21st century skills. They see that 45% of people with low digital skills are digitally excluded and 1/3rd of young people have low digital skills. This is in contrast with the reality of our digitized society that, in a few years, will require good digital skills for 90% of jobs (Șerban et al., 2020). Youth workers can consequently support the growth of young people, who are all too often mistakenly seen as digital natives (Vermeire et al., 2022c).

There is a clear need for more support and learning opportunities for young people in Europe. This is not about clear policies only, but also about the need for the development of practices that focus on digital inclusion and literacy of young people, and co-creation with and consideration of young people's voices. The Skill-IT report (2020) also mentioned a lack of funding, access, and good infrastructure, such as hardware and internet connectivity as obstacles to successful digital non-formal learning. Even in countries like Norway, Ireland, and Finland, forerunners regarding digital youth work, there is still a need for effective planning, coordinated digital learning policies, and strategic funding (Skill IT, 2020; Lauha & Nõlvak, 2019). In addition, we also notice a need for preliminary research into the needs of the target group and effectiveness research of digital practices (Vermeire et al., 2022b).

1.2. METHODOLOGY

Within this project, we apply an in-depth case study analysis of four digital youth work projects funded by the Erasmus+ Youth Programme, through 1/ desk research and content analysis of the online materials and 2/ in-depth interviews based on a semi-structured topic list. This allows us to identify the different aspects of digitalization in non-formal learning and youth work. The research was conducted from May 2022 until May 2023.

[1] Organizations that focus on supporting and training youth workers and youth services.

	Materials analysed	Interview project team	Interview participants
Case A	- E+ Project report - JINT Project dossiers - Open access webmaterials and website	Online interview - With project organiser (F) & youth worker (F); January 2023	Telephone interview - With participant (F); March 2023 - With participant (F); March 2023
Case B	- E+ Project report - JINT Project dossiers - Open access webmaterials and website	In-person interview - With project organiser (F); November 2022	Online interview - With local youth leader (M) & policymaker (M); February 2023
Case C	- E+ Project report - JINT Project dossiers - Open access webmaterials and website	Online interview - With project organiser (F); November 2022 - With project organiser (M); November 2022	Project ended in 2020
Case D	- E+ Project report - JINT Project dossiers - Open access webmaterials and website	Online interview With project organiser (F) & youth worker (F); January 2023	Group interview cancelled by project D due to lack of project participants

Table 1: summary desk research and conducted (group) interviews.

Within this brief study, we try to answer several research questions on a European level:

- What are the main gaps between digitalization in young people's lives and youth work practice, and how can these gaps be reduced?
- What competences do youth workers need to add meaningful, quality digital dimensions to their work with young people, and how can youth workers be supported to develop these competences?
- What competences do youth workers need to enable young people to interact competently with the digital world, and how can youth workers be supported in developing these competences?
- How can youth work be supported in building and discovering a unique identity for non-formal learning in online environments?

These questions will be answered based on the studies in the different European member states.

1.3. DISCUSSION

1.3.1. CLASSIFICATION AND DESCRIPTION OF 4 CASES

In this chapter, the four cases are briefly outlined. These best practices were chosen in consultation with JINT and the RAY DIGI team. The selected digital youth work cases are European or national Erasmus+ projects focussing on inclusion, participation, and education. We divide the cases into the previously presented types of youth work, as well as the overall objective, target groups, duration, and approach of the projects.

	Type of project	Target group	Type DYW	Description of activity	Approach	Duration
A	KA2	(Vulnerable) girls & young women	Physical/ on-site DYW	Fablab[2]/ boot camp	STEM & empowerment	27 months (2020-2022)
B	KA3	Local youth	Online asynchronous	Online platform for local youth participation	Digital youth participation	18 months (2020-2021)
C	KA2	Vulnerable youth	Physical/ on-site DYW	Makerspace	Maker attitude/mindset, STEM & inclusion	26 months (2018-2020)
D	KA2	Girls & young women	Physical/ on-site DYW	Co-creation workshops	(Digital) citizenship & changemaking	24 months (2021-2023)

Table 2: summary case study description.

As will become clear in the discussion, three of the four cases belong to type 4, physical/on-site digital youth work, with a focus on subtype 4.3, creating digital products/tools. These include makerspaces/fab labs and co-creative learning environments, which are good examples of physical digital creation.

However, the projects' learning objectives are broader than merely creating, therefore, parts of the projects can also be categorized under other (sub)types, such as:

- Understanding and critically reflecting on digital media/technology.

  - Project D
  - Project C

- Using digital products/tools

  - Project A

- Online asynchronous

  - Project C

In addition, project B can be classified as online asynchronous, an online and non-live participation platform.

The four projects want to empower young people to participate in a digitalized/datafied society, want to involve (vulnerable) youth, and give them space to develop and share ideas. Project B is an online platform that encourages anonymous and accessible participation. The other three projects focus on digital development, experimental experience, and social inclusion of target groups that are not necessarily involved in makerspaces and STEM projects, such as vulnerable young women. Within these projects, the focus is on non-formal learning, but materials were also developed for youth workers, such as toolkits, a train-the-trainer Massive Open Online Course, or MOOC, and manuals/materials.

[2] An open fabrication lab where participants can work (cooperatively) with technological material to develop/make.

1.4. CASE REPORT 1: CASE A

1.4.1. KEY CHARACTERISTICS OF THE PROJECT

Project description:

Key Action	Cooperation for innovation and the exchange of good practices
Goal(s)	Increase digital and STEM literacy; digital citizenship/awareness; empowering (vulnerable) women; 21st century skills
Theme(s)	Digital & STEM literacy; reverse engineering; broad development opportunities
Digital activities	Creating digital products/tools (creating visual art, wearable technology/e-textiles)
Role digital media	Activity
Output	Toolkits for youth workers; boot camps; mentor program

1.4.2. SUMMARY PROJECT TEAMS

STEM project for vulnerable young women

The project works on the STEM literacy of (vulnerable) **young women** and girls. The partnership sets up boot camps that offer a first and basic **introduction to STEM themes** such as 3D printing, learning how to rig up a magnetic field, e-textile work, etc. The project team refers to the main theme as 'reverse engineering', namely taking things apart to create something new and to develop **logical thinking,** a **critical and positive attitude** around STEM, and **encouraging creativity**.

As the abovementioned table shows, the project developed **toolkits for youth workers** to set up STEM-related projects and makerspaces/fab labs. The project team developed the toolkits and the boot camps were a way of testing and developing these further. The project team worked with three main subjects, namely 1/ smart/e-textiles, 2/ reverse engineering, and 3/ visual arts. The partners developed youth worker toolkits for each of these topics, tested the toolkits, and provided feedback on them. The project chose to work with **textiles** and sewing based on the previous experience of the project team, as well as on **preliminary research** into the target group. Vermeire & Van den Broeck (2022) noted that preliminary research into the (needs of) the target group, is a key factor for success.

> "[The project] was developed so other trainers could use it independently, with their youngsters in local makerspaces or local youth centers, with a minimum of tools that they could use to do more STEM-inspired activities. At the time, we were thinking about, if we develop a kit, and then we find different manners to test the kits, we came up with the idea to put together teams of young girls that travel between one context and the other, so they can have an exchange of culture, and we can do the tests live" (project team).

> "We decided to focus on three different branches within STEM literacy. For one, we decided to [work] with textile, to engage women. From previous experiences and previous research, this was a good way to [engage them]. [...] And then we wanted to have something where we could exploit the best digital fabrication techniques. [...] So we chose the topic of reverse engineering, which is a kind of core engineering topic in product design. And then we went for something more artistic, so kind of visual arts. But it also taught me that visual [techniques and arts] is engaging for most people" (project team).

Teaching-learning approach

Other than that, the topics were also selected because STEM is often associated with robotics and what is often defined as 'hard science', but it can also be a fun and interesting activity. The project team wanted to show the **playful side of STEM** to introduce the topic to the vulnerable participants and provide them with the possibility to keep working on their STEM-related skills and interests. Building on that, the project team wanted to show the **women and girls** participating that **STEM professions** weren't just professions aimed at men.

> "It was the aim to let them discover [...] new techniques that are, nowadays, available in a more easy way if you know that they exist and if you know that there are places where you have [free] access to them [...] [If] you don't know what it is, you never go" (project team).

> "The point was to do it for younger people to get into the [STEM] education and the professions. So they know 'Oh, this is also here, and it isn't always a man's world'. I see in other projects that it's [becoming a mixed group], I really love it" (project team).

It seems a key **success factor** to make projects that focus on complex topics, such as reverse engineering, **fun** and to focus on aspects that will entice or interest the target group. Because of this, the team focuses on experience- and **experiment-based learning**. This type of learning lets the participants freely engage with the materials and theories without a focus on competence levels or right/wrong. The main set-up lies in motivating young women, showing the possibilities of STEM, and empowering them. Therefore, vulnerable and/or insecure youth might feel safer participating and experimenting, and thus, learning.

> "I think the main kind of learning was experience-based. It was like boot camps, set up with [only] a little bit of explanation. [...] [The participants] learn a lot by doing. They feel like [they] made it [on their] own" (project team).

> "The formal information that can be expected in 15 minutes, in a kind of 'how can you teach yourself to search for more information that you need?'[-way] [...] because if you give lessons [...], nobody's going to listen to you" (project team).

Empowerment

As mentioned above, the project wishes to **empower young women** and focuses on digital and STEM literacy. The boot camps did not require previous experience with STEM or required specific digital literacy competences. The focus was mainly on an introduction to these topics and the possibilities of STEM, as well as on **soft skills**, e.g. improving self-confidence, creativity, and promoting a logical, **problem-solving mindset**.

> "[The participants] had to disassemble [a] hairdryer, look at the components and then make something new out of it. [R]everse engineering is using a product and designing it into something new. [...] It is another way of thinking about digital making, it's looking at what already exists and how you can reform it. As well as with e-textiles, you need to do it with your hands. It's the combination of doing it with your hands that makes it digital creativeness" (project team).

Project evaluation and assessment

The project team was testing the different toolkits as well as educating the participants. Thus, they set up an **evaluation** of the boot camps, both on the project level and at the level of the participants.

> "All the girls [...] filled in a form, what about [the project] was good or bad, if they liked it, enjoyed it. And if they kind of felt, 'did they learn something or not?'. The main feedback was, 'When you do something, you're really kind of 'wow, I did it myself'. Even if it's not a success.' Doing [these bootcamps] gives you a lot of satisfaction. [...] They experimented and it didn't matter if they succeeded or not." (project team).

The project received **positive feedback**, mainly because the participants enjoyed the experimental and active learning activities and they were allowed to make mistakes. However, there were also several **challenges**. The project team notes several points of improvement, such as the length of the projects and the big age gap (16-24).

> "From the organizations' point of view, is not easy to have such a huge age gap [...] If we would do it again, I would narrow it down to [a difference of] four years, let's say 16 to 20 and 20 to 24, something like that. It would be more manageable" (project team).

> "[The bootcamps] were a short time. [...] You want to involve them, their talents, their motivation, etc. But it's really hard to do this in just a week" (project team).

This last quotation points out that the project team wanted to work more **bottom-up**, starting from the **talents and needs of the target group**. Working bottom-up tends to lead to accessible, low-threshold activities that can engage the participants much better, as the participants feel the activity accommodates their current needs, participating can prove useful for the future, etc.

> "It would have been better to have it a bit more [...] starting from them, bottom up. We did that. But I feel like it could be even more, to get them to [understand] 'what is my talent and how can I use what I already know or how can I use what I already like doing for the things that I'm learning here'" (project team).

Digital literacy of youth

The project team also touched upon the level of digital literacy and digital awareness of young people. They confirm what several research projects state, namely that the **button-knowledge** of young people, or the use of e.g. social media and smartphones, is good (Faure et al., 2022). The project team also mentions that the **self-assessment** of young people tends to be high, however, this relates to using digital media, as, when it comes to understanding and critical-related competences they might be more of a **consumer**.

> "If you take a random young person between 15 and 24 and you ask them about their digital skills, they will tell you they are good at it, but actually they are consumer" (project team).

When it comes to improving digital literacy, the project team mentions that it is important to develop a **critical, entrepreneurial mindset** to function in a digitalized society. Young people should not (only) be consumers of digital technology but need to be able to shape or influence society by becoming **creators**. Because of this, non-formal settings can be a better learning environment, as formal education systems are bound by structures and objectives that do not apply to non-formal activities. Non-formal education is **more flexible** and allows for an **individual talent-based approach**.

> "[Young people] need to be creative. We need to take some steps to prepare young people for the jobs of tomorrow. They need to develop a kind of mentality, a way of thinking that is different from what they have now. School changes too slowly if you compare it with how fast our society is advancing. [...] We have to make them aware that they need to do something to develop a mentality to become the creator of technology and not be a consumer" (project team).

> "In [youth work] you have a lot of flexibility that you don't have in an institution. You can work with the strengths of each individual" (project team).

1.4.3. SUMMARY PARTICIPANTS

Accessible STEM for vulnerable women

Within this research project, two participants were interviewed. The interviewees complement or build on the findings mentioned in the chapter above. The project focuses on vulnerable women who do not necessarily have **access** to STEM education and STEM-related topics. According to one of the participants, this attention to social inclusion, was one of the best aspects of the project, as it 1/ provided **vulnerable youth** with the right **tools to function** in a digitalized society, and 2/ brought together **different cultures** and needs and experiences.

> "Being able to include vulnerable young people, [...] people who have fewer opportunities, people who are almost excluded from society, to also give them the opportunities and encourage them, motivate them and give them more tools, I think that was a very strong point" (participant A)

> "The multicultural aspect... bringing together people from different places and being able to make sure that they can get in contact with each other, I also thought that was a strong point" (participant B)

Another aspect the interviewees focused on, is the **lack of stimulation of women** in STEM-related topics and professions. One interviewee mentions that society does not encourage women to go into STEM subjects and alludes to women maybe even being discouraged.

> "When I look back at my childhood and what society looks like, I find that girls are not encouraged to do anything in STEM subjects [...] That's always such a topic in the debates, women just don't choose engineering directions. And then I think, why don't they choose engineering disciplines? These things do not happen by accident" (participant A).

Teaching-learning approach

The participants appreciated the **result-driven, active learning** approach. According to the interviewees, the mix between theory and practice and being allowed to **explore by yourself** whilst being supported is a strong point, in contrast with formal education.

> "It's a different way of learning. It's not like we sit at a desk and open our books [...] you get to do it yourself. You can ask questions, and you can ask for help. It's really fun. You have the result at the end, you built something" (participant A).

> "You don't go to a project like this to sit behind school desks" (participant A).

> "Explain it in little steps. As small and as easy as possible" (participant B).

Looking into this further, the participants mention that a **flexible, informal approach** providing **good instructions and support**, is what made the boot camps successful. These aspects, as well as the freedom to work individually and the stimulation of creativity, seem to be key factors for a good digital youth work practice. This is confirmed by previous research (Vermeire et al., 2022b, 2022c)

> "Let them be creative with no rules. [...] that's what made it fun" (participant B).

However, one interviewee also mentioned some weaker points. The project, according to the participant, could have focussed more on the technical parts and the critical digital literacy of participants. The project team mentions the importance of attention to developing critical creators, not consumers, however, the participant mentions that this aspect did not receive much consideration. As is seen with most on-site/physical digital youth work focussing on creating, there is a **lack of attention to digital awareness**/understanding competences.

> "I think that more effort could be put into the engineering aspect. Because it did end up being a lot of sewing. And maybe also more on the critical aspect, or the link to society" (participant A).

Datafied society and the impact of data

The project does not focus on data or on improving data literacy competences, however, this theme was mentioned during multiple interviews. Young people note the importance of knowing more about the digitalized and datafied society. Mentioned themes are AI, online privacy, algorithms, and ethical issues related to these topics. These topics can all be grouped under the term 'data' and thus relates to the **level of data literacy** of young people. The interviewees mention feeling **insecure** and wanting to know more about the **impact of data** on their lives. They note the **importance of awareness** and wonder what the impact of future evolutions will be.

> "If you post something, it can go everywhere. And everyone should be aware of their privacy and how to protect it because once it's online, you can't take it off" (participant B).

> "I find some automations very convenient, like a banking app or being able to pay with Bancontact on the bus. But sometimes, with some things, I'm not on board yet [...] Like

> artificial intelligence, for example. [...] It's still something I don't know what direction it's going in." (participant A).
>
> "People say, you can never replace human beings, but in a capitalist society where working fast and working efficiently and making money is key... [...] those are things that I question" (participant A).

Educating data literate citizens

Educating young people is seen as a priority, as this is, according to participants, the main way to become **active citizens** of society. However, currently, the importance of being data, media, and digitally literate is being underestimated by educators.

> "I think [children] should be prioritized in a lot of areas because it's there that the problems and opportunities for tomorrow actually begin- and that's underestimated too much" (participant A).

One participant pleads that educational practices need to pay more attention to the effects of a datafied and digitalized society on a person. These practices should **motivate self-reflection** and awareness regarding **well-being**, as well as **stimulate women** to go into STEM or engineering. Building on this, the participant mentions that **data literacy** education amongst young people should be a priority for both formal and non-formal education.

> "I think they need to focus on [data education] in as many [settings] as possible, where you can have an impact on children and adolescents. But [first] it has to be prioritized for that [to happen]" (participant A).

1.5. CASE REPORT 2: CASE B

1.5.1. KEY CHARACTERISTICS OF THE PROJECT

Project description:

Key Action	Support to policy development and cooperation
Collaboration & knowledge sharing	Youth; local policymakers; youth workers
Goal(s)	Motivate participation/voice youth; policy support & influence
Theme(s)	Youth participation; online dialogue; active citizenship
Digital activities	Online participation platform; an online discussion forum
Role digital media	Instrument
Output	Online platform; instruction manual & campaign materials for youth workers; TTT program (pilot projects)

1.5.2. SUMMARY PROJECT TEAMS

Youth participation project

The organization aims to **support youth policy** on a **local level**. In this context, the organization decided to create an online participation tool, to allow youth to inform policy about their wants and needs on a local level; what they require from their municipality.

> "Those signals constantly come to us, of, 'We as a youth council do not find it easy to guarantee that voice of children and young people, to incorporate that into an opinion.' [...] So that the council gets moving" (project team).

Accessible online participation

The **e-participation platform** was developed to gather **input from youth** in a **low-threshold, timeless,** and broad-scoped manner. The project wishes to 'light up' ideas, let the ideas prosper, grow, and create change. The organization wanted to organize something easily accessible and user-friendly and free for municipalities, deciding not to work with a login, making participation anonymous, and not gathering data from participants. Other participation platforms do tend to use logins, thus installing a barrier, something that might discourage youth from participating. This same logic is applied to the project team choosing to develop a website instead of an application and focusing on smartphone-friendliness.

> "Youth councils can use the tool to participate, to collect ideas from young people in a very low-threshold way. [...] The tool is made in such a way that any youth council can do its thing with it at any time. It's timeless, in the sense of you use it when you need it" (project team).

> "We chose not to work with a login. Of course, as a team, we also went to listen to CitizenLab, for example [...] You have to log in there. And you have to create a profile name. [...] The disadvantage is that you actually have to invest a lot of time to get them over that threshold [of sharing their personal information]. That's also why we chose a webtool and not an app. Young people do not have infinite data and space on their cell phones" (project team).

> "Because of the anonymity, I do think you're going to get more ideas, than having them register" (project team).

> "Those citizen participation platforms, you have to buy a license as a municipality, which is often really expensive" (project team).

Digitally inclusive online youth work

Due to the ability to share ideas anonymously, through a smartphone, and not having to download an application, the project team hopes to have created an accessible tool. The interviewee does ponder if all Flemish youth have a smartphone and internet connection. However, she also claims they are more likely to have a smartphone than a laptop, something confirmed by research on young people in Flanders (Vanwynsberghe et al., 2022).

> "The fact that you don't have to give data, does lower a barrier. Do all young people have cell phones? That is the question. And do they have access to internet or Wi-Fi? I do think most have one. I'm no expert, of course, but I'm thinking of certain groups. Would they all have cell phones anyway? [...] A smartphone is more likely than a laptop" (project team).

The abovementioned design choices are based on **preliminary research**, having spoken to people involved in similar projects, and having gathered **input from youth** before developing the tool and during the test phases. That input provided the project team with the suggestion of organizing a **Tinder-like platform** for ideas, letting the users swipe and like the suggestions.

> "By having those conversations, and that was actually before the development of our webtool, we had already gathered some input" (project team).

> "We made a Tinder of ideas. That's an idea that came from young people, 'We want to swipe between ideas.' So the setup came from them as well. And our webtool is made on a smartphone. [...] The project is kind of designed for and by young people" (project team).

Project evaluation and challenges

Other than having an e-participation platform for youth, the project has other objectives at its core as well, namely setting up a **campaign to boost participation** and support the municipalities with using the platform. The organization also set up **pilot projects** for a test launch, to gather feedback from the municipalities that experimented with/tested the platform. However, Project B had planned to first organize the pilot projects/trajectories, and only develop the platform afterward. Due to the **COVID-19 pandemic**, the project team decided to first develop the tool and wait to set up the pilots, as those trajectories included physical/face-to-face activities.

> "We wanted to do the trajectories first. The trajectories were then going to give input for the webtool. [...] With [the pandemic] we couldn't start with the trajectories because those had physical meeting moments. [...] So we built the tool first. And only then started the trajectories. So we worked with the feedback from the commission of the youth councils" (project team).

> "I do wonder what it would have been like if we didn't start during the pandemic, because we feel like we missed the start a little bit. We did deploy the tool digitally, but the other sequence would have made it better. But that's okay, because it's timeless, people can still sign up every day. It's nice, though, that there have already been more than 8,000 visitors" (project team).

Furthermore, the project team pleads for **trusting your target group** and not adapting/rewriting young people's input, as this could demotivate them and would touch them in their **individuality**, possibly making them believe their voice is inadequate.

> "There was a youth council that emailed 'we like the idea in itself, but it's not worded very well. Can we not change the text?' We chose not to do that because we don't want to touch the individuality of young people. Because if we start doing that, then they're also going to say 'those are not my words'" (project team).

The organization received positive feedback from participants, observing that the tool can **make changes and help** local municipalities reach out to their youth, but also noting that they wish to **develop the tool further** and add more functions.

> "[Local youth commissions] had never received so much input from young people who were not in their local youth movement. A number of young people also became part of

> the working group that [was organized afterward]. [...] So they sat around the table with the municipality to design ideas" (project team).
>
> "Because it's timeless, it's hard to know if it's a consistent success. [...] We don't always know how much it plays a role in each community. And that's kind of hard to track" (project team).

Although the tool seems to be well-received, the project team needs to **(re)advertise its existence constantly and continuously**, a main challenge for online participation platforms. A second challenge is getting youth to participate. An e-participation platform requires a **blended approach** (and-and), such as an offline campaign to guide/**steer youth towards** the platform, a participation event, etc., as it remains a challenge to make young people aware of the existence of the tool.

> "We have to make a commitment to 'put our product back on the market' every time. Because of course, youth councils renew very quickly. Every three years you have a completely new youth council. But then you have to constantly repeat your message. [...] But we have to keep doing it. It can have a lot of impact" (project team).
>
> "You have to take action to get young people on [the website]. And we actually tried to do that in the trajectories. [...] we do go and say 'look, how can you now develop a good action or campaign to make the tool known to your municipality?' Because you still have to lead them towards it [...] You still have to sell it. You still have to advertise it. It will always be and online and offline" (project team).

Digital and data literacy in youth work

The interviewee touches upon the **digital literacy of youth**, mentioning that youth do focus on and are concerned with their **online privacy** and safety, another reason to keep participants on the platform anonymous. The organization notes the ubiquitous nature and **interwovenness** of youths' online and offline lives.

> "I think [youth] are much more concerned with GDPR than we are. Sharing data and exchanging e-mail addresses, they don't do that anymore" (project team).
>
> "They no longer see the digital as separate from the physical world. [...] It may depend from topic to topic, but I do think it's a piece of their life, [...] So it can be intertwined. I don't think we can keep it out of activities anymore either" (project team).

Attention to digital media in and the organizing of digital youth work is currently ongoing in Flanders, however, the project team mentions, there should be differences between the types of organizations. Youth work can play a big role in the development of youth's digital literacy, but not all youth organizations need to focus on tackling digital youth work.

> "I think there are a lot of initiatives that are already doing digital youth work. [...] But you also have different carriers. [...] But you do have these specific associations that are focused on [digital youth work]" (project team).

1.6. CASE REPORT 3: CASE C

1.6.1. KEY CHARACTERISTICS OF THE PROJECT

Project description:

Key Action	Cooperation for innovation and the exchange of good practices
Goal(s)	Increase maker-mindset; digital citizenship; creating space for vulnerable/marginalized youth
Theme(s)	Digital & STEM literacy; equal and broad development opportunities; social inclusion
Digital activities	Creating digital products/tools (maker space); understanding and critically reflecting on digital media/technology
Role digital media	Activity
Output/result(s)	MOOCs; TTT program; makerspaces/fab labs

1.6.2. SUMMARY PROJECT TEAMS

Makerspace for vulnerable youth

The project focuses on **accessible, inclusive learning** and development of vulnerable youth and youth from minority groups. The lead organization refers to their maker space as a **formative lab**, where acquiring competences is a priority. The project wants to be accessible for youngsters with no previous experience with STEM or maker culture and pays special attention to young women and girls. Just like with case A, the organization wants to introduce women to STEM and allow them to learn more about the topic.

> "We wanted to develop a kind of network -in addition to the fab labs that are out there- which are even more focused on inclusive learning, and very specifically on a way to be able to [use] the acquired competences [in society]. [...] It has a fab lab infrastructure with that extra layer around learning. And this is just a continuation of that" (project team).

> "We wanted to make our activities accessible to all young people, whether they have very little knowledge of technology or are very adept at digital practices, or even traditional DIY. We also have an inclusive component because we realized that maker education is often seen as a male practice. So one of our goals was to invent and design micro-activities that would appeal to female youth" (project team).

Inclusive and accessible design

The organization mentions that their maker space is about more than just **technical skills** or button knowledge. According to the interviewee, beginning makerspaces tend to focus on these technical skills, and not on critical thinking or reflecting. As research shows, many educational practices tend to focus on using digital media/data and assume that using will lead to understanding (Seymoens et al., 2020). The interviewee challenges this assumption and pleads for an **inclusive design and accessibility** of fab labs/maker spaces for all people, e.g. youngsters from an immigrant background. To make sure that these young people are being reached and feel welcome, it is important to **collaborate** with other organizations, to complement each other.

> "Learning technical skills, was the big focus in the beginning. We need to teach people 3D printing and laser cutting and then we'll be fine. As the years go by, we find that it's good to look more broadly. [...] You do have to master all those tools first before you can go any further, but often it doesn't go any further. [...] We do feel the need to take further steps, [...] what comes next? It's not just about making sure that you have those machines in place and that there are manuals, that there's a way to access them, it's also about the way you use them and how inclusive your design is" (project team).

> "If we're talking about inclusion [...] there's still too much looking at technology today from that functional, masculine, Western perspective. [...] Culturally we build in too

> many barriers. [...] We have a role to play in that, in working with organizations" (project team).

One interviewee mentions the wish to set up a project that pays attention to **(digital) citizenship** and focuses less on the technical skills of youth, to build further on and go further than basic maker education.

> "Perhaps [we want to work] more around citizenship themes than purely technical ones" (project team).

To be able to organize an inclusive maker space or fab labs, the trainers/youth workers need to have the ability to support the young people interested in STEM. However, not many youth workers are experienced with STEM-related topics. Because of this, they are doubtful of their skills and their ability to transfer the right skills. This **trepidation** leads youth workers to stay in their **comfort zone**, which could exclude young people from minority backgrounds, as they might not feel comfortable joining. This refers to the importance of building youth workers' competences, but also to the importance of working from a **bottom-up**, needs-based approach of the target group.

> "[The youth workers] feel that they have to be able to do something well themselves before they can transfer it, so they don't do it. And so the workshops that are then offered, are very often about soft skills. And very much out of the comfort zone of a lot of people, especially those who are less socially adept or have language barriers" (project team).

The capacity of youth workers

Building on this, the project team mentioned the attention on supporting and **training the trainer** and **sharing knowledge/resources**, e.g. handbooks and working with open-source software[3].

> "Every two months or so [we get] a question from someone somewhere in Europe or Belgium who wants to set up a fab lab and asks to exchange knowledge. [...] There's been the same need for 15 years to have some kind of handbook" (project team).

> "We share our practices with [youth workers] in the hope that they go back to their communities and implement maker education workshops" (project team).

> "I think [open-source] should be one of the main principles [of European youth projects], just like [paying attention to] climate and sustainable mobilities, you should also work open-source" (project team).

The digital competences of youth workers are mentioned to be 'lacking'. The interviewees note several underlying reasons, such as the lack of motivation, and trepidation. Thus, it is important to **share** the **opportunities** of digital youth work and the **meaningfulness** of projects focussed on digital literacy.

> "It [will only] work well if you bring [those topics] in from your motivation. We can't force that [motivation] [...] We see very often the manual-oriented technique because the teacher is not sufficiently skillful to make variations in [the lesson] or let students be free [to experiment]. [...] Young people have so many choices these days [...] that they drop out very quickly if it doesn't suit them. [...] they have to trust the teacher, and they have to be curious about it, and then it does help to keep it very close to your interests" (project team).

> "It can be tough sometimes to find motivation. Why do difficult stuff when you can play football? [...] There is a decade-long culture of sports competition in youth work or playing board games and playing video games, whereas there is not so much culture about maker education" (project team).

The interviewee puts forth a solution to the abovementioned obstacles, namely the possibility of **co-teaching**, having one trainer with strong technical skills and one with good soft skills.

[3] Publicly 'open' and accessible software.

Moreover, the project team mentions the importance of **effectiveness measurement**, to build on evaluation and feedback and improve one's offer.

> "I think it should be a duo. You have to provide that collaboration to make [maker education] happen. The technicians in the duo need to have youth work skills; It's not so easy to teach someone something" (project team).

> "There are very few trainers who engage in [effectiveness measurement]" project team).

Teaching-learning approach

The project has a **learning-by-doing** pedagogy. Providing an **open learning space** that allows youngsters to actively engage with the available materials, lowers barriers for young people and creates equal learning opportunities. Open learning spaces are low-threshold and accessible.

> "I think that the fact that there are things you can just fiddle with, without there being too many barriers, like filling out forms and taking three courses before you can do anything, that's also very important" (project team).

Being able to provide a learning space that is open to all youth, highlights the **flexibility** and versatility of non-formal learning. Youth workers do not have to adhere to a curriculum or learning goals and thus are free to set their own goals and focus. Another opportunity for non-formal learning spaces is the possibility of **peer-to-peer learning** and being able to create a comfort zone and **safe space** for the target group, getting away from the classical approach to learning.

> "The advantage of youth work is that we don't have a curriculum [...] So we're pretty flexible" (project team).

Project evaluation and challenges

As with all youth work projects organized in the past few years, **COVID-19** has affected the set-up of the project. To still be able to reach the target group, the project team decided to **deliver maker/DIY kits** to participants' houses. The interviewee noted that there was **less participation**, however, those that did participate could **concentrate well at home** due to fewer distractions. However, organizing at-home activities does **create distance** between the participants, thus paying less attention to soft and social skills.

> "We delivered the [materials] necessary to learn basic manipulations like a hot glue gun, pencils, or even some electronics, like Arduino-boards, USB-cables... But some people were quiet, they feared having to do this manipulation [on their own], so they didn't participate. But it was interesting because when kids were in their own homes, they could concentrate better actually. There was no distraction. There was no, when you put them together this group dynamic, somebody makes a joke, everybody laughs for 15 minutes. But from their homes, it was quite efficient" (project team).

Another challenge noted is setting up collaborations. An interviewee noted the importance of controlling the ambitions of a project. Whilst collaborating with another organization, one team needs to get to know the other team, their working method, and context, thus possibly 'losing' time that could have been spent focussing on the target group. It is therefore important to have a clear understanding between partners and a clear idea of the project concept.

> "You have to adjust your ambition a little because you have to do a lot of work to get to know each other, to get to know the context, the distance. And particularly in COVID-years that was not evident" (project team).

Digital and data literacy of youth

Equal to what the project team notes, the interviewees touch upon the digital literacy of youth and mention the **strong button-knowledge** of young people. One interviewee also mentions that young people are **mindful** of the types of platforms/tools/... out there and choose something that is most beneficial, user-friendly, and safe for them.

> "When I look at the young people coming in and out of here, they are insanely well-skilled in software. From programming to network management to using open-source

> platforms and Discord. All that kind of stuff is normal for them. [...] They choose Discord, nobody told them to. So, they're conscious about that choice" (project team).

The project team also mentions challenges and blind spots when it comes to the competences of their target groups. Especially related to **datafication**, there is a **lack of attention** from both formal and non-formal education. The themes mentioned are ethics, privacy and controlling your data, bias/inequality in AI, and the impact of data. There is a need for data literate youth and citizens.

> "If you take artificial intelligence... There is little awareness of where this can go. If you're interested in the topic you know that it can get tricky, you know it can [...] contribute to widening inequalities. But it's a complicated subject, young people are not that [aware] of it. So I would say one need is that youth workers can focus on is [...] teaching kids how they can be left alone" (project team).

> "When we think about maker education, [...] what most people have in mind is making stuff, making robots, making interactive devices. But that doesn't necessarily mean that kids are aware of what [...] our needs are. Nor does it mean that they're much aware of the impacts of artificial intelligence on our lives, or the lives of our communities" (project team).

There is room to teach youth about data-related topics, however, data is a **complex topic** that tends to be very theoretically focused. Such topics, e.g. AI, need to be brought up **playfully**.

> "I think [AI] is a bit of a technical topic. [...] We've tried to figure out some practical activities about artificial intelligence. How can our community, how can we communicate concepts like machine learning? What needs to be fun and ends on a lecture about machine learning" (project team).

1.7. CASE REPORT 4: CASE D

1.7.1. KEY CHARACTERISTICS OF THE PROJECT

Project description:

Key Action	Cooperation for innovation and the exchange of good practices
Goal(s)	Help develop changemakers; encourage civic participation; increase digital literacy; equal opportunities
Theme(s)	Digital/active citizenship; civic participation; environmental citizenship; digital literacy
Digital activities	Creating and using digital products/tools
Role digital media	Activity
Output	Manuals for youth workers; hackathon; mentor program

1.7.2. SUMMARY PROJECT TEAMS

Workshops on citizenship for young women

The project organizes STEM-related two-day **workshops for young women** and girls, focusing on the theme of **climate change**. The participants work on environmental and digital **citizenship** as well as encouraging civic participation and an entrepreneurial mindset in the target group. This way, the organization works on developing societal **changemakers**.

> "The project was born from another initiative that our organization has, which is called Move It Forward. The idea of the two projects is to support girls and women to become digital entrepreneurs. And we do that through a very precise intervention, [...] which is a hackathon" (project team).

> "This event is two days. It's a very intense event that aims to inspire the participating girls and women to start their entrepreneurial paths, even if they don't have, let's say, all the knowledge to do that. The purpose is for us to give them access to knowledge, to resources, to experts, and to follow up as well so that they can continue if they want with the projects that they develop during the event" (project team).

The workshops try to give the participants the **confidence to set up their own projects**. The workshops focus on forming active citizens with an **entrepreneurial mindset**. Because it is a short program, the project team selects what is most important as an outcome, namely the participants' ability to stand on their own two feet and move forward with the provided tools. The pedagogy behind the workshops is built around 'trying, more than achieving'.

> "It's a two-day, compact program where we want people to learn something about themselves. So for us, the main result is that, when they produce something, it can become something bigger, like a start-up. But that's not necessary, it doesn't need to happen. For us, the most important is that they understand that they can do something, that they can develop their ideas" (project team).

> "They learn [...] that may be something that they thought completely out of their range, like for example, [developing] an app from scratch. They learn how to do it [...] themselves. It's a very practical workshop, [it shows that] it's not so difficult and that it's feasible [to do yourself]" (project team).

Capacity building of youth workers

Other than that, the partners also wanted to develop **train-the-trainer** sessions and materials for other youth workers and youth organizations, thus developing a **handbook and curriculum**, listing the most important aspects of organizing a similar project focussed on change-making and digital competences. According to the project team, trainers must develop the necessary competences to **support the participants**.

> "The deliverables of the project are a handbook and training for partners and other potential organizations that would like to organize such events. In the handbook, we tell

them, step by step, how to organize such events, how to get in touch with partners, and how to work with the participants during the two days and after. We give them information about the skills that they should develop as trainers, but also the focus that should be on the competences of the participants. Another output of the project is a curriculum of materials and resources that can be used during the events to develop the right skills. So we have materials on digital skills, materials on entrepreneurial skills, and materials on mentoring. Together they kind of form this package that should support other organizations" (project team).

"During the training that we offered, we also trained [youth workers] on specific skills that they can include in their events" (project team).

The project team noted the needs of youth workers and responded by developing the abovementioned materials. Furthermore, the project team observed that youth organizations often **do not have sufficient digital competences** to support youth during their educational activities. However, **collaborating** and sharing resources is a good way to overcome this possible obstacle.

"What we noticed while we implemented the project is that on the organizations' side, they don't have the digital skills to be able to include them in such an event. [...] Internally, they don't have the knowledge or digital skills that they can share during the events. And the way that we solved this issue, the way that the project is designed, is that they should collaborate with other partners. So to bring in external support. It's not a problem if you don't have the right skills. We encourage them to call in external support to help" (project team).

Teaching-learning approach

The project has a **result-driven and active approach**, like the two cases mentioned above, with a focus on **soft skills, teamwork**, and societal value. To make the activity meaningful for participants, there is a community-based focus. According to the interviewees, the **societal and personal relevance** of a project can motivate women to participate.

"[We work with] a very hands-on approach. We don't talk too much about things, but we do them; it's this learning by doing with less theory and more practice. We also focus on teamwork and community. If you want community, encourage them to work as a team and to think about the needs of their community" (project team).

"Since youth have access to a lot of information, you need to have something that has a wow factor for them to want to be involved. I'm not sure what the wow factor would be, but I see that you catch attention more when you're talking about big things. Sometimes the big thing can be [...] an event with a big tech company and they're interested because they know the brand. On the other hand, you [focus on] something that is super relevant for them, climate, for example. It has to be in a very dynamic format. It cannot be just listening to things and giving examples. So even if you talk about social media, for example, you have to make it relevant for them, not talk about things that they cannot identify in their lives" (project team).

As mentioned above, the pedagogy focuses on **fostering an entrepreneurial mindset**. The focus is on internal change and instilling self-confidence in the participants. Thus, the project team finds it important to offer accessibility and **low-threshold** activities that do not require specific prior knowledge or experience. An example mentioned by the project team is the concept of a 'hackathon'[4]. The team mentions that the two-day event can be classified as a hackathon, however, this term can have a dissuasive effect.

"When it comes to the participants of the event, it's about making sure that the way we communicated about the event makes the target audience understand that they don't need to have all the knowledge to start participating. That accessibility was one of the things that we wanted to keep in mind" (project team).

[4] An event in which participants collaborate to find solutions/approaches to certain cases, e.g. climate change, within a short period of time, e.g. 48 hours.

> "We don't call it hackathon. That's also one of the success factors. The name is not scary for the potential participants. [...] Very often for women, when you mention that it's a hackathon, that it's something tech, they will [think] 'Oh, that's not for me.'" (project team).

Project evaluation and challenges

Although the project team organized something that could prove useful for participants, they encountered several challenges related to the effects of COVID-19. The interviewees note much **less interest** in their project **post-pandemic**, and they have a hard time attracting participants, despite the theme.

> "Before COVID-19, we had on average 25-30 participants, so we would need at least 10 external people. [...] But afterward, this changed completely. It's way more difficult now to find participants. [...] This project is addressed to a younger audience, so younger girls usually are in high school or university. I find that they have more difficulties committing, because we had registrations, but they didn't show up. And those who came, said that it was too long" (project team).

Digital and data literacy of youth

The project team mentions the **good button-knowledge** and digital skills of their participants. However, albeit they are good at using digital media, they are, as mentioned by the other interviewees and project teams as well, **'consumers' of digital media**. The project team hopes to support their **digital awareness** and citizenship, so they can use and adapt digital media to their advantage, as their digital awareness and their understanding of the digital impact on their lives is low. According to the interviewees, they might not realize the importance of digital literacy and of having a critical digital mindset.

> "They are not so aware of how they can use [digital media] in their projects. They understand much better how digital media, social media works" (project team).

> "There's a lot of information and training for youth on digital media, but I wonder [...] if they see the interest for them to be involved in these kinds of activities in a productive way. [...] Maybe they don't have a profound understanding of what the impact of digital [technology] is. And I think there is also a gap. There's a lot, but they don't understand the core issues. They have a lot of knowledge, but there's not enough attention to what the impact is on your life" (project team).

Several themes (ethics, online privacy), similar to the other interviews', are mentioned concerning the **datafication** of society. The project team notes that training data literate youth should be put **on the educational agenda**.

> "Nobody is talking about ethics, but this will be a huge topic in the future [...] for all levels of the educational spectrum" (project team).

> "[Youth] are a bit more aware of the bigger causes of the planet, so I think maybe privacy could be one of those topics. But at the same time, they are pretty confused about many things. [...] They are not able to implement [their attention] or focus it and say, 'Okay, this is important. And this is how I will impact society or myself.'" (project team).

Importance of education

Therefore, education, both formal and **non-formal plays an important role**, in developing and **empowering** the proactive, resilient citizens of tomorrow. The project team suggests **intergenerational learning** as a possible solution, as well as setting up **needs-based**, bottom-up practices, something also mentioned during the other interviews.

> "I think there should be way more education on all sides, [...] because this is a new reality we are living in, that COVID-19 has also changed a lot" (project team).

> "[Learning] should be intergenerational because we cannot teach them something we haven't understood. The fact is that they have way more knowledge in the digital sector because this is how they grew up. But they are a bit confused with what is ethical, what is [right or wrong]" (project team).

> “It should be more bottom-up than top-down. [...] [We need] more awareness of what happens on the ground” (project team).

Collaboration and dialogue within the ecosystem

Another suggestion mentioned is setting up a clearer, more open **dialogue** within the youth **ecosystem**, as well as including the **private sector**. Different actors together could complement and build on each other’s expertise to organize good practices that attract youth. Including the private sector calls upon their **social responsibility**, and by setting up a (transparent) dialogue, youth might be able to learn to understand the **impact of digitalization** on their lives.

> “We need to work more together on things that are for [...] our future. There should be more of this intergenerational work, community, communication because sometimes I see we are all spread out and not understanding each other” (project team).

> “I would [...] ask the other members of the ecosystem, for example, companies to also be more active [...] so people can see exactly how something is developed, why, and so on. I think [policy] should make sure that more actors in the ecosystem are involved [...] [and] create these dialogues between companies and young people in whatever way, to see how things are made and what the real impact is” (project team).

1.8. COMPARATIVE ANALYSIS

1.8.1. OBJECTIVES DIGITAL YOUTH WORK PROJECTS

Based on the selected projects, it could be expected that the focus within the projects and thus within the outcomes would be on the creation and use of digital media and technology. Indeed, three of the four projects provide a digital space for learning and experimentation. However, the focus is not exclusively on learning digital competencies, but on how digital media and technology can be used for other purposes and how the participants position themselves in society. We distinguished several main goals during the interviews:

- Digital and active citizenship;
- (Civic) participation and changemaking;
- Introduction to STEM;
- Encourage maker mentality;
- Encourage entrepreneurial/critical mindset.

Active (and digital) citizenship/participation and innovation in society are consequently at the forefront for all projects. Results can therefore be framed within these goals.

In addition, it is important to note that the four projects focus on the social inclusion of young people, such as engaging them in policies. Equally, the three maker projects focus on the social inclusion of vulnerable target groups or target groups with little involvement in the themes cited above. As a result, the answers consistently address and take into account (digital) inclusion of (vulnerable) young people.

1.8.2. BRIDGING THE GAP

1.8.2.1. YOUNG PEOPLE AS 'CONSUMERS'

Young people are described by interviewees as passive users of digital media and technology. Respondents indicate that young people have very little voice in the digital world and do not sufficiently identify/realize their needs and obstacles. Young people are not aware that beyond being passive users and consumers, they can also have an active influence and that critical, active citizenship is necessary today. One respondent indicates that young people need to learn how to become a 'creator'. Another respondent points out that young people need to know that they can shape the world to their liking if they have the right competencies to do so. Consequently, there is a greater need for youth work that focuses on 21st century skills and digital competences.

Educational practices need to pay attention to fostering the critical mindset of participants. This is easier to pay attention to in a youth work context, in part because youth workers are not required to achieve learning goals. Youth work is said to focus on empowering young people, thus, activities should strive to empower their target group. To teach them how to recognize structures/systems in place, etc. It is not only about the 'hard skills' of being able to use a laptop or being able to code, but also about soft skills, like promoting an entrepreneurial mindset to be able to handle new developments or changing contexts.

1.8.2.2. DIGITAL LITERACY AND COMPETENCES OF YOUTH

Several respondents address the competences of young people. For example, they indicate that (vulnerable) young people are very good at using social media, but lack basic skills, such as using and navigating a computer, and young people know very little about electronics/ICT, such as its problem-solving aspect. This is consistent with results from the Belgian Digital Inclusion Barometer (Faure et al., 2022) and the Apestaartjaren survey[5] (Vanwynsberghe et al., 2022). While according to respondents, learning is at the forefront of their project, they also indicate that other dimensions are equally important in youth work, like providing space for fun and personal development and growth. The focus should not always be on achieving learning goals.

[5] Apestaartjaren is a biennial survey of the digital environment of young people in Flanders and Brussels (Belgium).

The practices seem to focus on STEM subjects and technical skills, but the projects also want to instil a critical mindset, going beyond the technical skills, as mentioned above. Something to consider, is that technology is here to stay, it is part of young people's lives in every way, e.g. to stay in contact with people, thus, being able to function in a digital society is an essential competence. It does not just come down to having usage skills or knowledge, but it is also about an attitude, a mindset to become a proactive citizen, seeing both the advantages and disadvantages of digital media, knowing how to accommodate those disadvantages, and how to be resilient and protect one's digital well-being. When organizing an activity, it is therefore required to look further than STE(A)M or the 'novelty factor' of certain digital technologies and bring in the critical understanding of these technologies. Naturally, this requires youth workers to also have certain competences to support youth in this process (see 1.4.4.1. for more information).

1.8.2.3. DATAFICATION

Several interviews draw attention to the datafication of society and the importance of data competences, an aspect that also recurred in several national SNAC DIGI research reports (SNAC DIGI WP4 expert meeting, 2022). Data protection, ethics and data, online privacy, AI, and more are very technical topics for young people and consequently something young people do not often think about. However, our society is highly datafied, and "almost all areas of today's society use and produce data" (Vermeire et al., 2022c). As respondents point out, young people must have sufficient awareness and knowledge that data can contribute to inequalities in society. Young people need to learn how to deal with this, and express an interest in the subject, yet education pays little attention to data literacy. There is a need for policy attention and more knowledge sharing so that trainers and youth workers also pay attention to this and can answer questions about it. It would be valuable if youth workers could teach the main aspects of safe internet use, as well as encourage critical thinking when using online platforms. It is paramount that youth not only learn to use digital media, but also understand the ethical aspects, have good problem-solving and computational thinking skills to be prepared for a technological and datafied society, a society where citizens are seen more as consumers or passive data subjects. Youth work has the ability to support youth in becoming active 'creators', as mentioned above.

1.8.3. NAVIGATING NON-FORMALITY WITHIN DIGITAL ENVIRONMENTS

1.8.3.1. DIGITAL INCLUSION, ACCESSIBILITY, AND VULNERABLE YOUTH

1.8.3.1.1. Digitally inclusive and low-threshold practices

The three maker projects focus on active, hands-on, and experimental learning in a face-to-face environment. As a result, youth workers and participants experienced few obstacles related to digital inclusion. The cases focused mainly on vulnerable target groups, as indicated above. Despite these vulnerable target groups, the organizations/projects experienced little to no difficulty regarding the digital inclusion of their participants. Indeed, hardware, Internet connection, etc., were provided by the project organizers.

Project B provides an online participation platform. Online participation generally works better with young people, if it meets several of their needs and desires, such as anonymity, accessibility, approachability, and smartphone-friendliness. The platform was designed for a smartphone, not a computer. To ascertain what the needs of the target audience were, the project team conducted preliminary research and worked with young people to outline the project idea. This and the fact that young people prefer websites to applications for these purposes (Vermeire & Van den Broeck, 2022), could make it a successful project. Overall, this seems to be the case. Through a feedback form, local municipalities/youth counsels indicated that they were able to successfully make use of the platform, but that they had expected more input from young people and that the platform could have been more visually appealing. The lack of participation for some municipalities and a positive experience for others, could be due to several reasons, such as a widespread local campaign, the duration of possible participation, etc. Consequently, this cannot be speculated on further.

1.8.3.1.2. Online youth work and accessibility

Finally, respondents see a transition from on-site practices to online youth work in Flanders. According to most respondents, this is not necessarily a negative evolution, but online practices need to pay more attention to digital inclusion aspects, such as competences, connectivity,

and access to hardware/software/internet. According to one respondent, digital inclusion should be the main goal of a project, by for example providing open-source software. According to another respondent, learning digital competences without a laptop/computer proved more productive. Currently, youth work sees digital media as an instrument to tackle certain issues, e.g. isolation, however, using digital media to learn and learning about digital media are two separate tracks and branches of digital youth work.

The respondent from case B indicated that creating and running online platforms is not simple, requiring constant follow-up by the developer and by the youth council/service using the platform. In addition, it is uncertain which young people participate in the initiative. To maintain awareness/recognition of the platform, the organization will offer free trainings for interested users.

These challenges are consistent with findings from other research, where online participation needs to be strongly supported and motivated, and the target groups to be reached need to be specifically 'targeted' through various channels. As stated in the SNAC DIGI Belgium-Flanders report, "digital inclusion remains a major concern at the level of access, competence, and support in the youth sector" (Vermeire & Van den Broeck, 2022, p.12).

1.8.3.2. NON-FORMAL LEARNING SETTINGS

1.8.3.2.1. Advantages of non-formal settings

In addition, non-formal, physical digital youth work projects appear to be a successful environment for learning digital and 21st century competencies. This research confirms the proposition that youth work and non-formal learning is a good educational environment partly due to its flexibility, informal and active nature. If youth workers are properly supported and have sufficient digital competencies, a maker environment is ideal. Young people can learn at their own pace, from each other, and everyone achieves something and makes progress. There are no right or wrong results, having a positive impact on the participants' self-confidence and feelings of safety. Moreover, learning-by-doing achieves positive results that benefit not only digital competencies but also soft skills. Nevertheless, according to respondents, many young people do not know about the existence and benefits of e.g. maker spaces and opportunities to learn independently through these types of projects.

Another aspect to consider, is that most non-formal learning spaces do not necessarily give much consideration to the importance of digital awareness. As is seen with most on-site/physical digital youth work focussing on creating, there is a lack of attention for understanding competences. It is crucial that maker space activities do not forget about the importance of critical mindset and build on maker education to train these competences.

1.8.3.2.1. Formal and non-formal education

Respondents connect the abovementioned and the flexibility/versatility of the youth work context with formal education, which they believe cannot bear all the responsibility of digital competencies. A collaboration between formal and non-formal and the support of youth workers to set up strong digital youth work are mentioned as starting points. Here, respondents reiterate that both youth and youth workers need to be sufficiently motivated to engage in digital youth work and it can be demonstrated through knowledge sharing that youth work on digital media and technology need not be intimidating.

Non-formal education comes across as more reactive, because of this free ability to respond to societal trends and signals. However, there is room for the two settings to complement one another, e.g. setting up collaborative trajectories.

1.8.4. ENVISIONING DIGITAL YOUTH WORK

1.8.4.1. CAPACITY BUILDING OF YOUTH WORKERS

1.8.4.1.1. Motivation and experience of youth workers

Regarding capacity building and competences of youth workers, the majority of respondents indicated that youth workers should be able to provide digital support to young people. However, this happens very rarely. Youth workers and social workers, who were also mentioned, talk little to never about digital awareness, according to the respondents. If they

talk about it, peers do so among themselves. This is confirmed by research among young people in Flanders (Vanwynsberghe et al., 2022).

According to respondents, this is mainly because youth workers are insecure about their knowledge and need to be motivated to pay attention to the digital world and the influence of digitization on our society. This can be obtained in several ways, including informing youth workers about the opportunities and possibilities that digital youth work offers, providing more capacity building on this topic, as well as more knowledge sharing among themselves. Some respondents also indicated that in addition to train-the-trainer projects, digital youth work should be included in social work training, to reach as many (future) youth workers as possible. One interviewee indicates that learning the necessary skills only happens when the youth worker is sufficiently motivated to do so (intrinsic motivation), and that collaboration between youth workers is important, to complement each other's strengths and weaknesses (e.g. soft skills vs. technical skills). These results are also consistent with previous research (Vermeire et al., 2022a; Vermeire et al., 2022b).

This also relates to something noted by Vermeire and Van den Broeck (2022), namely, that a lot of youth workers and projects see this need for knowledge sharing, deciding to develop materials or training sessions. However, this leads to a lot of standalone, ad hoc initiatives that are not always disseminated properly. This is something we noted in all the case studies, as they all developed materials for other youth workers.

1.8.4.1.2. Training and knowledge sharing

Respondents consider this to be the most important missing link in the digital youth work story and consequently develop and offer accessible materials for youth workers themselves. Recommended steps here are support for youth work events, where youth workers can inform each other about good practices and exchange materials/ideas. One aspect to pay attention to here is the inaccessibility of STEM- and ICT-focused projects. The hardware and software needed for this type of youth work are very expensive, which means that the projects may not be very inclusive, and that young people may not be able to develop their competencies independently to boost these competencies. In addition, VR and XR activities are increasingly popular because of the ‘novelty factor’ and are becoming ‘gimmicks’, according to one respondent. However, projects using this material are not necessarily better. VR, XR and AI-focused activities can have an incredibly empowering impact, e.g. reaching young people from rural communities, however, it is important to first decide on the objectives of the activity and understand the needs/wishes of the target group, e.g. do they feel comfortable with VR?, before deciding to organize an activity with what is defined as a ‚high wow-factor‘.

1.8.4.1. BOTTOM-UP AND NEEDS-BASED PRACTICES

Respondents indicate that there is room for improvement o.v. bottom-up practices. After all, not everything can be arranged through policy, good practices start with the needs and talents of young people. Being sufficiently aware of the strengths and weaknesses of your target group is indispensable. This can be compared with both European and national results, where co-creation with young people and needs-oriented work is at the forefront and is a recommendation for good practices (Vermeire et al., 2022b; Skill IT, 2020; Șerban et al., 2020; Lauha & Nõlvak, 2019). Additionally, a practice may be more enjoyable for the target group, not only because of its fun nature, but also because it touches upon a relevant topic for them, stimulating the intrinsic motivation of the participants.

1.8.4.2. SELF-EVALUATION AND EFFECTIVENESS ASSESSMENT

Lastly, several respondents address, in addition to the need for prior research, effectiveness measurements at the end of a project. The practices interviewed are strongly pedagogically supported and pay attention to a quality learning process and learning method. However, they also mention frustrations or note that many projects do not pay attention to self-evaluation, both in terms of how much the participants have learned, but also what obstacles the youth workers encountered throughout the project and how they can tackle this better in the future.

1.8.1. GRASPING SUCCESSFUL APPROACHES TO DIGITAL YOUTH WORK IN *BELGIUM-FLANDERS*

KEY FACTORS OF SUCCESS

Youth work context

- The informal, flexible, and versatile context of youth work to promote learning;
- Motivating and building on self-reflection and digital awareness of youth
- Providing a safe space where young people can set their own boundaries and decide what they (do not) feel comfortable with;
- Providing hardware, software, internet connection, and support/guidance for the participants.

Capacity building of youth workers

- Setting up collaborative practices and collaborations between practices that complement expertise;
- Knowledge sharing and disseminating training materials, tips, tricks, ... for youth workers from a single, user-friendly database
- Organizing training opportunities and sharing opportunities and the importance of digital youth work with other youth organizations;
- Organizing effectiveness assessment to assess a practice's impact and adjusting where necessary.

Setting up an activity

- Allowing practices to adjust their focus based on the effectiveness assessments.
- Organizing bottom-up activities that start from the needs and talents of the target group (preliminary research);
- Having a good understanding of the target group and their needs (prior research) before deciding what activity or type of digital youth work to organize;
- Looking into similar practices and their challenges and opportunities (preliminary research);
- Taking a participatory approach to setting up an activity, by involving the target before and during organizing an activity, allowing room for their voice and their insight.

Pedagogy and learning context

- Adopting an active, hands-on, playful, and possibly experience-based learning pedagogy that balances theory and practice;
- Motivating and building on self-reflection and digital awareness of youth
- Involving the target groups' input before and during organizing an activity, allowing room for their voice and their insight;
- Focussing on the meaningfulness/usefulness of an activity and having a value-based approach when organizing an activity;
- Providing good instructions and support, as well as a safe space to learn.

BRIEF RECOMMENDATIONS

Youth work practices

- Have a clearly defined goal and target group, and define, based on this, what type of digital youth work and pedagogy is most useful to reach the learning goals and what subject is most meaningful to the target group to engage them and to empower them in a digital society;
- Organise co-creation tracks with the target group and start from a talent-based perspective, e.g. letting them beta-test, setting up a focus group, involving them in the design process, etc.;
- Provide youth with the means to actively participate during the activity, by accommodating their needs and wishes and providing the required hardware, support, etc.;
- Make sure the organized activity goes further than 'classical' maker education when the focus is on digital or data citizenship/awareness/well-being...;
- Pay attention and investigate the digital needs and digital literacy levels of youth, do not assume they are digital natives from the get-go;
- Set up peer-to-peer and hands-on learning activities with youth workers as coaches to support the learning of young people;

- Set up and inform youth about open and safe learning spaces that are accessible for all types of youth and are both socially and digitally inclusive of vulnerable groups, try to eliminate possible barriers, e.g. language, and allow youth to freely explore;
- Collaborate and share knowledge with other organizations/the youth sector to set up sustainable practices, reach the target group and attain the objectives of the practice.

Policymakers

- Inform youth workers about the importance of digital inclusion and the possible steps to take to make a practice as accessible as possible, e.g. developing informative guidelines, sharing best practices, communicating the objectives of digital youth work, etc.;
- Share the European Council materials on digital and data literacy and adapt/share the competences that apply to youth workers/trainers, e.g. using the European Digital Competence Framework 2.2 and Digital education Plan or using national materials from the youth departments;
- Encourage youth workers to organize projects focussing on digital rights and wellbeing, especially for vulnerable youth with low social/digital capital, by setting up financial support for these practices, e.g. through a European/national call for project;
- Motivate youth workers to set up collaborations and share knowledge to complement expertise and provide youth workers with the means to seek support from others, by providing a widespread digital youth work platform, setting up peer learning events and learning networks, etc.;
- Provide youth workers with a how-to guide, tips and tricks, and a database of best practices on a European level.

Youth work support structures

- Inform youth workers about the importance of digital inclusion and the possible steps to take to make a practice as accessible as possible, spreading materials developed together with policymakers.
- Inform youth workers about the importance of being data literate and encourage youth workers to organize projects focussing on ethics/equality/impact of data and request the projects go further than merely using/introducing the new technologies, e.g. AI;
- Inform youth workers about the importance of being able to navigate a digital society safely and stress the importance of digital wellbeing/resilience, and encourage youth workers to organize projects focussing on digital rights and wellbeing, especially for vulnerable youth with low social capital;
- Inform youth workers about the difference between the ability to 'use' digital media/technology and the ability to 'understand' it, refer to the importance of digital awareness in a digitalized society;
- Provide youth workers with the means and the tools to seek support from other actors, e.g. peer learning events, train-the-trainer sessions, etc. together with policymakers;
- When evaluating projects/practices, stress the importance of not only innovation, but also of inclusiveness, and look beyond the novelty factor of certain practices;
- Require tenable/sustainable practices and effectiveness/impact assessment from activities focussed on youth empowerment and development, and allow for trial-and-error for practices to adapt their set-up to attain their objectives;
- Stress the importance of preliminary and subsequent research and provide the youth workers with tips and tricks on how to set this up, e.g. involving the target group, investigating why similar projects were (un)successful in the past, doing a pilot study to test feasibility, etc.

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